Sr. No. 481

ENTRANCE TEST-2024

SCHOOL OF EARTH AND ENVIRONMENTAL SCIENCES

ENVIRONMENTAL SCIENCE

Question Booklet Series **A**

Total Questions : 60
Time Allowed : 70 Minutes

Roll No. : | | | | | | |

Instructions for Candidates :

1. Write your Entrance Test Roll Number in the space provided at the top of this page of Question Booklet and fill up the necessary information in the spaces provided on the OMR Answer Sheet.
2. OMR Answer Sheet has an Original Copy and a Candidate's Copy glued beneath it at the top. While making entries in the Original Copy, candidate should ensure that the two copies are aligned properly so that the entries made in the Original Copy against each item are exactly copied in the Candidate's Copy.
3. All entries in the OMR Answer Sheet, including answers to questions, are to be recorded in the Original Copy only.
4. Choose the correct / most appropriate response for each question among the options A, B, C and D and darken the circle of the appropriate response completely. The incomplete darkened circle is not correctly read by the OMR Scanner and no complaint to this effect shall be entertained.
5. Use only blue/black ball point pen to darken the circle of correct/most appropriate response. In no case gel/ink pen or pencil should be used.
6. Do not darken more than one circle of options for any question. A question with more than one darkened response shall be considered wrong.
7. There will be **'Negative Marking'** for wrong answers. Each wrong answer will lead to the deduction of 0.25 marks from the total score of the candidate.
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SEAL

1. What among the following is more appropriate for Repiti discontinuity inside the Earth ?

(A) Between upper and lower crust

(B) Between lower crust and upper mantle

(C) Between lower mantle and outer core

(D) None of the above

2. Which of the following situation is true regarding the carbon balance in Tundra ecosystem with time due to increasing and heavily permafrost thawing ?

(A) Plants growing faster

(B) More carbon out than in

(C) More old carbon released

(D) All of the above

3. Match List I with List II and select the appropriate combination :

	List I		List II
A.	Hadley Cell	1.	Boundary between air masses that differ in temperature moisture & density
B.	Ferrel Cell	2.	North-South deflection of air currents of convective cells
C.	Coriolis force	3.	0-30 degree N S
D.	Front	4.	Blow from East to West
E.	Trade winds	5.	30-60 degree N S

	A	B	C	D	E
(A)	3	5	4	1	2
(B)	3	5	2	1	4
(C)	5	3	2	1	4
(D)	5	3	1	2	4

4. Match List I with List II and select the appropriate combination :

	List I		List II
A.	Theory of special creation	1.	Oparin and Haldane
B.	Spontaneous generation	2.	Richter and Arrhenius
C.	Cosmozoic	3.	Aristotle and Needham
D.	Chemical theory	4.	Supernatural power

	A	B	C	D
(A)	4	2	3	1
(B)	3	2	1	4
(C)	3	1	4	2
(D)	4	3	2	1

5. The term 'Biosphere' was first coined by which of the following scientist ?

(A) Eduard Suess

(B) Arthur George Tansley

(C) Ernst Haeckel

(D) George Evelyn Hutchinson

6. Which of the following is/are the important attributes of an ecosystem ?

(A) Nutrient cycling

(B) Energy flow

(C) Biotic diversity

(D) All of the above

7. Process of successful establishment of species in a new area/habitat is called :

(A) Nudation

(B) Invasion

(C) Ecesis

(D) Sere

8. Markhor (*Capra falconeri*) an endangered mammal is found in which of the below mentioned area/region of the Kashmir Himalaya :

(A) Kazinag National park

(B) Hirpora Wildlife Sanctuary

(C) Both (A) and (B)

(D) (A) is wrong but (B) is correct

9. The correct sequence in descending order of the following soil types in terms of coverage in India is :

(A) Alluvial, black, red, laterite

(B) Alluvial, red, black, laterite

(C) Alluvial, red, laterite, black

(D) Red, alluvial, black, laterite

10. Which of the following substance has the highest specific heat (cal g^{-1}) ?

(A) Ethyl alcohol

(B) Water

(C) Ammonia

(D) Ice at zero degree centigrade

11. In natural aquatic systems in which the following zones will have the highest peak for BOD :

(A) Septic zone

(B) Decomposition zone

(C) Recovery zone

(D) Clean zone

12. Photochemical smog is a resultant of the reaction between :

(A) NO_2,O_3 and PAN in the presence of sunlight

(B) CO, CO_2 and NO_2 at low temperature

(C) High concentration of NO_2, O_3 and CO in the evening

(D) CO,O_2 and PAN in the presence of sunlight

13. Which one of the following combination/s depicts correct right bank and left bank tributary combination/s of river Jhelum ?

(A) Arapal-Rembiara

(B) Bringhi-Ningli

(C) Both (A) and (B)

(D) None of the above

14. Identify the wrong combination :

(A) Coenozoic-Age of mammals

(B) Mesozoic-Age of reptiles

(C) Paleozoic-Age of fishes

(D) None of the above

15. Cave formation is more pronounced in which of the following rock types ?

(A) Basalt

(B) Limestone

(C) Granite

(D) Sandstone

16. Which one of the following is a wrong match ?

(A) Chamoli disaster–2023

(B) Himachal Pradesh flood–2023

(C) Turkey earthquake–2023

(D) Typhoon Saola-South China–2023

17. Champions of earth award (UNs highest Environment Honour) of 2023 was given to which of the following women ?

(A) Josefina Belmonte

(B) Ellen Macarthur

(C) Blue Circle

(D) All of the above

18. Which one of the following does not characterize Shallow Ecology ?

(A) Environmental ethics

(B) Intrinsic value

(C) Eccentric

(D) All of the above

19. Which of the following scientist gave the Gaia hypothesis ?

(A) Joseph Grinnell

(B) James Lovelock

(C) Frederic Clements

(D) Arne Naess

20. Identify which one of the following is not correctly matched?

(A) Bishnoi movement – Rajasthan

(B) Chipko movement-Uttarakhand

(C) Tehri Dam conflict- Bihar

(D) Appiko movement-Karnataka

21. Safe noise level is considered to depend on which of the following important factors ?

(A) Frequency

(B) Pitch

(C) Both (A) and (B)

(D) Noise level and exposure

22. In light of WHO data which of the following is/are related to Indoor air pollution exposure globally ?

(A) Ischemic heart disease

(B) Stroke

(C) Cancer

(D) All of the above

23. Which of the following is primarily responsible for acid precipitation ?

(A) Sulphur dioxide

(B) NOx

(C) Both (A) and (B)

(D) A is wrong but B is correct

24. Which one of the following air pollution control devices is suitable for removal of finest dust particles from the air ?

(A) Cyclone separator

(B) Electrostatic precipitator

(C) Fabric filter

(D) Wet scrubber

25. Which of the following do you think is not a symptom of eutrophication process ?

(A) Increase in productivity

(B) Algal bloom

(C) High total phosphorus

(D) Low dissolved oxygen

26. Identify which one of the following disease is not a water-borne disease :

(A) Hepatitis A

(B) Poliomyelitis

(C) Hepatitis B

(D) Hepatitis E

27. Apart from fossil fuel production and intensive livestock farming which one of the following contribute to human sources of methane emissions globally :

(A) Landfill and waste

(B) Biomass burning

(C) Biofuel

(D) All of the above

28. Development of saline and sodic soils are an outcome of which of the following factor/s ?

(A) Poor drainage

(B) High evaporation

(C) Low rainfall

(D) All of the above

29. Lithium reserves were recently found in which of the following area in Jammu and Kashmir ?

(A) Reasi

(B) Kathua

(C) Kishtiwar

(D) Rajouri

30. Identify which one of the below mentioned Sustainable Development Goal (SDG) number is related to Zero hunger ?

(A) SDG 1

(B) SDG 2

(C) SDG 4

(D) SDG 13

31. Environmental performance index puts highest weightage in terms of percentage to which one of the below mentioned indicator ?

(A) Air quality

(B) Water quality

(C) Soil quality

(D) None of the above

32. Identify the correct combination with regard to desert and region :

(A) Chalbi desert- South America

(B) Dasht-e Lut - Iran

(C) Registan desert- Kenya

(D) Karakum desert-India

33. Which one of the following combination is properly matched ?

National Park/Wildlife sanctuary	State
(A) Kazinag National Park	Jammu and Kashmir
(B) Kaziranga National Park	Rajasthan
(C) Lachipora Wildlife Sanctuary	Himachal Pradesh
(D) Bandipur National Park	Assam

34. Endangered black necked crane is found in which of the following areas ?

(A) Ladakh

(B) Arunachal Pradesh

(C) Both (A) and (B)

(D) (A) is correct but (B) is wrong

35. Which of the following is true related to Biodiversity levels ?

(A) Genetic, population and ecosystem

(B) Genetic, species and biome

(C) Species, population and community

(D) Genetic, species and ecosystem

36. Match the following lists I and II and select the most appropriate answer using the code given below the lists :

	List I		**List II**
a.	Tso Khar	i.	Madhya Pradesh
b.	Chilka lake	ii.	Jammu
c.	Shallbugh wetland	iii.	Ladakh
d.	Bhoj wetland	iv.	Kashmir
e.	Surinsar-Mansar lakes	v.	Odisha

Code :	a.	b.	c.	d.	e.
(A)	iii	i	iv	v	ii
(B)	iii	v	iv	i	ii
(C)	i	v	iv	iii	ii
(D)	v	i	iv	iii	ii

37. The inside wall of fluorescent tube is coated with which of the following material ?

(A) Sulphur powder

(B) Phosphorus powder

(C) Sodium

(D) Krypton

38. Which of the following is correct about Carbon Positive Area ?

(A) Area with carbon emissions more than carbon sequestration

(B) Area with carbon emissions balanced with carbon sequestration

(C) Area with more carbon sequestration than carbon emissions

(D) None of the above

39. Which of the following is most appropriate about green cities ?

(A) High carbon footprint

(B) High water footprint

(C) Low carbon footprint

(D) All of the above

40. The concept and initiative of Green jobs is aimed to help :

(A) To cut energy, raw material and water consumption through efficient technology

(B) De-carbonize the economy

(C) Minimize waste and pollution

(D) All of the above

41. Which of the following best explains why more contaminants are leached when solid waste is crushed into small particles and put in contact with water than when the particles are large ?

(A) Smaller particles have a larger surface area per unit volume than larger particles

(B) Water penetrates larger particles more easily than small particles

(C) Larger particles have greater density per unit weight

(D) Internal pressure is greater in smaller particles than in larger particles

42. Sour crop disease in the worms in Vermiculture is attributed to which of the following ?

(A) Too much protein in the bed

(B) Overfeeding of worms

(C) Both (A) and (B)

(D) Fungal infection

43. Which of the following is not used in Vermicomposting ?

(A) *Eisenia fetida*

(B) *Eudrilus eugeniae*

(C) *Perionyx excavates*

(D) *Eisenia bicyclis*

44. Which of the following is true about the specification/ criteria (desirable limit) of arsenic and cadmium for drinking water monitoring in and around landfill sites in light of Solid Waste Management rules 2016 ?

(A) 0.05 mg /L

(B) 0.01 mg/L

(C) 0.3 mg/L

(D) 0.001mg/L

45. Which of the below mentioned country is not among top ten largest Methane emitting countries worldwide ?

(A) Indonesia

(B) Iran

(C) Pakistan

(D) Saudi Arabia

46. Which of the following is true about the contribution of solar (percentage) as of 2023 in installed generation capacity of electricity of India ?

(A) 16%

(B) < 5 %

(C) 25 %

(D) 40%

47. Nuclear energy contribution currently to the overall World electricity grid is approximately about :

(A) 2%

(B) 5%

(C) 10%

(D) 20%

48. Which of the below mentioned country currently occupies the top position in oil producing countries of the world ?

(A) Russia

(B) Saudi Arabia

(C) USA

(D) Canada

49. Match correctly List I (Global population distribution 2024) with List II (Freshwater Reserves 2024) :

	List I	**List II**
A.	America 12 %	1. 5%
B.	Europe 9%	2. 36%
C.	Africa 18%	3. 11%
D.	Asia 60%	4. 8%
E.	Australia and Oceania 1%	5. 40%

Codes :	A	B	C	D	E
(A)	5	4	3	1	2
(B)	5	4	3	2	1
(C)	2	1	3	4	5
(D)	2	1	3	5	4

50. In light of IPCC 2023 Report, the way forward for Climate resilient development should encompass which of the following ?

(A) Improving people's health and livelihood

(B) Reducing poverty and hunger

(C) Clean energy, water and air

(D) All of the above

51. Identify among below mentioned substances which one is not coming under Ozone Depleting Substances (ODS) ?

(A) Chlorofluorocarbons (CFCs)

(B) Methyl bromide

(C) Carbon tetrachloride

(D) All of the above

52. Identify which of the following pandemic event is not correctly matched :

(A) COVID-19 -2019-2023

(B) HIV/AIDS Pandemic -1981 and onwards

(C) Influenza Pandemic- 1957-58

(D) Cholera Pandemic- 1946-60

53. Which of the following Indian personalities do you think have great contribution in the cause of Environmental Protection ?

(A) Sunita Narain

(B) Anil Agarwal

(C) M. C. Mehta

(D) All of the above

54. Goals of Environmental Education were first formulated at :

(A) Tbilisi, USSR, 1977

(B) UNESCO, 1977

(C) Belgrade, Yogoslavia, 1975

(D) Ahmedabad, India 2007

55. The World Environmental Education Congress (WEEC) in 2024 was held in which of the following country ?

(A) Abu Dhabi, United Arab Emirates

(B) Prague, Czech Republic

(C) Bangkok, Thailand

(D) Canada

56. Match the list I (SDG 2015) and list II (Title/ description) and select the correct answer from the codes given below the lists :

List I (SDG Goal No.)		**List II (SDG Goal Title/description)**
A.	SDG No. 3	1. Clean water and sanitation
B.	SDG No. 4	2. Sustainable cities and communities
C.	SDG No. 6	3. Good Health and well-being
D.	SDG No. 11	4. Climate action
E.	SDG No. 13	5. Quality education

Codes :	A	B	C	D	E
(A)	5	3	1	4	2
(B)	1	3	5	4	2
(C)	4	3	1	2	5
(D)	3	5	1	2	4

57. Polluter pay principle in the Indian context was invoked and upheld in which of the following case/s :

(A) Indian Council of Enviro-legal action vs Union of India and others

(B) Vellore citizens welfare forum vs Union of India and others

(C) The Taj Trapezium case M.C. Mehta vs Union of India and Others

(D) All of the above

58. Match list I and II and select the correct answer using the codes given below the lists :

List I		List II	
1.	Air Pollution Act	A.	Citizen
2.	Wildlife Protection Act	B.	1981
3.	Article 48-A	C.	1972
4.	Forty seven Amendment Act	D.	1976
5.	Environmental Pollution Act	E.	State
6.	Article 51-A (g)	F.	1986

Codes :

(A) 1-B, 2-C, 3-E, 4-D, 5-F, 6-A

(B) 1-B, 2-C, 3-A, 4-D, 5-F, 6-E

(C) 1-F, 2-C, 3-E, 4-D, 5-B, 6-A

(D) 1-F, 2-C, 3-A, 4-D, 5-B, 6-E

59. Which of the following is the correct classification mentioned in Indian Forest Act?

(A) Private forest, social forest and town forest

(B) Tropical forests, deciduous forests and coniferous forests

(C) Dry forests, wet forests and thorn forests

(D) Protected forest, reserved forest and village forest

60. COP 28 of UNFCCC (UN Framework Convention on Climate Change) was held in which of the following country ?

(A) Dubai

(B) Egypt

(C) United Kingdom

(D) Spain

Sr. No. .....

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1. Which of the following equipment is used for measuring atmospheric humidity?
   (A) Anemometer
   (B) Hydrometer
   (C) Lysimeter
   (D) Psychrometer
2. Which is the largest delta of the World?
   (A) Ganga delta
   (B) Indus delta
   (C) Mekong delta
   (D) Sundarbans delta
3. A narrow strip of land with sea on either side, forming a link between two larger areas of land :
   (A) Cape
   (B) Isthmus
   (C) Peninsula
   (D) Strait
4. A high-level group 'Ambition on Melting Ice (AMI) on Sea-level Rise and Mountain Water Resources' was formed to ensure impacts of cryosphere loss is understood by political leaders and the public, and not only within mountain and polar regions, but throughout the planet. This broad coalition took place in
   (A) Katowice Climate Change Conference (COP 24)
   (B) Madrid Climate Change Conference (COP 25)
   (C) Glasgow Climate Change Conference (COP 26)
   (D) Sharm el-Sheikh Climate Change Conference (COP 27)
5. Which of the following statements would stand true across the ecosystems in an ideal situation?
   (A) Primary consumers always outnumber primary producers
   (B) Primary consumers are least dependent upon primary producers
   (C) Primary producers always outnumber primary consumers
   (D) Secondary consumers are the largest and the most powerful
6. The actual space that an organism inhabits and the resources it can access as a result of limiting pressures from other species is called
   (A) Niche differentiation
   (B) Niche density
   (C) Niche segregation
   (D) Niche width
7. In which of the following countries is the Pampas grasslands situated?
   (A) Andes Ecuador
   (B) Central Argentina
   (C) South Brazil
   (D) South Chile
8. Which of the following statements is NOT correct about the ecological pyramid?
   (A) Pyramid of biomass is inverted in aquatic ecosystem
   (B) Pyramid of biomass is upright in grassland ecosystem
   (C) Pyramid of energy is inverted in ocean ecosystem
   (D) Pyramid of numbers I upright in grassland ecosystem

9. Regardless of the underlying mechanisms of species interaction, which of the following is one of the best described patterns in community ecology ?

(A) Exponential distribution

(B) Lognormal distribution

(C) Normal distribution

(D) University distribution

10. Which of the following factors does not affect the solubility of gases in water?

(A) Nature of gas

(B) Number of particles of gas

(C) Pressure

(D) Temperature

11. In thin layer chromatography, the stationary and the mobile phase is made up of

(A) liquid, gas

(B) liquid, liquid

(C) solid, gas

(D) solid, liquid

12. Oxygen content can be controlled by adding which of the following material with water?

(A) Acidic solution

(B) Basic solution

(C) Hydroxyzine

(D) Iodine

13. If Biochemical Oxygen Demand (BOD) is high, then which of the following conditions is true?

(A) The air pollution is more

(B) The bacteria is less in it

(C) The water pollution is low

(D) Thc water pollution is more

14. The branch of geology which deals with study of rocks is

(A) Lithology

(B) Mineralogy

(C) Petrology

(D) Rockology

15. Which of the following is generally found in sedimentary rocks?

(A) Basalt

(B) Magnesium

(C) Shale

(D) Silica

16. The process by which some elements enter in mineral structures with certain elements being incorporated preferentially is known as

(A) Element partitioning

(B) Melonisation

(C) Podsotization

(D) Transportations

17. Chemical weathering of rock material is most effective in which of the following regions?

(A) Aravalli Hills

(B) Ladhak Himalaya

(C) Vindhyan Hills

(D) Western Ghats

18. India's first national park, also known as Hailey National Park, established in 1936 is

(A) Gangotri National Park

(B) Jim Corbett National Park

(C) Nanda Devi National Park

(D) Rajaji National Park

19. Which of the following organizations published the 'Red Data Book'?

(A) Global Biodiversity Information Facility

(B) Green Peace

(C) International Union for Conservation of Nature

(D) World Wildlife Fund

20. Match List I with List II

List I (Movements)	List II (Leaders)
1. Appiko movement	(i) Amrita Devi
2. Bishnoi movement	(ii) Pandurang Hegde
3. Chipko movement	(iii) Sughathakumari
4. Save Silent Valley movement	(iv) Sundarlal Bahuguna

Choose the correct answer from the options given below:

(A) 1 (i), 2 (ii), 3 (iii), 4 (iv)

(B) 1 (ii), 2 (i), 3 (iv), 4 (iii)

(C) 1 (ii), 2 (iv), 3 (i), 4 (iii)

(D) 1 (iv), 2 (i), 3 (iii), 4 (ii)

21. Which of the following is the major source of mercury pollution in India?

(A) Dental amalgam fillings

(B) Electrical and electronic gadgets

(C) Pesticides

(D) Small scale gold mining

22. The search for and the commercialisation of new products that have been sourced from nature :

(A) Biomagnification

(B) Biopiracy

(C) Bioprospecting

(D) Bioregulation

23. Which of the following is not an energy recovery method of soil waste management?

(A) Biomethanation

(B) Composting

(C) Palletization

(D) Pyrolysis

24. Chlorosis is

(A) destruction of leaf tissues

(B) severe drying

(C) the killing of tissues

(D) the reduction of chlorophyll from leaf

25. Which of the following is aerobic waste water treatment method?

(A) Imhoff tank

(B) Percolating filter

(C) Septic tank

(D) Sludge digester

26. The most common cause of blue baby syndrome is water contaminated with

(A) Cobalt

(B) Fluoride

(C) Mercury

(D) Nitrate

27. The word noise is derived from the Latin word 'nausea', meaning

(A) Annoyance

(B) Seasickness

(C) Pleasure

(D) Sleeplessness

28. Match List I with List II

List I (River)	List II (Origin)
1. Brahmaputra	(i) Amarkantak, Madhya Pradesh
2. Ganga	(ii) Trimbakeshwar, Maharashtra
3. Godavari	(iii) Kailash, China
4. Narmada	(iv) Gaumukh, Uttarakhand

Choose the correct answer from the options given below:

(A) 1 (i), 2 (iv), 3 (iii), 4 (ii)

(B) 1 (i), 2 (iv), 3 (ii), 4 (iii)

(C) 1 (iii), 2 (iv), 3 (ii), 4 (i)

(D) 1 (iii), 2 (iv), 3 (i), 4 (ii)

29. Which of the following factors govern the solubility and availability of nutrients in the soil?

(A) Aeration

(B) pH

(C) Porosity

(D) Temperature

30. Match List I with List II

List I (Protected Area)	List II (IUCN Category)
1. Community Reserves	(i) II
2. Conservation Reserves	(ii) IV
3. National Park	(iii) V
4. Wildlife Sanctuary	(iv) VI

Choose the correct answer from the options given below:

(A) 1 (iii), 2 (iv), 3 (ii), 4 (i)

(B) 1 (i), 2 (iv), 3 (iii), 4 (ii)

(C) 1 (iv), 2 (iii), 3 (i), 4 (ii)

(D) 1 (iv), 2 (i), 3 (iii), 4 (ii)

31. Which of the following pesticides persists for a long period in soil ?

(A) Carbaryl

(B) Lindane

(C) Monocrotophos

(D) Parathion

32. Which of the following forest types is most extensively distributed across India?

(A) Himalayan moist temperate forest

(B) Tropical dry deciduous forest

(C) Tropical dry evergreen forest

(D) Tropical moist deciduous forest

33. Which of the following is NOT the objective of the Convention on Biological Diversity (CDB)?

(A) Conservation of biological diversity

(B) Fair and equitable sharing of the benefits arising out of the use of genetic resources

(C) Mainstreaming biological diversity across government and society

(D) Sustainable use of components of biological diversity

34. Who has written the book A Revised Survey of the Forest Types of India?

(A) G.S. Puri and R.K Gupta

(B) H.G. Champion and S.K. Seth

(C) J.S. Singh and S.P. Singh

(D) V.M. Meher-Homji and Madhav Gadgil

35. Who coined the term 'biodiversity'?

(A) Edward Osborne Wilson

(B) Norman Myers

(C) Sir David Attenborough

(D) Walter Rosen

36. While measuring the diversity between communities, the following diversity index is computed :

(A) Alpha diversity

(B) Beta diversity

(C) Delta diversity

(D) Gamma diversity

37. The International Union for Conservation of Nature lists one of the following as the most serious threat to endangered species worldwide :

(A) Habitat destruction by fires

(B) Habitat destruction by global climate change

(C) Habitat destruction by human activities

(D) Habitat destruction by meteorites and asteroids

38. Where is India's first green building located ?

(A) CII - Sohrabji Green Business Centre, Hyderabad

(B) ITC Green Centre, Gurgaon

(C) Suzlon Earth, Pune

(D) Wipro Technologies, Gurgaon

39. The most appropriate term used by the IUCN within Nature Based Solutions as a solution for urban and climate challenges is

(A) Green Asset

(B) Green ICT

(C) Green Infrastructure

(D) Green System

40. Which of the following has the least or no possibility of being found in the e-waste?

(A) Cadmium

(B) Lead

(C) Mercury

(D) Neon

41. LEED in the Green Technology refers to

(A) Leadership in Energy and Efficiency Design

(B) Leadership in Energy and Efficiency Document

(C) Leadership in Energy and Environmental Design

(D) Leadership in Energy and Environmental Document

42. Which of the following is not a main part of a Life Cycle Analysis (LCA)?

(A) Comparative analysis

(B) Impact analysis

(C) Improvement analysis

(D) Inventory analysis

43. Which of the following types of worms are used for vermicomposting?

(A) Black Wiggler

(B) Blue Wiggler

(C) Green Wiggler

(D) Red Wiggler

44. Net calorific value of a waste is measured using

(A) Bomb Calorimeter

(B) Galvanometer

(C) Photometer

(D) Tensiometer

45. Which of the following terms is best suited for Dioxin?

(A) Antibiotic

(B) Fertilizer

(C) Pesticide

(D) Toxin

46. OTEC is related to a renewable energy technology that used potential of oceans to produce clean, reliable electricity, day and night, year-round. What is expansion of OTEC ?

(A) Ocean Thermal Energy Conversion

(B) Ocean Thermal Energy Counter

(C) Oceanic Thermal Energy Conservation

(D) Oklahoma Thermal Energy Center

47. Match List I with List II

List I (Minerals)	List II (Area of occurrence)
1. Coal	(i) Bhandara, Maharashtra
2. Gold	(ii) Karanpura, Jharkhand
3. Mica	(iii) Hatti, Karnataka
4. Manganese	(iv) Nellore, Andhra Pradesh

Choose the correct answer from the options given below:

(A) 1 (ii), 2 (iv), 3 (iii), 4 (i)

(B) 1 (ii), 2 (iii), 3 (iv), 4 (i)

(C) 1 (iii), 2 (iv), 3 (ii), 4 (i)

(D) 1 (ii), 2 (iii), 3 (i), 4 (iv)

48. Which of the following is called as the 'country of winds'?

(A) Austria

(B) Denmark

(C) Europe

(D) Italy

49. Sustainable Development Goals (SDGs), an urgent call for action by all countries - developed and developing - in a global partnership, come with

(A) 17 goals and 169 targets

(B) 17 goals and 179 targets

(C) 18 goals and 169 targets

(D) 18 goals and 179 targets

50. What was the preindustrial (1750 AD) concentration of methane (CH_4) in the atmosphere?

(A) 100 ppb

(B) 400 ppb

(C) 700 ppb

(D) 1000 ppb

51. Given below are two statements :

Statement I: Deforestation and forest degradation are the biggest threats to forests worldwide.

Statement II: Nature-Based Solutions (NBSs) can reverse the effects of deforestation and degradation.

In the light of the above statements, choose the most appropriate answer from the options given below :

(A) Both Statement I and Statement II are true

(B) Both Statement I and Statement II are false

(C) Statement I is correct but Statement II is false

(D) Statement I is incorrect but Statement II is true

52. UNCCD, the sole legally binding international agreement linking environment and development to sustainable land management stands for

(A) United Nations Climate Change and Development

(B) United Nations Convention for Climate, Degradation and Deforestation

(C) United Nations Convention to Climate and Development

(D) United Nations Convention to Combat Desertification

53. Environmental education must be made an integral part of all academic programs as students need to be mainly sensitized about

(A) growing environmental degradation and its consequence for life on earth

(B) its emergence as a specialized field

(C) its interdisciplinary and multidisciplinary nature

(D) relationship between culture and environment

54. The most dominating oxides resulting acid rains are

(A) Carbon dioxide and Carbon monoxide

(B) Carbon oxides and Nitrogen oxides

(C) Carbon oxides and Sulphur oxides

(D) Nitrogen oxides and Sulphur oxides

55. Who is popularly known as glacier man (or ice man) of India?

(A) Chewang Norphel

(B) Rajendra Singh

(C) Sonam Wangchuk

(D) Sunderlal Bahuguna

56. Environmental education was mandated as a compulsory subject in all schools across the country following a Public Interest Litigation (PIL) in 1991 by

(A) Constitution of India

(B) High Courts of India

(C) Ministry of Environment, Forest and Climate Change

(D) Supreme Court of India

57. Which of the following global agreements was instrumental to protect stratospheric ozone layer by phasing out the production and consumption of ozone-depleting substances (ODS)?

(A) Vienna Convention

(B) Basel Convention

(C) Montreal Protocol

(D) Stockholm Convention

58. The first of the major Environmental Protection Act to be promulgated in India was

(A) Air (Prevention and Control of Pollution) Act of 1981

(B) Forest (Conservation) Act, 1980

(C) Water (Prevention and Control) Act, 1974

(D) Wild Life (Protection) Act, 1972

59. Which of the following sections of the Wildlife Protection Act 1972 deals with the prohibition of hunting (i.e. no person shall hunt any wild animal specified in Schedules I, II, III and IV)?

(A) Section 6

(B) Section 9

(C) Section 12

(D) Section 15

60. Right to live is a Fundamental Right under Article 21 of the Constitution of India and it includes the right of enjoyment of pollution free water and air for full enjoyment of life. In which Supreme Court has observed this?

(A) Rajesh Kumar v. Union of India [(2012) SC]

(B) Subhash Kumar v. State of Bihar [(1991) SC]

(C) Subramaniam Swamy v. Union of India [(2012) SC]

(D) Vineet Narain v. Union of India [(1998) SC]

ROUGH WORK

ROUGH WORK

Sr. No. 1089

ENTRANCE TEST-2021

SCHOOL OF ENVIRONMENTAL AND EARTH SCIENCES

ENVIRONMENTAL SCIENCE

Total Questions : 60
Time Allowed : 70 Minutes

Question Booklet Series A

Roll No. : | | | | | | |

Instructions for Candidates :

1. Write your Entrance Test Roll Number in the space provided at the top of this page of Question Booklet and fill up the necessary information in the spaces provided on the OMR Answer Sheet.
2. OMR Answer Sheet has an Original Copy and a Candidate's Copy glued beneath it at the top. While making entries in the Original Copy, candidate should ensure that the two copies are aligned properly so that the entries made in the Original Copy against each item are exactly copied in the Candidate's Copy.
3. All entries in the OMR Answer Sheet, including answers to questions, are to be recorded in the Original Copy only.
4. Choose the correct / most appropriate response for each question among the options A, B, C and D and darken the circle of the appropriate response completely. The incomplete darkened circle is not correctly read by the OMR Scanner and no complaint to this effect shall be entertained.
5. Use only blue/black ball point pen to darken the circle of correct/most appropriate response. In no case gel/ink pen or pencil should be used.
6. Do not darken more than one circle of options for any question. A question with more than one darkened response shall be considered wrong.
7. There will be **'Negative Marking'** for wrong answers. Each wrong answer will lead to the deduction of 0.25 marks from the total score of the candidate.
8. Only those candidates who would obtain positive score in Entrance Test Examination shall be eligible for admission.
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10. Calculators and mobiles shall not be permitted inside the examination hall.
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12. OMR Answer Sheet must be handled carefully and it should not be folded or mutilated in which case it will not be evaluated.
13. Ensure that your OMR Answer Sheet has been signed by the Invigilator and the candidate himself/ herself.
14. At the end of the examination, hand over the OMR Answer Sheet to the invigilator who will first tear off the original OMR sheet in presence of the Candidate and hand over the Candidate's Copy to the candidate.

1. Match List I with List II and select the appropriate combination :

List I	List II
A. Troposphere	1. Contains much of total atmospheric ozone
B. Stratosphere	2. Temperature decrease with increasing height
C. Ionosphere	3. Aurora Borealis and Aurora Australis are produced
D. Exosphere	4. Molecules are almost collisionless

	A	B	C	D
(A)	2	1	3	4
(B)	2	4	1	3
(C)	2	1	4	3
(D)	2	3	4	1

2. The Asthenosphere is characterized by :
   (A) Low velocity zone
   (B) Zone of magma generation
   (C) Both (A) and (B)
   (D) None of the Above

3. The Oceanic Crust is rich in :
   (A) Silica and Magnesium
   (B) Calcium and Magnesium
   (C) Silica and Aluminum
   (D) None of the above

4. Which of the following compartment of hydrological cycle has the highest residence time ?
   (A) Oceans and Seas
   (B) Lakes and reservoirs
   (C) Glaciers and ice caps
   (D) Biospheric water

5. Which one of the following is/are the key attribute/s of an ecosystem :
   (A) Energy flow
   (B) Biotic diversity
   (C) Both (A) and (B)
   (D) (A) is correct but not (B)

6. Identify the wrong match :
   (A) Biosphere — Totality of living things present on earth
   (B) Ecosphere — Zone where life is sustainable
   (C) Gaia — Single Living Entity
   (D) Eduard Suess — Chemical Evolution hypothesis

7. Identify the correct match with regard to ecosystem services :
   (A) Fish production — Cultural
   (B) Nutrient Cycling — Habitat
   (C) Recreation — Regulating
   (D) Scientific knowledge — Informational

8. What is true about heterotrophic succession
   (A) $P > R$
   (B) $P < R$
   (C) $P = R$
   (D) None of the above

SEAL

9. Identify which of the following are carbon acids by using the codes given below :

1. Acetylene
2. Ethyl aceto acetate
3. Phenol
4. Benzoic acid
5. Benzene Suplhonoic acid

(A) 1 & 2 only

(B) 2, 3, and 5

(C) 1 & 5 only

(D) 2 & 5 only

10. The usual vertical sequence of horizons in a soil from the surface downward is :

(A) O, A, B, C, E

(B) A, B, C, E, O

(C) O, A, E, B, C

(D) A, E, B, C, O

11. Which one of the following is the most prominent interfering agent in Chemical Oxygen Demand (COD) estimation ?

(A) Chloride

(B) Ammonia

(C) Nitrite

(D) None of the above

12. Compared to CO_2, methane has more global warming potential of :

(A) 5-10 times

(B) 20-25 times

(C) 40-45 times

(D) 60-65 times

13. Marusudar river which is an important tributary of Chenab originates from :

(A) Kishtiwar

(B) Himachal Pradesh

(C) Doda

(D) Rambandh

14. Risk is comprised of which of the following two factors ?

(A) Alert and alarm

(B) Hazard and vulnerability

(C) Vulnerability and susceptibility

(D) Hazards and threats

15. Identify the correct match :

(A) Chernobyl disaster-1984

(B) Bhopal gas tragedy-1986

(C) Fukushima disaster-2012

(D) Three Mile Island Accident-1979

16. Which one of the following era is considered as age of mammals ?

(A) Paleozoic

(B) Cenozoic

(C) Mesozoic

(D) None of the above

17. Sunderlal Bahuguna started Chipko movement in which of the following areas ?

(A) Narmada Valley

(B) Rajasthan desert

(C) Western Ghats

(D) Garhwal Himalayas

18. Sardar Sarovar Dam is built on :

(A) Sabarmati river

(B) Narmada river

(C) Tapti river

(D) Chambal river

19. Narmada River flows through which of the following state/s of India ?

(A) Gujarat

(B) Maharashtra

(C) Madhya Pradesh

(D) All the above

20. Who among the following has coined the term Deep ecology ?

(A) Arne Naess

(B) Ernst Haeckel

(C) Frederick Clements

(D) Charles Elton

21. Which of the following parameters are not measured while calculating the National Air Quality index ?

(A) PM10

(B) PM2.5

(C) Carbon dioxide

(D) Ammonia

22. Lichens are often used as biological indicator of :

(A) Global warming

(B) Air quality

(C) Soil pollution

(D) Water pollution

23. A safe level of noise depends on :

(A) Level of noise and exposure to noise

(B) Area

(C) Pitch

(D) Frequency

24. Apart from hearing loss, effects produced b excessive noise/noise pollution are :

1. Migraine headaches
2. Heart Palpitation
3. Dizziness
4. Nausea
5. Gastric Ulcers

(A) Only 1, 2 and 3

(B) Only 1, 2, 3 and 4

(C) Only 4 and 5

(D) All of the above

25. Match the following Lists I and II and select correct answer using the code given below lists :

List I	List II
a. Typhoid fever	i. Giardia intestinalis
b. Salmonellosis	ii. Salomonella typhi
c. Diarrhea	iii. Shigella species
d. Dysentery	iv. Salomonella specie
e. Giardiasis	v. Cryptosporidium pa

Codes :

	a	b	c	d	e
(A)	ii	iv	v	iii	i
(B)	ii	iii	i	v	iv
(C)	ii	iii	i	v	iv
(D)	ii	iv	v	i	iii

SEAL

26. Match Lists I and II and select the correct answer using the codes given below the lists :

List I	List II
1. Aquifer	a. Saturated and permeable that can transfer some amount of water
2. Aquitard	b. Saturated and permeable that can transfer significant amount of water
3. Aquiclude	c. Saturated zone below the water table
4. Phreatic zone	d. Saturated but permeability so low as to be unable to transmit water

Codes :

	1	2	3	4
(A)	a	b	c	d
(B)	b	a	d	c
(C)	a	b	d	c
(D)	b	a	c	d

27. Which of the following is not a correct match ?

(A) Cadmium — Itai Itai

(B) Mercury — Minimata

(C) Lead — Ouch Ouch

(D) Arsenic — Arsenicosis

28. Which one of the following diseases is not due to contamination of water ?

(A) Hepatitis-B

(B) Jaundice

(C) Cholera

(D) Typhoid

29. The major forest product in India is :

(A) Fuel wood

(B) Resins

(C) Timber

(D) Oils

30. Which of the following crop is the largest consumer of irrigation waters in India ?

(A) Wheat

(B) Sugarcane

(C) Rice

(D) Soyabean

31. Identify the correct sequence (highest to lowest) in the order of their contribution (percentage) in forest resources of India :

(A) Tropical wet evergreen forest, Tropical moist deciduous forest and Tropical dry deciduous forest

(B) Tropical dry evergreen forests, Tropical moist deciduous forest and Tropical dry deciduous forest

(C) Tropical dry deciduous forest, Tropical moist deciduous forest and Tropical thorn forest

(D) Tropical moist deciduous forest, Tropical dry deciduous forest and Himalayan dry temperate forests

32. Koderma, in Jharkhand is the leading producer of which one of the following minerals ?

(A) Bauxite

(B) Mica

(C) Iron ore

(D) Copper

33. Match the following Lists I and II and select the most appropriate answer using the code given below the lists :

List I	List II
a. In-situ Conservation	i. Reduction approach
b. Ex-situ Conservation	ii. Nonuse approach
c. Preservation	iii. National park
d. Conservation	iv. Zoo

Codes :

	a	b	c	d
(A)	iii	iv	ii	i
(B)	iii	iv	i	ii
(C)	ii	iv	iii	i
(D)	iv	iii	ii	i

34. Which one of the following is correctly matched ?

(A) Jim Corbett National Park—Rajasthan

(B) Keoladeo National Park—Himachal Pradesh

(C) Hemis High Altitude National Park—Ladakh

(D) Kaziranga National Park—Uttar Pradesh

35. Which one of the following is a qualifying criteria for biodiversity hot spots ?

(A) 1500 species of vascular plants as endemics

(B) 70% habitat loss to its original habitat

(C) Both (A) and (B)

(D) (A) is correct but not (B)

36. The one-horned rhinoceros in India is specifi to which of the following ?

(A) Periyar National Park

(B) Jim Corbett National Park

(C) Kazinag National Park

(D) None of the above

37. The most common three R's to save th environmental resources are :

(A) Reserve, Reduce, Replenish

(B) Reuse, Reverse, Reduce

(C) Reserve, Reuse, Recirculate

(D) Reduce, Recycle, Reuse

38. LEED (Leadership in Energy and Environmen Design) for India covers which of the followin

(A) Sustainable sites and Water Efficiency

(B) Energy, Atmosphere, materials and resour

(C) Indoor Environmental quality and des in innovation

(D) All of the above

39. Which of following pollutants is released the environment by disposal of comp fluorescent lights (CFLs) ?

(A) Mercury

(B) Tungsten

(C) Boron

(D) None of the above

SEAL

40. ECOMARK label of India is represented by :

(A) A blue bird

(B) An earthen pot

(C) Red rose

(D) White rabbit

41. Which of the following products is not suitable for its application in vermicomposting ?

(A) Plant wastes

(B) Animal Wastes

(C) Cow dung

(D) Kitchen waste

42. Waste to energy recovery can be obtained from which of the following methods/ process ?

(A) Heat

(B) Electricity

(C) Cogeneration

(D) All the above

43. Biomass can be converted into which of the following gases ?

(A) Biodiesel

(B) Ethanol

(C) Methane

(D) All the above

44. Which one of the following is not correctly matched ?

(A) Sanitary landfill-Groundwater pollution

(B) Pyrolysis-Sulphur dioxide

(C) Incinerator-Dioxins

(D) Shredding and Pulverization-Volume reduction

45. Which is currently the world's largest oil-producing country (including Crude Oil, NGLs, Biofuel, and Other Hydrocarbons) in the World ?

(A) USA

(B) Canada

(C) Saudi Arabia

(D) Russia

46. Which of the following countries is not among top five Coal producing countries of the world ?

(A) China

(B) Indonesia

(C) India

(D) Russia

47. Match the List I and List II and select the correct answer from the codes given below the lists :

List I	List II
a. Biomass	1. Indirectly supplies all the energy required for sustaining life on earth
b. Biogas	2. Good means of storing defuse and intermittent solar energy
c. Petroplants	3. An important solution to the present energy crisis in rural areas
d. Solar energy	4. Sources of liquid hydrocarbons

Codes :

	a	b	c	d
(A)	4	3	2	1
(B)	4	3	1	2
(C)	3	2	4	1
(D)	2	3	4	1

32

48. Match the List I (SDG 2015) and List II (Title/ description) and select the correct answer from the codes given below the lists :

List I (SDG Goal No.)	List II (SDG Goal tile/ description)
a. SDG No. 3	1. Clean water and sanitation
b. SDG No. 4	2. Sustainable cities and communities
c. SDG No. 6	3. Good Health and well-being
d. SDG No. 11	4. Climate action
e. SDG No. 13	5. Quality education

Codes :

	a	b	c	d	e
(A)	5	3	1	4	2
(B)	1	3	5	4	2
(C)	3	5	1	2	4
(D)	4	3	1	2	5

49. Choose the incorrect statement :

(A) The Montreal protocol is associated with the control of emission of ozone depleting substances

(B) Kyoto Protocol is meant to reduce Green House gas emissions

(C) Dobson units are used to measure oxygen content

(D) Use of incinerators is crucial to disposal of hospital wastes

50. Match the List I (disease type) and List II (description) and select the correct answer from the codes given below the lists :

List I	List II
a. Sporadic disease	1. Worldwide epidemic
b. Endemic disease	2. Disease acquired by many hosts in a given area in a short time
c. Epidemic disease	3. Disease constantly present in a population
d. Pandemic disease	4. Disease that occurs occasionally in a population

Codes :

	a	b	c	d
(A)	3	1	2	4
(B)	4	3	2	1
(C)	3	2	4	1
(D)	1	2	3	4

51. Which of the following today is not in top five populous countries of the world ?

(A) China

(B) India

(C) Pakistan

(D) Brazil

52. Which one of the following is largest consumer of the groundwater in world ?

(A) China

(B) USA

(C) India

(D) Brazil

53. Which of the following is correct with Gro Harlem Brundtland ?

(A) Idea of sustainable development

(B) Former Prime Minister of Norway

(C) Both (A) and (B)

(D) (A) is correct but not (B)

54. The headquarters of the Green Peace International are located in which of the following country :

(A) Norway

(B) Netherlands

(C) Switzerland

(D) Paris

55. First UNESCO-UNEP sponsored international conference on Environmental Education was held in which of the following country ?

(A) USA

(B) Georgia

(C) Johannesburg

(D) Italy

56. The fourth international conference on environmental education was held in :

(A) Jaipur in 1987

(B) Tiblisi in 1997

(C) Ahmadabad in 2007

(D) Delhi in 2008

57. Match Lists I and II and select the most appropriate answer using the codes given below the lists :

List I	List II
1. Vermin	A. Vernacular language
2. Proclamation reservation	B. Central Govt.
3. Zoo Authority	C. Chief wildlife warden
4. Declaration of National Park	D. State Govt.
5. Declaration of stock	E. Rodents

Codes :

	1	2	3	4	5
(A)	E	A	B	D	C
(B)	E	A	D	B	C
(C)	A	B	C	D	E
(D)	A	B	D	E	C

SEAL

32

58. Power to give directions under EPA 1986 includes the following :

(A) Closure of industry

(B) Stoppage of electricity

(C) Stoppage of Water Supply

(D) All of the Above

3

59. The competency of dereservation of forests lies with :

(A) Central Govt.

(B) State Govt.

(C) State Govt. with prior approval from Central Govt.

(D) All of the Above

60. Match Lists I and II and select the correct answer using the codes given below the lists :

List I	List II
1. Ozone depletion	A. Paris Agreement
2. GHG reduction	B. Kyoto Protocol
3. Article 48A	C. Citizen
4. Article 51 A (g)	D. Montreal Protocol
5. Climate Change	E. State

Codes :

	1	2	3	4	5
(A)	D	B	C	E	A
(B)	D	B	A	C	E
(C)	D	B	E	C	A
(D)	D	B	E	A	C

Sr. No. .....

ENTRANCE TEST-2021

SCHOOL OF ENVIRONMENTAL AND EARTH SCIENCES

ENVIRONMENTAL SCIENCE

Question Booklet Series **A**

Total Questions : 60

Time Allowed : 70 Minutes

Roll No. : | | | | | | |

Instructions for Candidates :

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1. Match List I with List II and select the appropriate combination :

	List I	List II
A.	Troposphere	1. Contains much of total atmospheric ozone
B.	Stratosphere	2. Temperature decrease with increasing height
C.	Ionosphere	3. Aurora Borealis and Aurora Australis are produced
D.	Exosphere	4. Molecules are almost collisionless

	A	B	C	D
(A)	2	1	3	4
(B)	2	4	1	3
(C)	2	1	4	3
(D)	2	3	4	1

2. The Asthenosphere is characterized by :

(A) Low velocity zone

(B) Zone of magma generation

(C) Both (A) and (B)

(D) None of the Above

3. The Oceanic Crust is rich in :

(A) Silica and Magnesium

(B) Calcium and Magnesium

(C) Silica and Aluminum

(D) None of the above

4. Which of the following compartment of hydrological cycle has the highest residence time ?

(A) Oceans and Seas

(B) Lakes and reservoirs

(C) Glaciers and ice caps

(D) Biospheric water

5. Which one of the following is/are the key attribute/s of an ecosystem :

(A) Energy flow

(B) Biotic diversity

(C) Both (A) and (B)

(D) (A) is correct but not (B)

6. Identify the wrong match :

(A) Biosphere — Totality of living things present on earth

(B) Ecosphere — Zone where life is sustainable

(C) Gaia — Single Living Entity

(D) Eduard Suess — Chemical Evolution hypothesis

7. Identify the correct match with regard to ecosystem services :

(A) Fish production — Cultural

(B) Nutrient Cycling — Habitat

(C) Recreation — Regulating

(D) Scientific knowledge — Informational

8. What is true about heterotrophic succession ?

(A) $P > R$

(B) $P < R$

(C) $P = R$

(D) None of the above

9. Identify which of the following are carbon acids by using the codes given below :

1. Acetylene
2. Ethyl aceto acetate
3. Phenol
4. Benzoic acid
5. Benzene Suplhonoic acid

(A) 1 & 2 only

(B) 2, 3, and 5

(C) 1 & 5 only

(D) 2 & 5 only

10. The usual vertical sequence of horizons in a soil from the surface downward is :

(A) O, A, B, C, E

(B) A, B, C, E, O

(C) O, A, E, B, C

(D) A, E, B, C, O

11. Which one of the following is the most prominent interfering agent in Chemical Oxygen Demand (COD) estimation ?

(A) Chloride

(B) Ammonia

(C) Nitrite

(D) None of the above

12. Compared to CO_2, methane has more global warming potential of :

(A) 5-10 times

(B) 20-25 times

(C) 40-45 times

(D) 60-65 times

13. Marusudar river which is an important tributary of Chenab originates from :

(A) Kishtiwar

(B) Himachal Pradesh

(C) Doda

(D) Rambandh

14. Risk is comprised of which of the following two factors ?

(A) Alert and alarm

(B) Hazard and vulnerability

(C) Vulnerability and susceptibility

(D) Hazards and threats

15. Identify the correct match :

(A) Chernobyl disaster-1984

(B) Bhopal gas tragedy-1986

(C) Fukushima disaster-2012

(D) Three Mile Island Accident-1979

16. Which one of the following era is considered as age of mammals ?

(A) Paleozoic

(B) Cenozoic

(C) Mesozoic

(D) None of the above

17. Sunderlal Bahuguna started Chipko movement in which of the following areas ?

(A) Narmada Valley

(B) Rajasthan desert

(C) Western Ghats

(D) Garhwal Himalayas

18. Sardar Sarovar Dam is built on :

(A) Sabarmati river

(B) Narmada river

(C) Tapti river

(D) Chambal river

19. Narmada River flows through which of the following state/s of India ?

(A) Gujarat

(B) Maharashtra

(C) Madhya Pradesh

(D) All the above

20. Who among the following has coined the term Deep ecology ?

(A) Arne Naess

(B) Ernst Haeckel

(C) Frederick Clements

(D) Charles Elton

21. Which of the following parameters are not measured while calculating the National Air Quality index ?

(A) PM10

(B) PM2.5

(C) Carbon dioxide

(D) Ammonia

22. Lichens are often used as biological indicator of :

(A) Global warming

(B) Air quality

(C) Soil pollution

(D) Water pollution

23. A safe level of noise depends on :

(A) Level of noise and exposure to noise

(B) Area

(C) Pitch

(D) Frequency

24. Apart from hearing loss, effects produced by excessive noise/noise pollution are :

1. Migraine headaches
2. Heart Palpitation
3. Dizziness
4. Nausea
5. Gastric Ulcers

(A) Only 1, 2 and 3

(B) Only 1, 2, 3 and 4

(C) Only 4 and 5

(D) All of the above

25. Match the following Lists I and II and select the correct answer using the code given below the lists :

List I	List II
a. Typhoid fever	i. Giardia intestinalis
b. Salmonellosis	ii. Salomonella typhi
c. Diarrhea	iii. Shigella species
d. Dysentery	iv. Salomonella species
e. Giardiasis	v. Cryptosporidium parvum

Codes :

	a	b	c	d	e
(A)	ii	iv	v	iii	i
(B)	ii	iii	i	v	iv
(C)	ii	iii	i	v	iv
(D)	ii	iv	v	i	iii

26. Match Lists I and II and select the correct answer using the codes given below the lists :

List I	List II
1. Aquifer	a. Saturated and permeable that can transfer some amount of water
2. Aquitard	b. Saturated and permeable that can transfer significant amount of water
3. Aquiclude	c. Saturated zone below the water table
4. Phreatic zone	d. Saturated but permeability so low as to be unable to transmit water

Codes :

	1	2	3	4
(A)	a	b	c	d
(B)	b	a	d	c
(C)	a	b	d	c
(D)	b	a	c	d

27. Which of the following is not a correct match ?

(A) Cadmium — Itai Itai

(B) Mercury — Minimata

(C) Lead — Ouch Ouch

(D) Arsenic — Arsenicosis

28. Which one of the following diseases is not due to contamination of water ?

(A) Hepatitis-B

(B) Jaundice

(C) Cholera

(D) Typhoid

29. The major forest product in India is :

(A) Fuel wood

(B) Resins

(C) Timber

(D) Oils

30. Which of the following crop is the largest consumer of irrigation waters in India ?

(A) Wheat

(B) Sugarcane

(C) Rice

(D) Soyabean

31. Identify the correct sequence (highest to lowest) in the order of their contribution (percentage) in forest resources of India :

(A) Tropical wet evergreen forest, Tropical moist deciduous forest and Tropical dry deciduous forest

(B) Tropical dry evergreen forests, Tropical moist deciduous forest and Tropical dry deciduous forest

(C) Tropical dry deciduous forest, Tropical moist deciduous forest and Tropical thorn forest

(D) Tropical moist deciduous forest, Tropical dry deciduous forest and Himalayan dry temperate forests

32. Koderma, in Jharkhand is the leading producer of which one of the following minerals ?

(A) Bauxite

(B) Mica

(C) Iron ore

(D) Copper

33. Match the following Lists I and II and select the most appropriate answer using the code given below the lists :

List I	List II
a. In-situ Conservation	i. Reduction approach
b. Ex-situ Conservation	ii. Nonuse approach
c. Preservation	iii. National park
d. Conservation	iv. Zoo

Codes :

	a	b	c	d
(A)	iii	iv	ii	i
(B)	iii	iv	i	ii
(C)	ii	iv	iii	i
(D)	iv	iii	ii	i

34. Which one of the following is correctly matched ?

(A) Jim Corbett National Park—Rajasthan

(B) Keoladeo National Park—Himachal Pradesh

(C) Hemis High Altitude National Park—Ladakh

(D) Kaziranga National Park—Uttar Pradesh

35. Which one of the following is a qualifying criteria for biodiversity hot spots ?

(A) 1500 species of vascular plants as endemics

(B) 70% habitat loss to its original habitat

(C) Both (A) and (B)

(D) (A) is correct but not (B)

36. The one-horned rhinoceros in India is specific to which of the following ?

(A) Periyar National Park

(B) Jim Corbett National Park

(C) Kazinag National Park

(D) None of the above

37. The most common three R's to save the environmental resources are :

(A) Reserve, Reduce, Replenish

(B) Reuse, Reverse, Reduce

(C) Reserve, Reuse, Recirculate

(D) Reduce, Recycle, Reuse

38. LEED (Leadership in Energy and Environmental Design) for India covers which of the following ?

(A) Sustainable sites and Water Efficiency

(B) Energy, Atmosphere, materials and resources

(C) Indoor Environmental quality and design in innovation

(D) All of the above

39. Which of following pollutants is released into the environment by disposal of compact fluorescent lights (CFLs) ?

(A) Mercury

(B) Tungsten

(C) Boron

(D) None of the above

40. ECOMARK label of India is represented by :

(A) A blue bird

(B) An earthen pot

(C) Red rose

(D) White rabbit

41. Which of the following products is not suitable for its application in vermicomposting ?

(A) Plant wastes

(B) Animal Wastes

(C) Cow dung

(D) Kitchen waste

42. Waste to energy recovery can be obtained from which of the following methods/ process ?

(A) Heat

(B) Electricity

(C) Cogeneration

(D) All the above

43. Biomass can be converted into which of the following gases ?

(A) Biodiesel

(B) Ethanol

(C) Methane

(D) All the above

44. Which one of the following is not correctly matched ?

(A) Sanitary landfill-Groundwater pollution

(B) Pyrolysis-Sulphur dioxide

(C) Incinerator-Dioxins

(D) Shredding and Pulverization-Volume reduction

45. Which is currently the world's largest oil-producing country (including Crude Oil, NGLs, Biofuel, and Other Hydrocarbons) in the World ?

(A) USA

(B) Canada

(C) Saudi Arabia

(D) Russia

46. Which of the following countries is not among top five Coal producing countries of the world ?

(A) China

(B) Indonesia

(C) India

(D) Russia

47. Match the List I and List II and select the correct answer from the codes given below the lists :

List I	List II
a. Biomass	1. Indirectly supplies all the energy required for sustaining life on earth
b. Biogas	2. Good means of storing defuse and intermittent solar energy
c. Petroplants	3. An important solution to the present energy crisis in rural areas
d. Solar energy	4. Sources of liquid hydrocarbons

Codes :

	a	b	c	d
(A)	4	3	2	1
(B)	4	3	1	2
(C)	3	2	4	1
(D)	2	3	4	1

48. Match the List I (SDG 2015) and List II (Title/ description) and select the correct answer from the codes given below the lists :

List I (SDG Goal No.)	List II (SDG Goal tile/ description)
a. SDG No. 3	1. Clean water and sanitation
b. SDG No. 4	2. Sustainable cities and communities
c. SDG No. 6	3. Good Health and well-being
d. SDG No. 11	4. Climate action
e. SDG No. 13	5. Quality education

Codes :

	a	b	c	d	e
(A)	5	3	1	4	2
(B)	1	3	5	4	2
(C)	3	5	1	2	4
(D)	4	3	1	2	5

49. Choose the incorrect statement :

(A) The Montreal protocol is associated with the control of emission of ozone depleting substances

(B) Kyoto Protocol is meant to reduce Green House gas emissions

(C) Dobson units are used to measure oxygen content

(D) Use of incinerators is crucial to disposal of hospital wastes

50. Match the List I (disease type) and List II (description) and select the correct answer from the codes given below the lists :

List I	List II
a. Sporadic disease	1. Worldwide epidemic
b. Endemic disease	2. Disease acquired by many hosts in a given area in a short time
c. Epidemic disease	3. Disease constantly present in a population
d. Pandemic disease	4. Disease that occurs occasionally in a population

Codes :

	a	b	c	d
(A)	3	1	2	4
(B)	4	3	2	1
(C)	3	2	4	1
(D)	1	2	3	4

51. Which of the following today is not in top five populous countries of the world ?

(A) China

(B) India

(C) Pakistan

(D) Brazil

52. Which one of the following is largest consumer of the groundwater in world ?

(A) China

(B) USA

(C) India

(D) Brazil

53. Which of the following is correct with Gro Harlem Brundtland ?

(A) Idea of sustainable development

(B) Former Prime Minister of Norway

(C) Both (A) and (B)

(D) (A) is correct but not (B)

54. The headquarters of the Green Peace International are located in which of the following country :

(A) Norway

(B) Netherlands

(C) Switzerland

(D) Paris

55. First UNESCO-UNEP sponsored international conference on Environmental Education was held in which of the following country ?

(A) USA

(B) Georgia

(C) Johannesburg

(D) Italy

56. The fourth international conference on environmental education was held in :

(A) Jaipur in 1987

(B) Tiblisi in 1997

(C) Ahmadabad in 2007

(D) Delhi in 2008

57. Match Lists I and II and select the most appropriate answer using the codes given below the lists :

List I	List II
1. Vermin	A. Vernacular language
2. Proclamation reservation	B. Central Govt.
3. Zoo Authority	C. Chief wildlife warden
4. Declaration of National Park	D. State Govt.
5. Declaration of stock	E. Rodents

Codes :

	1	2	3	4	5
(A)	E	A	B	D	C
(B)	E	A	D	B	C
(C)	A	B	C	D	E
(D)	A	B	D	E	C

58. Power to give directions under EPA 1986 includes the following :

(A) Closure of industry

(B) Stoppage of electricity

(C) Stoppage of Water Supply

(D) All of the Above

59. The competency of dereservation of forests lies with :

(A) Central Govt.

(B) State Govt.

(C) State Govt. with prior approval from Central Govt.

(D) All of the Above

60. Match Lists I and II and select the correct answer using the codes given below the lists :

List I	List II
1. Ozone depletion	A. Paris Agreement
2. GHG reduction	B. Kyoto Protocol
3. Article 48A	C. Citizen
4. Article 51 A (g)	D. Montreal Protocol
5. Climate Change	E. State

Codes :

	1	2	3	4	5
(A)	D	B	C	E	A
(B)	D	B	A	C	E
(C)	D	B	E	C	A
(D)	D	B	E	A	C

ROUGH WORK

ROUGH WORK

Sr. No. 1079

ENTRANCE TEST-2020

SCHOOL OF ENVIRONMENTAL AND EARTH SCIENCES

ENVIRONMENTAL SCIENCE

Question Booklet Series C

Total Questions : 60
Time Allowed : 70 Minutes

Roll No. : | | | | | | |

Instructions for Candidates :

1. Write your Entrance Test Roll Number in the space provided at the top of this page of Question Booklet and fill up the necessary information in the spaces provided on the OMR Answer Sheet.
2. OMR Answer Sheet has an Original Copy and a Candidate's Copy glued beneath it at the top. While making entries in the Original Copy, candidate should ensure that the two copies are aligned properly so that the entries made in the Original Copy against each item are exactly copied in the Candidate's Copy.
3. All entries in the OMR Answer Sheet, including answers to questions, are to be recorded in the Original Copy only.
4. Choose the correct / most appropriate response for each question among the options A, B, C and D and darken the circle of the appropriate response completely. The incomplete darkened circle is not correctly read by the OMR Scanner and no complaint to this effect shall be entertained.
5. Use only blue/black ball point pen to darken the circle of correct/most appropriate response. In no case gel/ink pen or pencil should be used.
6. Do not darken more than one circle of options for any question. A question with more than one darkened response shall be considered wrong.
7. There will be **'Negative Marking'** for wrong answers. Each wrong answer will lead to the deduction of 0.25 marks from the total score of the candidate.
8. Only those candidates who would obtain positive score in Entrance Test Examination shall be eligible for admission.
9. Do not make any stray mark on the OMR sheet.
10. Calculators and mobiles shall not be permitted inside the examination hall.
11. Rough work, if any, should be done on the blank sheets provided with the question booklet.
12. OMR Answer Sheet must be handled carefully and it should not be folded or mutilated in which case it will not be evaluated.
13. Ensure that your OMR Answer Sheet has been signed by the Invigilator and the candidate himself/herself.
14. At the end of the examination, hand over the OMR Answer Sheet to the invigilator who will first tear off the original OMR sheet in presence of the Candidate and hand over the Candidate's Copy to the candidate.

SEAL

1. In case of genetic engineering, all are required except :
   (A) Restriction enzymes
   (B) DNA ligase
   (C) Alkaline phosphatase
   (D) Topoisomerase

2. Black stem rust disease caused by *Puccinia graminis* infects :
   (A) Wheat and barley
   (B) Rice and barberry
   (C) Barley and grains
   (D) Wheat and barberry

3. What type of pyramid depicts the total amount of living material at various tropic levels of the food chain ?
   (A) Energy
   (B) Number
   (C) Biomass
   (D) All of the above

4. No two different species can occupy the same niche. This principle was put forward by :
   (A) Elton
   (B) Lindeman
   (C) Shelford
   (D) Gause

5. Consider the following statements :
   Assertion (A) : Dal Lake has become Eutrophic
   Reason (R) : Lot of pollution is coming in the form of sewage.
   Select the correct answer from the codes given below :
   (A) Both (A) and (R) are true, but (R) is the correct explanation of (A)
   (B) Both (A) and (R) are true, and (R) is not the correct explanation of (A)
   (C) (A) is true, but (R) is false
   (D) (A) is false, but (R) is true

6. At the end of secession diverse and stable community is :
   (A) Climax community
   (B) Pioneers community
   (C) Top community
   (D) Stable community

7. In a national park, protection is given to the :
   (A) Entire fauna
   (B) Entire flora
   (C) Plants and animals
   (D) Entire ecosystem

8. Which among the following is the most phytotoxic in nature ?
   (A) Carbon monoxide
   (B) Carbon dioxide
   (C) Sulphur dioxide
   (D) None of the above

9. High B.O.D. is a measure of :
   (A) Air pollution
   (B) Land pollution
   (C) Water pollution
   (D) Noise Pollution

10. Sound level meter is a device used for measuring :
   (A) The noise level
   (B) Intensity of noise
   (C) Effect of noise
   (D) None of the above

11. Composting offers a method of processing and recycling of :
   (A) Garbage
   (B) Sewage sludge
   (C) Both (A) and (B)
   (D) Neither (A) nor (B)

12. Pesticides are having deleterious effects on human health through various mechanisms like :
(A) Endocrine disruptors
(B) Carcinogens
(C) Mutagens
(D) All of the above

13. Apart from audits, other management strategies for hazardous waste management include :
(A) Life cycle analysis
(B) Volume reduction
(C) Recycling and reuse
(D) All of the above

14. Tertiary treatment of sewage through STPs mainly include :
(A) Removal of Big solid particles
(B) Removal of bacteria/fungus
(C) Removal of Phosphates and Nitrates
(D) All of the above

15. Which of the following is not a waterborne disease ?
(A) Cholera
(B) Diarrhea
(C) Hepatitis
(D) Diabetes type II

16. Which of the following is a renewable source ?
(A) Minerals
(B) Forests
(C) Underground water
(D) None of the above

17. Hirpur sanctuary is famous for :
(A) Hangul
(B) Brown bear
(C) Markhor
(D) All of the above

18. Consider the following statements about Forest conservation :
1. It is the practice of planning and maintaining forested areas for the benefit and sustainability of future generations.
2. It involves the upkeep of the natural resources within a forest which are beneficial to both humans and the ecosystem.

Select the correct answer from the codes given below :
(A) 1 only
(B) 2 only
(C) Both 1 and 2
(D) Neither 1 nor 2

19. Eco-friendly products are those products :
(A) Which are cheap
(B) Which do not harm environment through its use or manufacturing process
(C) Which have no concern with the environment
(D) All of the above

20. Taxol is an important _____ agent isolated from *Taxus wallchina* and its associated endophytes.
(A) Anti diabetic
(B) Anti malarial
(C) Anticancer
(D) Anti hyperlipidemic

21. _____ is the nature's best genetic engineer.
(A) *Agrobacterium tumefaciens*
(B) *E. coli*
(C) *Pseudomonas putida*
(D) *Bacillus thuringiensis*

22. IUCN categories of threatened species are divided in _____ categories :
(A) 4
(B) 5
(C) 7
(D) 9

23. One of the useful social activity called as establishment of Sacred groves are especially useful in :
(A) Conserving rare and threatened species
(B) General environmental awareness
(C) Preventing soil erosion
(D) All of the above

24. Anticipated health effect due to ozone layer depletion is/are :
(A) Increase in the skin cancer
(B) Increase in the eye cataracts
(C) Reduction in the growth of ocean phytoplanktons
(D) All of the above

25. The global community is in need of a set of imperatives that would allow :
(A) Equitable access to the environmental benefits of the planet
(B) Sharing the resources of the globe
(C) Understanding the current global environment
(D) None of the above

26. India signed the United Nations Framework Convention on Climate Change in 1992 as :
(A) Annex I country
(B) Non-Annex country
(C) Primary member country
(D) All of the above

27. The prices of a wheat flour during a week were 350, 260, 340, 290, 320, 310, 300. The range is :
(A) 60
(B) 70
(C) 90
(D) 100

28. The median of the data 78, 56, 22, 34, 45, 54, 39, 68, 54, 84 will be :
(A) 55
(B) 54
(C) 53
(D) 51

29. A coin is tossed five times in succession, the probability of getting at least four heads is :
(A) 1/16
(B) 3/16
(C) 1/4
(D) 3/4

30. The mean of a distribution is 14 and the standard deviation is 5, the value of the coefficient of variation is :
(A) 60.4 %
(B) 48.3 %
(C) 35.7 %
(D) 27.8 %

31. The era in which the emergence of life came into being, is called as :
(A) Cambrian
(B) Precambrian
(C) Mesozoic
(D) Coenzoic

32. In Earth "Lehmann discontinuity" lies between :
(A) Crust and mantle
(B) Mantle and core
(C) Outer core and inner core
(D) Asthenosphere and lithosphere

33. The processes involved in the chemical weathering are :
(A) Carbonation and oxidation
(B) Hydrolysis and chelation
(C) Hydrolysis and reduction
(D) All of the above

34. One of the rivers in Jammu and Kashmir called as "Wyeth" is :
(A) Sind
(B) Jhelum
(C) Chinab
(D) Tawi

35. The reason for poor standard of living and malnutrition in India is due to :
(A) Environmental conditions
(B) Over population
(C) Absence of natural resources
(D) Due to the poor economy of India

36. The State with largest forest in the country is :
(A) Madhya Pradesh
(B) Arunachal Pradesh
(C) Maharashtra
(D) Chhattisgarh

37. Salal hydro electric power project belongs to :
(A) Jammu and Kashmir
(B) Leh Ladakh
(C) Himachal Pradesh
(D) Arunachal Pradesh

38. The mineral present in the monazite sand is :
(A) Oil
(B) Uranium
(C) Thorium
(D) Coal

39. Which natural disaster is the sliding down of a mass of earth or rock from a mountain or cliff ?
(A) Tsunami
(B) Thunderstorm
(C) Landslide
(D) Tornado

40. In which layer of the atmosphere gases are excited by the solar radiation to form ions and electrically charged particles ?
(A) Troposphere
(B) Stratosphere
(C) Mesosphere
(D) Ionosphere

41. The most heat entrapping power per molecule lies in :
(A) Carbon dioxide
(B) Methane
(C) Chlorofluorocarbon
(D) Carbon monoxide

42. Consider the following statements :
1. Monsoons play a pivotal role in the agrarian economy of India.
2. 75% of the total rain in the country is received during the South-West Monsoon season.

Select the correct answer from the codes given below :
(A) 1 only
(B) 2 only
(C) Both 1 and 2
(D) Neither 1 nor 2

43. Consider the following statements about the alluvial soil :
1. It is the largest soil group which covers 40% of the total area of the country.
2. The soil is porous because of its loamy nature.
3. Alluvial soil has high nitrogen but has low potash and phosphoric acid.

Which of the statements are/is correct ?
(A) Only 1
(B) 1 and 2
(C) 1 and 3
(D) 1, 2 and 3

44. The color of "red soils" is due to :

(A) Abundance of magnesium

(B) Accumulated humus

(C) Presence of ferric oxides

(D) Abundance of phosphates

45. Which of the following soil is dominant in Deccan plateau ?

(A) Alluvial soil

(B) Black soil

(C) Laterite soil

(D) Arid soil

46. Consider the following statements :

1. Overgrazing is the main causative factor for desertification.

2. Tourism is the main causative factor for desertification

Select the correct answer from the codes given below :

(A) 1 only

(B) 2 only

(C) Both 1 and 2

(D) Neither 1 nor 2

47. Buffering capacity of a buffer depends on :

(A) Its concentration

(B) pK

(C) Dissociation constant

(D) All of the above

48. Mg ions are essential for the activity of :

(A) Taq polymerase

(B) Glucokinase

(C) Hexokinase

(D) All of the above

49. The average precipitation over the globe is estimated as 1000 mm per year, and the amount of water vapour in the earth's atmosphere is estimated to equal a liquid water layer of 25 mm. The average residence time of water vapour in the earth's atmosphere in days therefore equals :

(A) 40

(B) 14

(C) 9

(D) 3

50. During carbon fixation one very important enzyme being slowest in nature is :

(A) RUBISCO

(B) Nitrate reductase

(C) Succinate dehydrogenase

(D) PEP carboxylase

51. Which of the following causes damage to blood ?

(A) Calcium

(B) Magnesium

(C) Lead

(D) Arsenic

52. Phenylbutazone is a non steroidal anti-inflammatory drug (NSAID) effective in treating :

(A) Pain

(B) Fever

(C) Inflammation

(D) All of the above

53. Proteins, starch and DNA are :

(A) Synthetic polymers

(B) Natural polymers

(C) Proteins and DNA are homopolymers and starch is a heteropolymer

(D) All of the above

54. Tick odd one out with respect to a peculiar property of the following :
(A) Glucose
(B) Fructose
(C) Mannose
(D) Galactose

55. The two pigment system theory of photosynthesis was proposed by :
(A) Aron
(B) Blackman
(C) Hill
(D) Emerson

56. High concentration of Glucose 6-phosphate inhibits _____ .
(A) Fructokinase
(B) Glucokinase
(C) Hexokinase
(D) All of the above

57. Which of the following is an artificial ripening agent ?
(A) Ethephon
(B) 2, 4-D
(C) NAA
(D) Ethylene

58. Seeds in which germination is not stimulated by light are called as :
(A) Thermoblastic seeds
(B) Positively photoblastic
(C) Negatively photoblastic
(D) None of the above

59. The first multicellular organism appeared during _____ .
(A) 1 billion years ago
(B) 1.5 billion years ago
(C) 2 billion years ago
(D) 2.5 billion years ago

60. In case of double helical structure of DNA, Guanine is paired with Cytosine through :
(A) Two hydrogen bonds
(B) Three hydrogen bonds
(C) Double bond
(D) Triple bond

1. First Genetically modified organism was a :
   (A) Mouse
   (B) Bacteria
   (C) Sheep
   (D) Fish
2. A primary host or definitive host is :
   (A) That host which harbors the parasite only for a short transition period
   (B) The host in which the immature forms of parasite lives
   (C) The host in which the adult parasite lives, and reproduces sexually
   (D) All of the above
3. Of the three types of ecological pyramids, which one is always upright ?
   (A) Pyramid of energy
   (B) Pyramid of number
   (C) Pyramid of biomass
   (D) All of the above
4. Succession driven by the biotic components of an ecosystem :
   (A) Autogenic succession
   (B) Retrogressive succession
   (C) Allogenic succession
   (D) Secondary succession
5. Lakes situated on the inner Himalayas between altitudes of 3000-4000 m asl :
   (A) Pine forest lakes
   (B) Valley lakes
   (C) Glacial mountain lakes
   (D) None of the above
6. India stretches over which zoogeogrpaphic region ?
   (A) Palaearctic
   (B) Oriental
   (C) Neotropical
   (D) Ethiopian
7. The best control device for particulate contaminants is :
   (A) Fabric filters
   (B) Cyclone separators
   (C) Gravitational settling
   (D) Electrostatic precipitators
8. A neurological syndrome caused by severe mercury poisoning :
   (A) Minamata disease
   (B) Yokkaichi Asthma
   (C) Itai-itai disease
   (D) Fanconi syndrome
9. An economic system aimed at minimizing waste and making the most of resources is :
   (A) Circular economy
   (B) Natural economy
   (C) Green economy
   (D) Industrial economy
10. The permissible noise level for industrial area is :
   (A) 55 day time / 45 Night time
   (B) 75 day time / 70 Night time
   (C) 85 day time / 80 Night time
   (D) 50 day time / 40 Night time
11. Increase in concentration of a pollutant in an organism is referred as :
   (A) Biomagnification
   (B) Bioamplification
   (C) Biopersistence
   (D) Bioaccumulation
12. Which of the following is not waterborne disease caused by protozoa ?
   (A) Amoebiasis
   (B) Giardiasis
   (C) Botulism
   (D) Cryptosporidiosis

⊙⊙⊙

13. In waste management indicate an order of preference from most to least preferred methods :
(A) Reduction-Reuse-Recovery-Recycle-Disposal
(B) Reduction-Recycle-Reuse-Recovery-Disposal
(C) Reduction-Reuse-Recycle-Recovery-Disposal
(D) Reduction-Recovery-Reuse-Recycle-Disposal

14. Moving bed biofilm reactor (MBBR) forms a part of:
(A) Pre-treatment
(B) Secondary treatment
(C) Primary treatment
(D) Tertiary treatment

15. The coal types as per highest amount of carbon present is :
(A) Peat > Lignite > Anthracite > Bituminous
(B) Anthracite > Bituminous > Peat > Lignite
(C) Peat > Lignite > Bituminous > Anthracite
(D) Anthracite > Bituminous > Lignite > Peat

16. State bird of Jammu and Kashmir is :
(A) Common merganser
(B) Northern pintail
(C) Black necked crane
(D) Graylag goose

17. REDD stands for :
(A) Reducing effective deforestation and degradation
(B) Reducing emissions from deforestation and degradation
(C) Renewing effectively degraded and deforested lands
(D) Renewing effects of degraded and deforested lands

18. The production of two useful forms of energy from same fuel is termed as :
(A) Cogeneration
(B) Coproduction
(C) Coassembly
(D) Cointegration

19. The average protein content per 100 gm of raw egg is :
(A) 11gm
(B) 12gm
(C) 13gm
(D) 16gm

20. Which of the following is not denitrifying bacteria ?
(A) Lactobacillus
(B) Thiobacillus
(C) Pseudomonas
(D) Nitrosomonas

21. As per IUCN category a species that is unlikely to become extinct in near future is :
(A) Data Deficient (DD)
(B) Least Concerned (LC)
(C) Not Evaluated (NE)
(D) Near Threatened (NT)

22. A critical value below which a species, population or metapopulation will go extinct :
(A) Critical threshold
(B) Extinction debt
(C) Critical debt
(D) Extinction threshold

23. Which of the following is not a greenhouse gas ?
(A) Nitrogen oxide
(B) Methane
(C) Argon
(D) Water vapor

24. Smog term was first used in 1905 by :
(A) H.A. Des Voeux
(B) Charles Fabry
(C) Christine Corton
(D) Henri Buisson

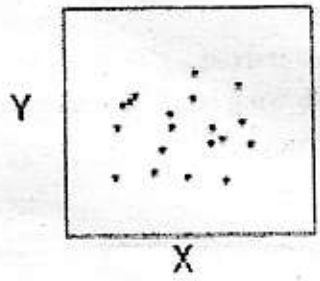
25. Kyoto Protocol was adopted in Kyoto Japan on :
(A) 14 June 1992
(B) 11 December 1997
(C) 16 February 2005
(D) 21 March 1994

26. Environmental education does not include :
(A) Public awareness and knowledge of environmental issues
(B) Teaching individuals critical thinking
(C) Advocating a particular view point
(D) Enhancing individuals' problem solving and decision-making skills

27. In a normally distributed data set, which is greatest ?
(A) Mean
(B) Mode
(C) Median
(D) All of the above

28. If data is skewed, which is preferred measure of central tendency ?
(A) Mean
(B) Mode
(C) Median
(D) All of the above

29. What is the correlation coefficient (r) indicated in figure ?



(A) r = 1
(B) r = 0
(C) r = –1
(D) None of the above

30. There are five coins in bag, four gold and one silver. What is probability of gold coin being picked ?
(A) 0.8
(B) 0.2
(C) 1.25
(D) 0.25

31. Age of the earth is approximately :
(A) 4.571 billion years
(B) 3.571 billion years
(C) 4.524 billion years
(D) 4.543 billion years

32. Earth's mantle extends to a depth of :
(A) 2,890 km
(B) 660 km
(C) 270 km
(D) 5,150 km

33. Physical weathering does not involve :
(A) Oxidation
(B) Frost weathering
(C) Thermal stress
(D) Pressure release

34. Catchment of Jhelum river comprises of :
(A) 16 watersheds
(B) 18 watersheds
(C) 24 watersheds
(D) 20 watersheds

35. If population of city increases from 150,000 in 1980 to 300,000 in 2017. The growth rate is :
(A) 8108 approx.
(B) 4054 approx.
(C) 48648 approx.
(D) 3054 approx.

36. Champion and Seth (1968) recognized following forest types in India :
(A) Eight types
(B) Sixteen types
(C) Thirteen types
(D) Twelve types

37. The State in India with highest installed electricity generation capacity (in MW) is :
(A) Gujarat
(B) Himachal Pradesh
(C) Jammu and Kashmir
(D) Maharashtra

38. Kashmir valley covers an area of :
(A) 16658 sq. km
(B) 15645 sq. km
(C) 15948 sq. km
(D) 15588 sq. km

39. Which of the following is not a hydrological disaster ?
(A) Sinkholes
(B) Flood
(C) Tsunami
(D) Limnic eruptions

40. Bhopal gas tragedy occured due to leakage of :
(A) Methyl isocyanide gas
(B) Methyl isocyanate gas
(C) Methylisonitrile gas
(D) Methancisonitrile gas

41. The air pressure at 5 km above sea level is :
(A) Equal to that at surface
(B) 1/4 of that at surface
(C) 1/2 of that at surface
(D) 1/3 of that at surface

42. Indian summer monsoon is also known as :
(A) Northeast monsoon
(B) Southwest monsoon
(C) East Asia monsoon
(D) Retreating monsoon

43. Horizon comprising bedrock, compacted and cemented by the weight of the overlying horizons is :
(A) C Horizon
(B) R Horizon
(C) A Horizon
(D) E Horizon

44. All India Soil Survey Committee setup in 1953 divided the Indian soils into :
(A) Six major groups
(B) Ten major groups
(C) Five major groups
(D) Eight major groups

45. Universal Soil Loss Equation (USLE) is represented as :
(A) $A = K * LS * C * P$
(B) $A = R * K * LS * C * P$
(C) $A = 95 (Q.q_p)^{0.56} K * LS * C * P$
(D) Both (A) and (B)

46. Type of drought that occurs when the demand for water exceeds the supply :
(A) Socioeconomic drought
(B) Meteorological drought
(C) Hydrological drought
(D) Agricultural drought

47. In water molecule bond angle between the central oxygen atom and the hydrogen atoms is :
(A) 109.5°
(B) 107°
(C) 104.5°
(D) 105°

48. Which of the following is not major element (macronutrient) in plants ?
(A) N
(B) Mn
(C) Ca
(D) Mg

49. Which biogeochemical cycle has no atmospheric phase ?
(A) Phosphorous cycle
(B) Sulphur cycle
(C) Carbon cycle
(D) Nitrogen cycle

50. Out of 2.5% of global fresh water reserves, glaciers constitute :
(A) 68.7%
(B) 0.8%
(C) 30.1%
(D) 0.4%

51. Disorder caused by copper accumulation in the body :
(A) Minamata disease
(B) Myocarditis
(C) Argyrosis
(D) Wilson's disease

52. Drug used for the short-term treatment of pain and fever in animals :
(A) Paracetamol
(B) Phenylbutazone
(C) Asprin
(D) All of the above

53. Which is not a synthetic polymer ?
(A) Polynucleotides
(B) Polypropylene
(C) Polyethylene
(D) Polystyrene

54. Nobel Prize for studies on mechanism of action of hormones and role of cyclic AMP was awarded to :
(A) M. Calvin, 1961
(B) Aaron Klung, 1982
(C) Haris and Watkins, 1965
(D) E. A. Sutherland, 1971

55. The atmospheric carbon dioxide accepter in C3 plants is :
(A) Phospho enol pyruvate
(B) Ribulose-1, 5-bisphosphate
(C) 3-phosphoglyceric acid
(D) Both (A) and (B)

56. As per "de novo" hypothesis mitochondria originated from :
(A) Division of preexisting mitochondria
(B) Endoplasmic reticulum or plasma membrane
(C) Building blocks such as amino acids and lipids
(D) All of the above

57. Which of the following is not plant growth promoter ?
(A) Auxins
(B) Abscisic acid
(C) Cytokinins
(D) Gibberellin

58. Dormancy that is caused by underdeveloped or undifferentiated embryo is :
(A) Secondary dormancy
(B) Combined dormancy
(C) Physiological dormancy
(D) Morphological dormancy

59. Hypothesis of Panspermia was initially developed by :
(A) Thomson (1884)
(B) Van Tieghem (1891)
(C) Helmholtz (1884)
(D) Richter (1865)

60. The rules of base pairing (or nucleotide pairing) was given by :
(A) Watson and Crick
(B) Friedrich Miescher
(C) Erwin Chargaff
(D) Raymond Gosling

1. First experiment regarding evolution of life was performed by :
   (A) Watson and Crick
   (B) Oparin and Haldane
   (C) Urey and Miller
   (D) Meselson and Stahl

2. Which among the following is the widest section of Earth ?
   (A) Inner core
   (B) Outer core
   (C) Mantle
   (D) Crust

3. Rocks when expand and contract repetitively can give rise to :
   (A) Stress
   (B) Heat
   (C) Volume
   (D) Force

4. The ..... River is the only major Himalayan River which flows through the Kashmir valley :
   (A) Indus
   (B) Jhelum
   (C) Tawi
   (D) Ravi

5. Human population pressure in poor areas like sub-Saharan Africa often results in :
   (A) Increased environmental degradation as marginal land is brought into production
   (B) Decreased political unrest as multinational food producers take over production facilities
   (C) Increased self-sufficiency as aid agencies respond to urgent need
   (D) Decreased internal migrations as people lose energy to travel within the country

6. According to 1878 Act which of the following categories of forests is/are considered as the best on the basis of their utility ?
   (A) Reserved forests
   (B) Protected forests
   (C) Village forests
   (D) Community forests

7. In which of the following States, copper is not mined:
   (A) Jammu and Kashmir
   (B) Bihar
   (C) Maharashtra
   (D) Rajasthan

8. Consider the following statements :
   (i) India has about 25% of the world's reserve of Thorium
   (ii) Thorium is found in the form of mineral Monazite in the beach sands of Kerala and Tamil Nadu.
   Choose the correct answer/s from the codes given below :
   (A) (i) only
   (B) (ii) only
   (C) (i) and (ii)
   (D) None

9. With regard to classification of natural disasters, consider the following statements :
   (i) Broadly natural disasters can be classified into four categories, like terrestrial, atmospheric, aquatic and biological.
   (ii) Bird flu and dengue are examples of aquatic disaster.
   (iii) India has experience of all four kinds of disasters.
   Choose the correct answer/s from the code given below :
   (A) (i) only
   (B) (ii) only
   (C) (i) and (iii) only
   (D) (i), (ii) and (iii)

10. Two great industrial tragedies namely, MIC and Chernobyl tragedies respectively occured where and when ?
   (A) Bhopal 1984 : Ukraine 1986
   (B) Bhopal 1986 : Ukraine 1984
   (C) Bhopal 1986 : Russia 1988
   (D) Bhopal 1984 : Ukraine 1990

11. Consider the following statements :
   Assertion (A) : Monsoons play a pivotal role in the agrarian economy of India.
   Reason (R) : Seventy-five percent of the total rain in the country is received during the south-west Monsoon season.
   Select the correct answer from the codes given below :
   (A) Both (A) and (R) are true, (R) is the correct explanation of (A)
   (B) Both (A) and (R) are true, and (R) is not the correct explanation of (A)
   (C) (A) is true, but (R) is false
   (D) (A) is false, but (R) is true

12. The part of atmosphere which contains constant gases with known composition is called :
(A) Homosphere
(B) Thermosphere
(C) Hetrosphere
(D) None of the above

13. Average content of silica in soil is :
(A) 24%
(B) 27%
(C) 31%
(D) 35%

14. Which of the micro organisms have highest biomass in soils ?
(A) Bacteria
(B) Algae
(C) Fungi
(D) Actinomycets

15. Laterite soil is developed in areas with :
(A) Low temperature and low rainfall
(B) High temperature and low rainfall
(C) Low temperature and heavy rainfall
(D) High temperature and heavy rainfall

16. Which is the main causative factor for desertification ?
(A) Irrigated agriculture
(B) Overgrazing
(C) Tourism
(D) Developmental activities

17. With regard to hydrogen bonds in water, which of the following statements is correct ?
(A) Hydrogen bond is 10% covalent and 90% electrostatic
(B) Hydrogen bond is 25% covalent and 75% electrostatic
(C) Hydrogen bond is 50% covalent and 50% electrostatic
(D) Hydrogen bond is 100% electrostatic.

18. Carbonic anhydrase contains ..... ions in its active site.
(A) Zinc
(B) Cobalt
(C) Ferric
(D) Cupric

19. Consider the following statements :
Assertion (A) : The circulation of ocean water is an important factor in air temperature distribution.
Reason (R) : There is a complex two way interaction between ocean and the atmosphere.
Select the correct answer from the codes given below :
(A) Both (A) and (R) are true, but (R) is the correct explanation of (A)
(B) Both (A) and (R) are true, and (R) is not the correct explanation of (A)
(C) (A) is true, but (R) is false
(D) (A) is false, but (R) is true

20. During phosphorous cycle, the phosphorus is available in the form as :
(A) P_2
(B) HPO_3^-
(C) $AlPO_4$
(D) PO_4^{3-}

21. Which of the following chelating agents is recommended for acute Lead poisoning with signs of encephalopathy ?
(A) Penicillamine
(B) Dimercaprol
(C) Calcium EDTA
(D) Dimercaprol + Calcium EDTA

22. Which of the following drugs is an inhibitor of Cyclooxygenase ?
(A) Aspirin
(B) Puromycin
(C) Lovastatin
(D) Vancomycin

23. Starch is a :
(A) Synthetic polymer
(B) Natural polymer
(C) Heteropolymer
(D) All of the above

24. Tick odd one out with respect to some features of amino acids :
(A) Methionine
(B) Tyrosine
(C) Tryptophan
(D) Threonine

25. 90% of the total photosynthesis is carried out by :
(A) Algae
(B) Pteridophytes
(C) Xerophytes
(D) Mesophytes

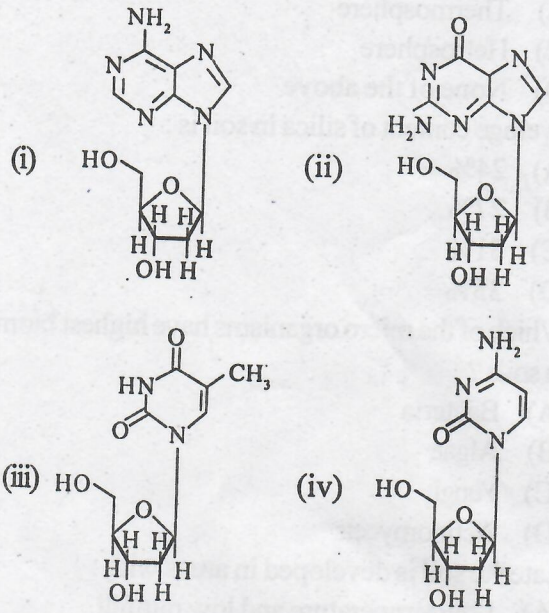
26. During respiration, out of 36 ATPs produced per glucose molecule :
(A) 2 are produced outside mitochondria and 34 inside the mitochondria
(B) 2 are produced outside mitochondria and 34 during glycolysis
(C) 2 are produced out of glycolysis and 34 during Krebs cycle
(D) All are produced inside mitochondria.

27. The hormone formed in leaves, helping in blooming of flowers is/are :
(A) Auxin
(B) Traumatic
(C) Florigens
(D) None of the above

28. Seed dormancy allows plant to :
(A) Overcome unfavorable climate conditions
(B) Develop healthy seeds
(C) Reduce viability
(D) Prevent deterioration of seeds

29. Consider the following statements :
Assertion (A) : The earliest organisms that appeared on the earth were non-green and presumably anaerobes.
Reason (R) : The first autotrophic organisms were the chemo-autotrophs that never released oxygen
Select the correct answer from the codes given below :
(A) Both (A) and (R) are true, but (R) is the correct explanation of (A)
(B) Both (A) and (R) are true, and (R) is not the correct explanation of (A)
(C) (A) is true, but (R) is false
(D) (A) is false, but (R) is true

30. What type of structures are the compounds (i)–(iv) ?



(A) Nucleic acids
(B) Nucleotides
(C) Nucleosides
(D) Deoxyriboses

31. 2nd step of genetic engineering is :
(A) Growth of GMO
(B) Expression of gene
(C) Isolation of gene interest
(D) Insertion of gene into vector

32. Protozoal disease is :
(A) Commonest in the tropics
(B) Generally acute
(C) Seldom fatal
(D) Only seen in immunodeficient individuals

33. The rate at which solar energy is fixed by autotrophs is :
(A) Gross primary productivity
(B) Gross secondary productivity
(C) Net primary productivity
(D) Net secondary productivity

34. The order of basic processes involved in succession is:
(A) Nudation --> Invasion --> Competition and co-action --> Reaction --> Stabilization
(B) Nudation --> Stabilization --> Competition and co-action --> Invasion --> Reaction
(C) Invasion --> Nudation --> Competition and co-action --> Reaction --> Stabilization
(D) Invasion --> Stabilization --> Competition and co-action --> Reaction -->Nudation

35. The Dal and Wular lakes are :
(A) Volcanic basins
(B) Glacial basins
(C) Fluviatile basins
(D) Groundwater basins

36. The significant species endemic to Western Ghats include:
(A) Nilgiri Langur
(B) Grizzled Giant Squirrel
(C) Malabar Civet
(D) All of the above

37. Which one is not a pollutant normally ?
(A) Hydrocarbon
(B) Carbon dioxide
(C) Carbon monoxide
(D) Sulphur dioxide

38. With reference to oil spills, consider the following statements :
(i) They make the water deficient in oxygen
(ii) They can cause algal bloom
Which of the statements given above is/are correct?
(A) (i) only
(B) (ii) only
(C) Both (i) and (ii)
(D) Neither (i) nor (ii)

39. Consider the following statements :
(i) The UN General Assembly declared 2014 the international year of soils
(ii) The IYS 2015 aims to increase awareness and understanding of the soils for food security and essential ecosystem functions
Which of the statements given above is/are correct?
(A) (i) only
(B) (ii) only
(C) Both (i) and (ii)
(D) Neither (i) nor (ii)

40. A safe level of noise depends on :
(A) Level of noise and exposure to noise
(B) Area
(C) Pitch
(D) Frequency

41. The process of accumulating higher and higher amounts of toxic material such as PCBs within the body of any animal is called a :
(A) Bioaccumulation
(B) Biological amplification
(C) Biological half life
(D) Biological persistence

42. Consider the following statements with respect to water born diseases and their causative agents :
(i) Cholera ..... viral
(ii) Diarrhoea ..... protozoan
(iii) Hepatitis ..... viral
Which of the statements given above is/are correctly matched ?
(A) (i) only
(B) (ii) only
(C) (ii) and (iii) only
(D) (i), (ii) and (iii)

43. Consider the following statements with regard to Solid Waste Management Rules, 2016 ?
(i) The jurisdiction of the rules covers only the Municipal area
(ii) The rules emphasizes source segregation of waste
Which of the statements given above is/are correct?
(A) (i) only
(B) (ii) only
(C) Both (i) and (ii)
(D) Neither (i) nor (ii)

44. Consider the following statements with respect to tertiary stage of waste water treatment :
(i) Tertiary treatment is the final cleaning process that improves wastewater quality before it is reused, recycled or discharged to the environment
(ii) The treatment removes remaining inorganic compounds, and substances, such as the nitrogen and phosphorus
(iii) Heavy solids can settle to bottom while oil, gases and lighter solids float to the surface during tertiary treatment
Which of the statements given above is / are correct ?
(A) (i) only
(B) (ii) only
(C) (i) and (ii) only
(D) (i), (ii) and (iii)

45. The Carbon Positive Area means :
(A) Area with carbon emissions more than carbon sequestration
(B) Area with carbon emissions balanced with carbon sequestration
(C) Area with carbon emissions are zero
(D) Area with more renewable energy generation than needed to sustain the area

46. Consider the following statements with respect to protected Area Network in J & K :
(i) National Parks 05
(ii) Wildlife Sanctuaries 14
(iii) Conservation Reserves 37
Which of the statements given above is/are correctly matched ?
(A) (i) only
(B) (ii) only
(C) (ii) and (iii) only
(D) (i), (ii) and (iii)

47. National forest policy has recommended that for maintaining the ecological balance, there should be 33% area under forests in plains of India, but at present it is around :
(A) 32-33%
(B) 25-26%
(C) 21-22%
(D) 17-18%

48. Consider the following statements with respect to Renewable energy sources :
(i) Renewable energy sources include wind, solar, biomass, geothermal and hydro, all of which occur naturally
(ii) Renewable energy, generally speaking, is clean energy and non-polluting
(iii) Many forms do not emit any greenhouse gases or toxic waste in the process of producing electricity
Which of the statements given above is/are correct?
(A) (i) only
(B) (ii) only
(C) (i) and (ii) only
(D) (i), (ii) and (iii)

49. Which of the following plants can be used as the source of anti malarial drug ?
(A) *Arnebia benthamii*
(B) *Saussurea costus*
(C) *Artemisia annua*
(D) None of the above

50. Red data book provides data on :
(A) Red flowered plants
(B) Red colored fishes
(C) Lists of plants and animals
(D) Endangered plants and animals

51. The microbe used in control of oil spills is :
(A) *Methanobacterium*
(B) *Pseudomonas putida*
(C) *Bacillus thuringiensis*
(D) *Rhizobium*

52. Which endangered animal is the source of the world's finest, lightest, warmest and most expensive wool – the shahtoosh ?
(A) Nilgai
(B) Cheetal
(C) Kashmiri goat
(D) Chiru

53. Sacred groves are specially useful in :
(A) General environmental awareness
(B) Preventing soil erosion
(C) Year-round flow of water in rivers
(D) Conserving rare and threatened species

54. Consider the following statements with regard to solving environmental problems :
(i) We must assess the situation
(ii) We must educate the public
(iii) We must predict the consequences of environmental intervention
Which of the statements given above is/are correct ?
(A) (i) only
(B) (ii) only
(C) (i) and (ii) only
(D) (i), (ii) and (iii)

55. Montreal Protocol to reduce production of chlorofluorocarbons was assigned in :
(A) 1977
(B) 1982
(C) 1987
(D) 1992

56. Consider the following statements :
(i) Acid rains are produced by excess of NO_2 and SO_2 from burning fossil fuels
(ii) Acid rains are produced by excess production of NH_3
(iii) Acid rains are produced by excess formation of CO_2 by combustion and animal respiration
Which of the statements given above is / are correct ?
(A) (i) only
(B) (ii) only
(C) (i) and (ii) only
(D) (i), (ii) and (iii)

57. What is the possibility of having 53 Thursdays in a non-leap year ?
(A) 6/7
(B) 1/7
(C) 1/365
(D) 53/365

58. If the value of any regression coefficient is zero, then two variables are :
(A) Qualitative
(B) Correlated
(C) Dependent
(D) Independent

59. The mean of hemoglobin content of 100 pregnant women is 10% with standard deviation of 1%, then the standard error of the estimate would be :
(A) 0.01
(B) 0.1
(C) 1
(D) 10

60. Mode is best measure of tendency if analysis is :
(A) Descriptive
(B) Exploratory
(C) Experimental
(D) Set of deciles

Sr. No. 0011

ENTRANCE TEST-2017

SCHOOL OF EARTH AND ENVIRONMENTAL SCIENCES

ENVIRONMENTAL SCIENCE

Question Booklet Series A

Total Questions : 60

Time Allowed : 70 Minutes

Roll No. : | | | | | | |

Instructions for Candidates :

1. Write your Roll Number in the space provided at the top of this page of Question Booklet and fill up the necessary information in the spaces provided on the OMR Answer Sheet.
2. OMR Answer Sheet has an Original Copy and a Candidate's Copy glued beneath it at the top. While making entries in the Original Copy, candidate should ensure that the two copies are aligned properly so that the entries made in the Original Copy against each item are exactly copied in the Candidate's Copy.
3. All entries in the OMR Answer Sheet, including answers to questions, are to be recorded in the Original Copy only.
4. Choose the correct / most appropriate response for each question among the options A, B, C and D and darken the circle of the appropriate response completely. The incomplete darkened circle is not correctly read by the OMR Scanner and no complaint to this effect shall be entertained.
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SEAL

1. Which of the following best explains how water vapor and carbon dioxide affect the radiation emitted by the Sun and Earth?
   (A) Water vapor and carbon dioxide absorb ultraviolet radiation from the Sun, but they transmit infrared radiation from Earth's surface into the upper atmosphere
   (B) Water vapor and carbon dioxide absorb much of the ultraviolet radiation emitted by the sun, but they transmit visible light reflected from Earth's surface
   (C) Water vapor and carbon dioxide absorb the infrared radiation emitted by the Sun, but they trap the ultraviolet radiation emitted by Earth in the lower atmosphere
   (D) Water vapor and carbon dioxide allow much of the Sun's radiation to reach Earth's surface, but they absorb much of the infrared radiation emitted by Earth
2. The S-wave Shadow zone is evidence that
   (A) The core is made of Iron and Nickel
   (B) The inner core is solid
   (C) The outer core is fluid
   (D) The mantle is plastic
3. Which is not a foliated metamorphic rock?
   (A) Slate
   (B) Gneiss
   (C) Quartzite
   (D) Schist
4. Marusudar river which is an important tributary of Chenab originates from
   (A) Kishtiwar
   (B) Himachal Pradesh
   (C) Doda
   (D) Rambandh
5. Which of the following is the wrong combination of global population statistics (UN, World Population Prospects, 2015)?
   (A) Asia-50%
   (B) Africa-13 %
   (C) Europe-10%
   (D) North America and Oceania-5%
6. Identify the correct sequence (highest to lowest) in the order of their contribution (percentage) in forest resources of India
   (A) Tropical wet evergreen forest, Tropical moist deciduous forest and Tropical dry deciduous forest
   (B) Tropical dry evergreen forests, Tropical moist deciduous forest and Tropical dry deciduous forest
   (C) Tropical dry deciduous forest, Tropical moist deciduous forest and Tropical thorn forest
   (D) Tropical moist deciduous forest, Tropical dry deciduous forest and Himalayan dry temperate forests
7. Koderma, in Jharkhand is the leading producer of which one of the following minerals?
   (A) Bauxite
   (B) Mica
   (C) Iron ore
   (D) Copper
8. The western syntaxial bend of the Himalayas is nearer to
   (A) Zanaskar Range
   (B) Nanga Parbat
   (C) Dhauladhar Range
   (D) Pir Panjal Range
9. Risk is comprised of which of the following two factors?
   (A) Alert and alarm
   (B) Hazard and vulnerability
   (C) Vulnerability and susceptibility
   (D) Hazards and threats
10. Identify the correct match
   (A) Chernobyl disaster-1984
   (B) Bhopal gas tragedy-1986
   (C) Fukushima disaster-2012
   (D) Exxon Valdez disaster-1989

SEAL

11. Match List I with List II and select the right combination

A. Troposphere	1. Contains much of total atmospheric ozone
B. Stratosphere	2. Temperature decrease with increasing height
C. Ionosphere	3. Aurora Borealis and Aurora Australis are produced
D. Exosphere	4. Atoms of oxygen, hydrogen and helium form the tenuous atmosphere

	A	B	C	D
(A)	2	1	3	4
(B)	2	4	1	3
(C)	2	1	4	3
(D)	2	3	4	1

12. Consider the following conditions for the formation of temperature inversions:
    1. Cloudy sky
    2. Strong winds
    3. Long winter nights
    4. Cold dry air

    Which of the above conditions are ideal?
    (A) 1, 2 and 3
    (B) 1 and 2
    (C) 3 and 4
    (D) 2, 3 and 4

13. Which of the following is/are characteristic of soil horizons?
    (A) Distinguished from one another by appearance and chemical composition
    (B) Boundaries between soil horizons are usually transitional rather than sharp
    (C) They are classified by letters
    (D) All the above

14. The correct sequence in ascending order of the following soil types in terms of coverage in India is
    (A) Laterite, red, black, alluvial
    (B) Laterite, black, red, alluvial
    (C) Black, laterite, red, alluvial
    (D) Laterite, black, alluvial, red

15. The usual vertical sequence of horizons in a soil from the surface downward is
    (A) O, A, B, C, E
    (B) A, B, C, E, O
    (C) O, A, E, B, C
    (D) A, E, B, C, O

16. Identify the wrong combination
    (A) Gobi desert-Mongolia
    (B) Kalahari desert-South Africa
    (C) Karakum desert-Turkmenistan
    (D) Dasht-e Margo- Iran

17. What do cohesion, surface tension, and adhesion have in common with reference to water?
    (A) All increase when temperature increases
    (B) All are produced by ionic bonding
    (C) All are properties related to hydrogen bonding
    (D) All have to do with nonpolar covalent bonds

18. Cu deficiency can lead to
    (A) Leucopenia
    (B) Ganulocytopenia
    (C) Anemia
    (D) All of the above

19. Match lists I and II and select the correct answer using the codes given below the lists

List I	List II
1. *Azobacter*	A. Conversion of ammonia or NH_4 into nitrite
2. *Pseudomonas*	B. Conversion of nitrite into nitrate
3. *Clostridium*	C. Denitrification
4. *Rhizobium*	D. Anaerobic Nitrogen fixation
5. *Nitobacter*	E. Aerobic Nitrogen fixation
6. *Nitrosomonas*	F. Symbiotic nitrogen fixation

Codes
(A) 1 -E, 2-C, 3-D, 4-F, 5-B, 6-A
(B) 1 -E, 2-C, 3-D, 4-B, 5-F, 6-A
(C) 1 -E, 2-C, 3-D, 4-A, 5-B, 6-F
(D) 1-E, 2-C, 3-A, 4-F, 5-B, 6-D

20. A saturated geologic unit, which may contain water but is essentially impermeable to the flow of water through it, is known as
(A) Aquifer
(B) Aquifuge
(C) Aquitard
(D) Aquiclude

21. A toxic heavy metal that tends to accumulate in high concentrations in marine fishes at the top of the food chain is
(A) Lead
(B) Mercury
(C) Zinc
(D) Copper

22. What is true about Phenylbutazone?
(A) Insoluble in water
(B) Odorless
(C) Insoluble in Ethanol
(D) All the above

23. The polymer which is used for making nonstick utensils is
(A) Polyurethane
(B) Bakelite
(C) Teflon
(D) All the above

24. Which of the following enzymes would be most useful as a marker for Chloroplasts during isolation of plant cell organelles?
(A) Malate dehydrogenase
(B) DNA polymerase
(C) Phosphoribulokinase
(D) Hexokinase

25. Consider the following events involved in stomatal opening
1. pH of guard cells decreases
2. Water moves into guard cells
3. K ions move into guard cells
4. Turgor pressure of the guard cells increases

Identify the correct sequence of events leading to stomatal opening
(A) 1-4-2-3
(B) 3-2-4-1
(C) 1-3-2-4
(D) 3-1-2-4

26. Match lists I (Compound oxidized during Krebs cycle) and II (Compound formed on oxidation) and select the correct answer using the codes given below the lists.

List I	List II
I. Pyruvic acid	A. Acetyl CoA
II. Isocitric acid	B. Succinyl CoA
III. α-Ketoglutaric acid	C. Oxalosuccinic acid
IV. Succinic acid	D. Fumaric acid

Codes:
(A) I-A, II-C, III-B, IV-D
(B) I-A, II-C, III-D, IV-B
(C) I-A, II-B, III-C, IV-D
(D) I-A, II-D, III-C, IV-B

27. Match List I and List II and select the correct answer using the codes given below the lists:

List I	List II
I. Cell division	A. Auxins
II. Dormancy	B. Gibberellins
III. Cell elongation	C. Abscisic acid
IV. Flowering	D. Ctyokinins

Codes:
(A) I-D, II-C, III-B, IV-A
(B) I-D, II-A, III-C, IV-B
(C) I-D, II-C, III-A, IV-B
(D) I-D, II-A, III-B, IV-C

28. During germination, mustard seed converts its lipids into sugars by
(A) Glyoxylate cycle
(B) Calvin cycle
(C) TCA cycle
(D) Glycolate pathway

29. In which one of the following geological periods did the first land plants appear?
(A) Carboniferous
(B) Silurian
(C) Permian
(D) Precambrian

30. The number of hydrogen bonds needed to bind cytosine with guanine in a DNA strand are
(A) Two
(B) Three
(C) Four
(D) Six

31. DNA is amplified by
(A) Southern Blotting technique
(B) Northern Blotting technique
(C) Nucleic acid hybridization technique
(D) PCR technique

32. Elephantiasis in man is caused by
(A) *Microfilariae*
(B) *Dracunculus*
(C) *Ancylostoma*
(D) *Oxyuris*

33. The land and water ecosystems that provide the resources that a person uses and that neutralize that person's wastes is part of that person's
(A) Biodiversity
(B) Ecological footprint
(C) Habitat
(D) Ecological sustainability

34. The most important factor/s affecting the distribution of biomes is/are
(A) Precipitation and temperature
(B) Latitude and Longitude
(C) Altitude
(D) None of the above

35. When the lake water circulates at times incompletely, the lake is termed as
(A) Amictic
(B) Holomitic
(C) Meromictic
(D) Polymictic

36. *Sphenodon punctatum* which is most primitive living lizard is restricted to
(A) Australia
(B) New Zealand
(C) Zimbabwe
(D) North America

37. Choose the incorrect statement.
(A) The Montreal protocol is associated with th control of emission of ozone depletin substances
(B) Methane and carbon dioxide are greenhou gases
(C) Dobson units are used to measure oxyge content
(D) Use of incinerators is crucial to disposal hospital wastes

38. Match the items in column I and column II and choo the most correct and appropriate option:

Column I	Column II
A. Sewage	I. Biomagnification
B. Biodegradable Organic matter	II. Eutrophication
C. DDT	III. Pathogenicity
D. Phosphates	IV. BOD

(A) A-II, B-I, C-IV, D-III
(B) A-III, B-II, C-IV, D-1
(C) A-III, B-IV, C-I, D-II
(D) A-II, B-III, C-I, D-IV

39. Which of the following is a potent threat for microbi diversity?
(A) Mining operations
(B) Forest fires
(C) Application of chemical fertilizers
(D) Soil erosion

40. A safe level of noise depends on
(A) Level of noise and exposure to noise
(B) Area
(C) Pitch
(D) Frequency

41. The organic compound responsible for impairi calcium metabolism in birds, resulting in the laying thin shelled, fragile eggs is
(A) PCB
(B) DDT
(C) Vinyl chloride
(D) Diisomethylphosphonate

42. Which one of the following diseases is not due to contamination of water?
(A) Hepatitis-B
(B) Jaundice
(C) Cholera
(D) Typhoid

43. Which one of the following is not correctly matched?
(A) Sanitary landfill-Groundwater pollution
(B) Pyrolysis-Sulphur dioxide
(C) Incinerator-Dioxins
(D) Shredding and Pulverization-Volume reduction

44. Match the following lists I and II and select the correct answer using the code given below the lists:

List I	List II
A. Trickling filter	I. Tertiary treatment
B. Biological nitrification-denitrification	II. Fixed growth system
C. Sludge volume	III. Suspended growth system
D. Secondary Treatment	IV. Biological treatment
E. Activated sludge	V. Inversely proportional to solids concentration

Codes :

	A	B	C	D	E
(A)	III	I	V	IV	II
(B)	II	I	V	IV	III
(C)	III	I	IV	V	II
(D)	II	I	V	III	IV

45. Which is currently the world's largest oil-producing country (including Crude Oil, NGLs, Biofuel, and Other Hydrocarbons) in the World (IEA, 2016)?
(A) USA
(B) Canada
(C) Saudi Arabia
(D) Russia

46. Which of the following combination is wrongly matched?
(A) Markhor and Hangul -Critically Endangered
(B) Hangul and Chiru- Critically Endangered
(C) Tibetan antelope and Markhor- Endangered
(D) Western Tragopan and Cheer Pheasant-Endangered

47. Which of the following countries contribute more than 50% of global share of tropical forests?
(A) India, Zimbabwe and Egypt
(B) Brazil, Egypt and Malaysia
(C) Brazil, India and Kenya
(D) Brazil, Zaire and Indonesia

48. The example/s of Phosphorus solubilizing biofertilisers is/are
(A) *Bacillus*
(B) *Pseudomonas*
(C) *Aspergillus*
(D) All the above

49. Among the following plants, the fibres of which one has least amount of Cellulose?
(A) Jute
(B) Flax
(C) Cotton
(D) Hemp

50. Match lists I and II and select the correct answer using the codes given below the lists

List I	List II
1. *Aspergillus niger*	A. Butyric acid
2. *Acetobacter aceti*	B. Acetic acid
3. *Clostridium butylicum*	C. Lactic acid
4. *Lactobacillus acidophylus*	D. Ethanol
5. *Saccharomyces cerevisiae*	E. Citric acid

Codes :
(A) 1 -E, 2-C, 3-D, 4-A, 5-B
(B) 1-E, 2-C, 3-D, 4-B, 5-A
(C) 1 -E, 2-B, 3-A, 4-C, 5-D
(D) 1 -E, 2-B, 3-A, 4-D, 5-C

51. Which of the following is a correct set of endangered species in India?
(A) Great Indian bustard, Kashmiri Hangul (Stag), Asiatic lion, Royal Bengal tiger
(B) Musk deer, Cheetah, Blue bull, Great Indian bustard
(C) Snow leopard, Swamp deer, rhesus monkey, Hanuman langur
(D) Lion tailed macaque, blue bull, Hanuman langur, cheetah

Sr. No. 1501

ENTRANCE TEST-2016

FACULTY OF PHYSICAL & MATERIAL SCIENCE

M.Sc. ENVIRONMENTAL SCIENCE

Question Booklet Series A

Total Questions : 60
Time Allowed : 70 Minutes

Roll No. : | | | | | | |

Instructions for Candidates :

1. Write your Roll Number in the space provided at the top of this page of Question Booklet and fill up the necessary information in the spaces provided on the OMR Answer Sheet.
2. OMR Answer Sheet has an Original Copy and a Candidate's Copy glued beneath it at the top. While making entries in the Original Copy, candidate should ensure that the two copies are aligned properly so that the entries made in the Original Copy against each item are exactly copied in the Candidate's Copy.
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1. The difference between equatorial and polar diameters of the earth is about :
   (A) 42.8 km (B) 77 km
   (C) 88 km (D) 111km

2. The correct descending order by volume of the three basic layers of the earth is :
   (A) Core, crust, mantle (B) Crust, core , mantle
   (C) Core, mantle, crust (D) None of the above

3. The parent materials of soils are derived more frequently from :
   (A) Igneous rocks (B) Metamorphic rocks
   (C) Sedimentary rocks (D) Biological action

4. The Sanskrit name as "Wythusta" refers to :
   (A) River Tawi (B) River Jhelum
   (C) River Chenab (D) Dal lake

5. The state among the following, which has more number of women than men, is :
   (A) Himachal Pradesh (B) Karnataka
   (C) Tamil Nadu (D) Kerala

6. Which among the following plants is not a medicinal plant ?
   (A) Artemisia annua (B) Ernebia benthami
   (C) Palm (D) Chinchona

7. The term "White coal" refers to :
   (A) Ice (B) Uranium
   (C) Diamond (D) Hydro-electricity

8. Coal deposits of the J&K State are abundantly found in :
   (A) Pulwama (B) Kalakote
   (C) Dandil (D) Baramulla

9. The major havoc due to earthquake in Uri region took place on :

(A) 5th Oct, 2005 (B) 5th Oct, 2008

(C) 8th Oct, 2005 (D) 8th Oct, 2008

10. In 1986, the Chernobyl nuclear reactor incident took place in which of the following country :

(A) USSR (B) USA

(C) Japan (D) France

11. The lowest layer of the atmosphere is called as the :

(A) Troposphere (B) Stratosphere

(C) Ionosphere (D) Exosphere

12. Which Division of Jammu and Kashmir state has semi-Arctic type of climate ?

(A) Kashmir- Division (B) Jammu- Division

(C) Ladakh - Division (D) None of the above

13. Red soils are red in color mainly because of presence of :

(A) Aluminium (B) Iron

(C) Lead oxide (D) Chromium

14. The names for soils as "Gurti, Nambal, and Sekil" refer to :

(A) Kashmiri names (B) Dogri names

(C) Maharati names (D) None of the above

15. When the soil is washed away in thin layers by water or wind, it is called as :

(A) Gully erosion (B) Sheet erosion

(C) Both (A) and (B) (D) Neither (A) nor (B)

16. Deforestation is the major causal agent of :

(A) Depletion of natural resources (B) Environmental pollution

(C) Desertification of habitat (D) Genetic erosion

17. The maximum buffering capacity of a buffer is :

(A) 1 pH unit below its pK

(B) 1 pH unit above its pK

(C) Near its pK

(D) pK has no concern with the buffering capacity of a buffer

18. Mg^{++} is essential for the activity of :

(A) DNA polymerase

(B) Glucose kinase

(C) Hexose kinase

(D) All of the above

19. Unicellular symbiotic organisms improve yield of legumes by :

(A) Fixing nitrogen without colonizing roots of host

(B) Fixing atmospheric nitrogen and colonizing roots of host

(C) Inducing the host plant to absorb more phosphorous

(D) Stimulating the host plant to become tolerant to drought

20. The rate of transpiration can be determined by :

(A) Photometers

(B) Potometers

(C) Polarimeters

(D) Conductivity meters

21. Pollutant of automobile exhausts that affects nervous system and produces mental disease is :

(A) Mercury

(B) Nitric oxide

(C) Sulphur dioxide

(D) Lead

22. Aspirin is a/an :

(A) Antibiotic

(B) Antifungal

(C) Antihelminthic

(D) Antipyretic/Analgesic

23. Polyacrylamide is a :

(A) Synthetic polymer

(B) Natural polymer

(C) Basic unit of a polymer

(D) Protein

24. Tick odd one out in terms of chemical reactions :

(A) Glucose (B) Galactose

(C) Mannose (D) Sucrose

25. Which among the following is the slowest enzyme in plants ?

(A) Glucose kinase (B) Catalase

(C) DNA pol (D) RUBISCO

26. The number of ATPs produced from complete oxidation of Acetyl- COA during Krebs cycle is :

(A) 12 (B) 36

(C) 8 (D) 15

27. The phytohormone responsible for stem elongation is :

(A) Ethylene (B) Cytokinin

(C) Abscisic acid (D) Gibberellin

28. The seed germination is inhibited by :

(A) Gibberellins (B) Cytokinins

(C) Abscisic acid (D) Auxins

29. The approximate time when the life originated was :

(A) 4000-10000 million years ago

(B) 3000-4000 million years ago

(C) 1000 million years ago

(D) 400 million years ago

30. Which among the following is true for DNA structure ?

(A) Adenine pairs with thymine through a double bond

(B) Adenine pairs with thymine through two hydrogen bonds

(C) Adenine pairs with cytosine through a triple bond

(D) Adenine pairs with thymine through three hydrogen bonds

31. The nature's best genetic engineer is :

(A) Rhizobium
(B) E.Coli
(C) Agro bacterium
(D) None of the above

32. The term pathogenicity refers to :

(A) Ability to cause disease
(B) Degree of disease
(C) Virulence
(D) All of the above

33. The term ecosystem was introduced by :

(A) Ernst Haeckel
(B) A.G. Tansely
(C) Odum
(D) None of the above

34. In an ecological succession from pioneer to climax community, the biomass shall :

(A) Decrease
(B) Increase and then decrease
(C) No relation
(D) Increase continuously

35. Dal Lake is an example of :

(A) Eutrophic type of lakes
(B) Oligotrophic type of lakes
(C) Mesotrophic type of lakes
(D) None of the above

36. The great Indian bustard is a huge ground bird with a long neck and long legs. It is inhabitant of the semi arid areas of :

(A) Gujarat
(B) Rajasthan
(C) Maharashtra
(D) All of the above

37. In a given area, the best indicator of sulphur dioxide pollution is :

(A) Algae
(B) Bryophyte
(C) Lichen
(D) Pteridophyte

38. BOD stands for :

(A) Biochemical oxygen demand
(B) Biological oxidation demand
(C) Biochemical oxidation demand
(D) Biotic oxidation demand

39. White lung cancer is most abundant in the workers of which industry ?

(A) Asbestos (B) Textile

(C) Coal mines (D) Paper

40. dB is a standard abbreviation used for the quantitative expression of :

(A) The dominant Bacillus in a culture

(B) The density of bacteria in a medium

(C) A certain pesticide

(D) A particular pollutant

41. Shell of egg in bird becomes thin (not properly formed) due to the pollution of pesticides. This is due to interference in the activity of :

(A) Calmodulin (B) Mg ATPase

(C) Ca ATPase (D) None of the above

42. One of the water borne bacterial pathogen is :

(A) *Entamoeba* (B) *Giardia*

(C) *Salmonella* (D) *Ascaris*

43. After matching the List-I and List-II, select the correct answer from the code given below :

	List–I		**List–II**
a.	Asphalt	1.	Precipitators, scrubbers and cyclones
b.	Cement	2.	Cyclones and scrubbers
c.	Glass	3.	Baghouses and multicyclones
d.	Gypsum	4.	Baghouses, cyclones and electrostatic precipitators

Code:

	a	b	c	d
(A)	1	2	3	4
(B)	2	3	4	1
(C)	4	3	2	1
(D)	3	4	2	1

44. In sewage treatment plants, the processes that remove inorganic nutrients, such as phosphate from waste water are considered :

(A) Primary treatment
(B) Secondary treatment
(C) Tertiary treatment
(D) None of the above

45. The example of non- renewable sources of energy is/are :

(A) Tidal energy
(B) Petroleum
(C) Solar energy
(D) All of the above

46. The total forest area in India is :

(A) 17.3%
(B) 23.3%
(C) 3.3 %
(D) 33.3%

47. Dachigam National Park is situated in :

(A) Naranag area
(B) Dodpathri area
(C) Near Harwan area
(D) Patnitop area

48. Fuel cells are examples of :

(A) Non-polluting energy sources
(B) Electrochemical cells
(C) Both (A) and (B)
(D) Neither (A) nor (B)

49. The first animal to be domesticated by primitive man was :

(A) Horse
(B) Goat
(C) Dog
(D) Cat

50. The advantage/s of using cyanobacteria as biofertilizer is/are :

(A) Its low cost
(B) Simple technology for use
(C) Potential to supply large quantity of fixed nitrogen
(D) All of the above

51. Among the following, which one is wrongly matched ?

(A) Extinct—No individuals remaining

(B) Critically endangered—Extremely high risk of extinction in the wild

(C) Endangered—low risk, does not qualify for a more at risk category

(D) Vulnerable—High risk of endangerment in the wild

52. Most biodiversity hot spots are in :

(A) Tropical forests (B) Mountain regions

(C) Dry shrub lands (D) Wet lands

53. Carbon dioxide is called green-house gas because it is :

(A) Transparent to sunlight but traps heat

(B) Transparent to heat but traps sunlight

(C) Used in green-house to increase plant growth

(D) Transparent to both sunlight and heat

54. Acid rain is caused by increase in the atmospheric concentration of :

(A) Ozone and dust (B) SO_2 and NO_2

(C) SO_3 and CO (D) CO_2 and CO

55. Identify the correctly matched pair :

(A) Basal convention — Biodiversity conservation

(B) Montreal Protocol — Global warming

(C) Kyoto protocol — Climatic change

(D) Ramsar Convention — Ground water pollution

56. What could be the possible outcomes from Environmental Education Systems ?

(A) An environmentally educated person understands the scientific concepts and facts that underlie environmental issue and the interrelationships that shape nature

(B) An environmentally educated person understand how human society is influencing the environment as well as the economic, legal, and political mechanisms that provide avenues for addressing issues and situations

(C) An environmentally educated person becomes involved in activities to improve, maintain and restore natural resources and environmental quality for all

(D) All of the above

57. The median of the data 160, 180, 200, 280, 300, 320, 400 will be :

(A) 160 (B) 300

(C) 280 (D) 180

58. A given data distribution is 2, 3, 4, 5, 6 and if x is 4, then the sum of squared deviations from the x will be :

(A) 10 (B) 8

(C) 6 (D) 12

59. While plotting a scatter diagram, it is observed that points are coming on a straight line, it is indication of :

(A) No correlation (B) Skewness

(C) Perfect correlation (D) None of the above

60. In a pack of 52 cards, the probability of finding a queen is :

(A) 1/52 (B) 1/26

(C) 1/13 (D) None of the above

M.Sc. Environmental Sciences/A

1. "Uniformitarianism" which is heralded today as a fundamental concept of Earth Sciences was first suggested by :
   (A) Leopold, A. in 1949
   (B) Hutton, J. in 1785
   (C) Lovelock, J. in 1988
   (D) Keller, E.A. in 1999

2. The soils commonly called as 'regur' are :
   (A) Laterite soils
   (B) Red soils
   (C) Black soils
   (D) None of these

3. According to estimates of National Commission on Agriculture the area of land under some form of degradation in India is :
   (A) 75 million ha
   (B) 175 million ha
   (C) 275 million ha
   (D) 375 million ha

4. Crystalline limestone is technically called as :
   (A) Micrite
   (B) Sparite
   (C) Oolite
   (D) Coquma

5. Narmada, Tapti and Mahanadi rivers have their several important catchment areas in :
   (A) Punjab
   (B) Himachal Pradesh
   (C) Haryana
   (D) Madhya Pradesh

6. Together China and India have what % of world's population ?
   (A) 17
   (B) 27
   (C) 37
   (D) 47

7. Which of these pairs of minerals represent primary and light minerals ?
   (A) Quartz, Olivine
   (B) Mica, magnetite
   (C) Quartz, feldspar
   (D) Calcite, biotite

8. The red transparent variety of corundum gem called 'Ruby' is found in the areas of :
   (A) Poonch
   (B) Newshehra
   (C) Zanskar
   (D) Baramulla

9. The swirling funnel-shaped clouds that form over land and can cause serious damages in areas where they touch down on earth's surface are called :

(A) Tropical cyclones (B) Tornadoes

(C) Hurricanes (D) Typhoons

10. Bhopal MIC disaster took place on the 3rd December of :

(A) 1982 (B) 1983

(C) 1984 (D) 1985

11. The layer of atmosphere stretching between 17 and 48 km above the earth's surface is known as :

(A) Ionosphere (B) Troposphere

(C) Stratosphere (D) Biosphere

12. The thickness of outer core of earth is just over :

(A) 1000 km (B) 2000 km

(C) 3000 km (D) 4000 km

13. The two layers of a mature soil profile that are teemed with bacteria, fungi, earthworms and other many small multicellular organisms include :

(A) A and B (B) B and C

(C) O and A (D) None of these

14. The forest cover % of India as per the recent assessments of Forest Survey of India is :

(A) 9.36 (B) 19.36

(C) 29.36 (D) 39.36

15. According to United Nations Environment Programme (UNEP) the approximate area (million ha) of croplands and rangelands which become desertified currently each year is :

(A) 7 to 9 (B) 9 to 11

(C) 11 to 13 (D) 13 to 15

16. Baltoro is the famous glacier of :

(A) Himachal Range
(B) Shiwalik Range
(C) Korakaram Range
(D) None of these

17. Water has its greatest density at :

(A) 4 °C
(B) 8 °C
(C) 12 °C
(D) 16 °C

18. During periods of rapid growth of producers, which often occurs in the spring, all of the available phosphorus (in an ecosystem) may become tied up in :

(A) Producers and consumers
(B) Litter and sediment materials lying below
(C) Producers only
(D) Consumers only

19. Vegetables dyes which are rare in Nature and insoluble in water are called :

(A) Direct dyes
(B) Mordant dyes
(C) Vat dyes
(D) None of these

20. The low molecular weight organic molecule of a holoenzyme is called as :

(A) Apoenzyme
(B) Coenzyme
(C) Exoenzyme
(D) None of these

21. Hutchinson in 1944 estimated that the amount of Nitrogen fixed per meter square per year from the air was between :

(A) 100 and 140 mg
(B) 140 and 700 mg
(C) 700 and 1400 mg
(D) 1400 and 2800 mg

22. In Israel, where fresh water is limited, the amount of municipal water used to irrigate cotton crop only is :

(A) 25%
(B) 35%
(C) 45%
(D) 55%

23. In Sweden and other northern European countries during the 1950s and 1960 many deaths of seed-eating birds, and of predatory birds feeding upon them were attributed to compounds of :

(A) Organoarsenic
(B) Organolead
(C) Organomercury
(D) Organotin

24. Acetylsalicylic Acid is :

(A) Paracetamol
(B) Aspirin
(C) Phenylbutazone
(D) None of these

25. Which of these theories does not account for the origin of life on Earth ?

(A) Special Creation
(B) Spontaneous generation
(C) Darwin's Natural Selection
(D) Biochemical Evolution

26. The most abundant photosynthetic pigment in nature is :

(A) Chlorophyll a
(B) Chlorophyll b
(C) Carotenes
(D) Xanthophyll

27. The group of Auxins that act as selective broad-leaved/dicot weed killers is :

(A) Indoles
(B) Naphthyls
(C) Phenoxyacetic acids
(D) None of these

28. The formation of winter buds in temperate trees and shrubs is usually a photoperiodic response to shortening days in autumn where the stimulus is perceived by the leaves and the levels of which plant hormone get built up and inhibit growth and induce leaf fall ?

(A) Florigen
(B) Cytokinin
(C) Gibberellins
(D) Abscisic Acid

29. The amount of energy (kj) required to make ATP from ADP and inorganic phosphate per mole is :

(A) 20.6
(B) 30.6
(C) 40.6
(D) 50.6

30. The experiments that strictly demonstrated the DNA as the hereditary material were those of :

(A) Frederick Griffith, 1928
(B) Harshey and Chase, 1952
(C) Sutton and Boveri, 1900
(D) None of these

31. The cloning of mammal Dolly-Sheep took place in the year :

(A) 1995
(B) 1996
(C) 1997
(D) 1998

32. The amount (%) of the solar energy used by the green plants, algae, and bacteria on earth to produce their food through photosynthesis is :

(A) More than 0.1
(B) Less than 0.1
(C) Equal to 0.1
(D) None of these

33. The ability of a living system to resist being disturbed or altered is termed as :

(A) Persistence
(B) Resilience
(C) Constancy
(D) None of these

34. Hybrids possess phenotypes or characters superior to either of the parental stock, the phenomenon is known as :

(A) Polymorphism
(B) Heterosis
(C) Ugenics
(D) None of these

35. In cities with drier, sunnier climates and low industrial activity, hydrocarbons and nitrogen oxides from motor vehicles react to form a brownish haze called :

(A) Industrial Smog
(B) Photochemical Smog
(C) Urban Smog
(D) Smoke

36. In streams and lakes inorganic Mercury, emitted by Vinyl factories and coal-fired Power Plants, is converted by bacteria into a number of organic forms, which of these forms of Mercury evaporates quickly from water ?

(A) Methyl Mercury
(B) Dimethyl Mercury
(C) Trimethyl Mercury
(D) None of these

37. The open water zone to the depth of effective light penetration in a deep lake is called as :

(A) Limnetic Zone
(B) Littoral Zone
(C) Profundal Zone
(D) None of these

38. The stage of Sewage Treatment which destroys biodegradable organic matter through biological decay represents :

(A) Primary Treatment
(B) Secondary Treatment
(C) Tertiary Treatment
(D) None of these

39. Indian Mustard stands recommended for removal of which radioactive elements from the soil ?

(A) Ceasium and Strontium
(B) Uranium and Plutonium
(C) Uranium and Thorium
(D) None of these

40. It has been reliably estimated that recycling a 1.2 meter stack of News Papers saves how many 12 meter tall trees :

(A) One
(B) Two
(C) Three
(D) Four

41. Since the advent of Agriculture the area of forests that has been cleared worldwide (in billion hectares) is :

(A) One
(B) Two
(C) Three
(D) Four

42. The causative agent (pathogen) for Typhoid Fever is :

(A) Vibrio cholera
(B) Shigella dysenteriae
(C) Clostridium sp.
(D) None of these

43. Which of these represents the first generation pesticides ?

(A) Carbamates
(B) Chlorinated Hydrocarbons
(C) Organophosphates
(D) None of these

44. Sound level (in dB) in case of a jet plane at take off is :

(A) 130
(B) 140
(C) 150
(D) 160

45. The most abundant fossil fuel on earth is :

(A) Natural Gas
(B) Crude Oil
(C) Coal
(D) Oil Shales

46. Who, in his classic book "Small is Beautiful" popularized the term 'Appropriate Technology' ?

(A) E.F. Schumacher
(B) Rachel Carson
(C) Daniel D. Chiras
(D) Eugene P. Odum

47. The keystone animal species for which Hirpora Sanctuary (Kashmir) is being maintained is :

(A) Musk Deer
(B) Markhor
(C) Snow Leopard
(D) Hangul Deer

48. Which one of these is now regarded as Extinct ?

(A) *Capra falconeri*
(B) *Panthera tigris*
(C) *Acinonyx jubatus*
(D) *Cervus hangul*

49. Which of these protozoans inhabits the human intestinal tract in the area of caecum as harmless commencial ?

(A) *Entameba histolytica*
(B) *Endolimax nana*
(C) *Pentatrichomonas hominis*
(D) *Iodameba butschlii*

50. The IUCN Red Data Book categorizes Snow Leopard as :

(A) Critical
(B) Endangered
(C) Vulnerable
(D) Insufficiently Known

51. The common five toed species of *Echidna aculeate* is found in the zoogeographic realm :

(A) Palaearctic
(B) Ethiopian
(C) Oriental
(D) Australian

52. Which one of these is a cyanobacterium ?

(A) *Nitrobacter winogradskyi*
(B) *Anabaena planktonica*
(C) *Clostridium botulinum*
(D) *Streptomyces scabies*

53. The Stratospheric Ozone layer screens out how much (%) of sun's Ultra Violet radiations ?

(A) 69 (B) 79

(C) 89 (D) 99

54. In an unpolluted environment Rain Water has a pH of about :

(A) 4.7 (B) 5.7

(C) 6.7 (D) 7.7

55. 1997 Kyoto Protocol was signed by how many nations ?

(A) 140 (B) 150

(C) 160 (D) 170

56. The International Workshop on Environmental Education was organized by UNESCO at Belgrade (Yugoslavia) as "The Belgrade Charter" in the year :

(A) 1972 (B) 1975

(C) 1978 (D) 1981

57. While summarizing many individual values in a single number the common average is statistically referred to as :

(A) Geometric Mean (B) Harmonic Mean

(C) Arithmetic Mean (D) None of these

58. The Standard Deviation of a variate x is ð. The Standard Deviation of the variate ax + b/c where a, b, c are constants is :

(A) (a/c) ð (B) a/c ÷ ð

(C) (a^2/c^2) ð (D) None of these

59. If Correlation Coefficient between X and Y is r, then correlation Coefficient between X^2 and Y^2 is :

(A) r (B) r^2

(C) 0 (D) 1

60. If two unbiased coins A and B, each with a head and tail, are tossed together the correct value of probability of any one way fall of the coin will be :

(A) 0.005 (B) 0.25

(C) 0.50 (D) 1.00

M.Sc. Environmental Science/A

1. In Earth's crust, the second most abundant element is :
   (A) Aluminium (B) Calcium
   (C) Silicon (D) Magnesium

2. The texture of an igneous rock :
   (A) determines the colour of the rock
   (B) is controlled by the chemistry of magma
   (C) refers to the shape of the rock body
   (D) records the rock's cooling history

3. Minimum years age of the earth is approximately :
   (A) 2×10^5 (B) 2×10^7
   (C) 2×10^2 (D) 2×10^9

4. The maximum and minimum discharges of the Jhelum river recorded near the Indo-Pak border are :

	Max. discharge		Minimum discharge
(A)	29600 m^3	&	112 m^3
(B)	28600 m^3	&	110 m^3
(C)	27500 m^3	&	105 m^3
(D)	26500 m^3	&	100 m^3

5. Which of the following is most convincing reason for increasing population growth in a country ?
   (A) high birth rate (B) low mortality rate
   (C) low population of old persons (D) high population of young people

6. Type of forest mainly found in India is :
   (A) subtropical deciduous (B) tropical moist deciduous
   (C) tropical deciduous (D) temperate deciduous

7. The maximum temperature reached when the coal is completely burnt in the theoretical amount of air, is called :

(A) fusion temperature
(B) calorific intensity
(C) ignition temperature
(D) none of the above

8. As per Directorate of Geology and Mining, the lignite deposits in J & K State are :

(A) about 85 million tons
(B) about 95 million tons
(C) about 100 million tons
(D) about 150 million tons

9. In earthquake prediction the most important factor is :

(A) magnetic property of rocks
(B) changes in electrical resistivity of the earth
(C) previous patterns and frequency of earthquakes
(D) anomalous behaviour of animals

10. Chernobyl disaster in erstwhile USSR occurred due to :

(A) entry of cooling water in reactor
(B) reactor meltdown resulting from loss of cooling
(C) failure in movement of control rods
(D) reaction of molten sodium with cooling water

11. Atmosphere consists of :

(A) Lithosphere + Hydrosphere
(B) Lithosphere + Stratosphere + Hydrosphere
(C) Troposphere + Stratosphere + Ionosphere
(D) None of the above

12. Climatology is a science of :

(A) edaphic factors
(B) topographic factors
(C) climatic factors
(D) biotic factors

13. A layer of the soil is made of :

(A) decaying litter (B) rocky matter

(C) soil mixed with organic matter (D) soil rich in inorganic matter

14. Alluvial soils are mostly found in which region ?

(A) Northern India (B) Eastern India

(C) Southern India (D) Gangetic planes

15. Soil erosion can be prevented by :

(A) restricted human activity (B) good plant cover

(C) checking movements of animals (D) wind screen alone

16. Deforestation has an alarming effect on :

(A) increase in grazing area

(B) sunlight

(C) weed control

(D) soil erosion or desertification of habitat

17. Amount of water a soil can hold against pull of gravity is called :

(A) field capacity (B) gravitational water

(C) storage water (D) hygroscopic water

18. Which of the following role is played by Copper in the human body ?

(A) it is an activator of insulin

(B) it is a part of electron transport chain

(C) it is an essential element of bones

(D) none of the above

19. The Phosphorus cycle is unusual in that it is entirely :

(A) within aquatic system (B) within terrestrial ecosystem

(C) sedimentary (D) gaseous

20. Fresh water needed for humans, animals and plants is provided only by :

(A) precipitation (B) oceans

(C) ground water (D) rain

21. In human body which component is the best indicator of Lead accumulation ?

(A) fatty tissues (B) bones

(C) brain (D) blood

22. Among drugs which one induces dreamy state of consciousness ?

(A) sedative (B) stimulant

(C) depressant (D) hallucinogen

23. Cell wall develops from :

(A) protoplast (B) environment

(C) nucleus (D) chromosomes

24. Plasma membrane is composed of :

(A) two layers of protein molecules and two layers of lipid molecules

(B) two layers of protein molecules and single layer of lipid molecules

(C) single layer of protein molecules and double layer of lipid molecules

(D) single layer of protein molecules and single layer of lipid molecules

25. Photosynthesis in C_4 plants is relatively less limited by atmospheric carbon dioxide level because :

(A) four carbon acids are the primary initial CO_2 fixation product

(B) the primary fixation of CO_2 is mediated via PEP carboxylase

(C) effective pumping of CO_2 into bundle sheath cell

(D) RUBISCO in C_4 plants has higher affinity for CO_2

26. Which is *not true* for Glycolysis ?

(A) end product is CO_2, H_2O (B) substrate level phosphorylation

(C) production of ATP (D) expenditure of ATP

27. A plant hormone is :

(A) an ion that alters turgor pressure

(B) a pigment that responds to environmental changes

(C) a chemical messenger that coordinates body cells

(D) a secondary metabolic compound

28. Gibberellins can promote seed germination because of their influence on :

(A) rate of cell division

(B) production of hydrolyzing enzymes

(C) synthesis of abscisic acid

(D) absorption of water through hard seed coat

29. The sequence of Origin of Life may be considered as :

(A) amino acids → protein → chlorophyll

(B) chlorophyll → starch → glycogen

(C) nucleic acid → amino acid → chlorophyll

(D) chlorophyll → nucleic acid → amino acid

30. In DNA :

(A) thymine pairs with guanine (B) adenine pairs with thymine

(C) adenosine pairs with thymidine (D) guanine pairs with cytosine

31. The transfer of genetic material from one bacteria cell to another bacterial cell with the help of a bacteriophage was discovered by Lederberg and Zinder. It is known as :

(A) mutation (B) transformation

(C) transduction (D) genetic transfer

32. Influenza is caused by :

(A) Mycobacterium (B) *Neisseria*

(C) Mxyovirus (D) *Rubeola*

33. An ecosystem resists change because it is in a state of :

(A) imbalance
(B) homeostasis
(C) storage of components
(D) deficiency of light

34. Primary succession, refers to the development of Communities on a :

(A) nearly exposed habitat with no record of earlier vegetation
(B) pond freshly filled with water after dry phase
(C) forest clearing after devastating fire
(D) freshly cleared crop field

35. Shallow lakes with abundant organic matter are :

(A) Saprophytic
(B) Oligotrophic
(C) Eutrophic
(D) Heterotrophic

36. Population of ferocious red ant is kept under check by :

(A) Rufus wood pecker
(B) Red billed ox pecker
(C) Yellow billed ox pecker
(D) Sparrow

37. Which will not cause atmospheric pollution ?

(A) SO_2
(B) CO_2
(C) Co
(D) H_2

38. The main cause of water pollution is :

(A) soap
(B) industrial effulents
(C) smoke
(D) ammonia

39. Which city has most arsenic pollution ?

(A) Delhi
(B) Kolkata
(C) Ahmedabad
(D) Maharashtra

40. Noise pollution is measured in :

(A) hertz
(B) fathoms
(C) nanometers
(D) decibles

41. Pesticide ingredient which killed 2500 people in Bhopal gas tragedy in 1984 was :

(A) Mustard gas (B) DDT

(C) Methyl isocynate (D) Carbon tetrachloride

42. Among the following which one is the best method for treating sewage sludge ?

(A) Aerobic digestion (B) Anaerobic digestion

(C) Incineration (D) Psiculture

43. The problem of wastage management is becoming complicated day by day due to :

(A) obsolete techniques employed for waste management

(B) large population

(C) insanitary methods adopted for disposal of solid wastes

(D) all the above

44. Sewage water can be purified for recycling with the action of :

(A) Micro-organisms (B) Penicillin

(C) Fishes (D) Aquatic plants

45. Which type of fossil fuel power plant has maximum electrical efficiency ?

(A) Steam turbine (B) Gas turbine

(C) Combined-cycle gas turbine (D) Fluidized bed combustion

46. Rangeland is used for :

(A) shooting wild life (B) rearing domestic stock

(C) protecting wild life (D) cultivating grains

47. Forests – their management and conservation is connected with :

(A) Apiculture (B) Agriculture

(C) Sericulture (D) Silviculture

48. Eco-friendly method is :

(A) use of CNG in automobiles (B) energy plantation

(C) both (A) and (B) (D) plantation of C_3 plants

49. Which of the following organisms is useful in degrading organic pollutants ?

(A) *Nitrosomonas* (B) *Chlamydia*

(C) Actinomycetes (D) *Pseudomonas*

50. Microbe which is harmful and enters the human body to cause disease, is called :

(A) Saprophyte (B) Symbiont

(C) Pathogen (D) Commensal

51. According to 2000 IUCN, Red List, how may plant and animal species are threatened ?

(A) 5485 plant species and 5611 animals

(B) 5611 plant species and 5485 animals

(C) 5738 plant species and 5738 animals

(D) 1237 plant species and 11046 animals

52. Which is correct for threatened (T) species ?

(A) it is an endangered species like Rhino, Asiatic Lion, which is in danger of extinction

(B) it is rare species like wild Asiatic Ass with small population in certain geographical areas

(C) it is a vulnerable species like musk deer, black buck which is likely to move into endangered category in near future

(D) it is a species to be conserved to avoid its becoming rare, endangered or vulnerable species.

53. Ozone layer is present in :

(A) Stratosphere (B) Troposphere

(C) Ionosphere (D) Mesosphere

54. Smog is :

(A) smoke (B) moistened air gases

(C) other name of dust storm (D) smoke and fog

55. Amendments to the Montreal Protocol were undertaken in 1990 at :

(A) Paris (B) London

(C) Tokyo (D) Amsterdam

56. Objectives and guiding principles of environmental education were first formulated in 1977 at which place ?

(A) Stockholm (B) Tbilisi

(C) Rio-de Janeiro (D) New Delhi

57. In an unbalanced or skewed distribution, which measure of Central tendency is least biased ?

(A) Mean (B) Median

(C) Mode (D) Range

58. Which statistical device helps in analyzing the covariation of two or more variables ?

(A) Regression (B) Median

(C) Standard deviation (D) Correlation

59. Product moment coefficient of correlation, measures which particular type of relationship between two variables ?

(A) Linear (B) Curvilinear

(C) Parabolic (D) Circular

60. Which of the following is probability sampling ?

(A) Purposive sampling (B) Snowball sampling

(C) Cluster sampling (D) Dimensional sampling

Environmental Science

1. When first formed, some 4.5 billion years ago, the early earth was very hot. Its surface temperature was :
   (a) 1,000 – 1,200°C (b) 3,500 – 4,000°C
   (c) 5,000 – 6,000°C (d) 8,000 – 10,000°C

2. The thickness of earth's core is :
   (a) 2883 Km (b) 3295 Km
   (c) 3475 Km (d) 6370 Km

3. The essential constituent of igneous rock is :
   (a) Carbon (b) Calcium
   (c) Magnesium (d) Silica

4. Of which river system does the Teesta form a part ?
   (a) Ganga (b) Indus
   (c) Brahamputra (d) Godavari

5. Which are the factors leading to the development of nucleated settlements ?
   I. Universal availability of rainfall
   II. Rough terrain
   III. Danger to life and property
   IV. Plain topography
   (a) I and IV (b) I, II and IV
   (c) II, III and IV (d) III and IV

6. In which type of forests would you find the pine spruce, redwood, fir and larch ?
   (a) Rain forest (b) Savannah
   (c) Deciduous (d) Coniferous

7. Copper–gold–iron–coal are connected with :
   (a) Kolar - Kundermaukh - Khetri - Jaharia
   (b) Khetri - Kolar - Kundermaukh - Jaharia
   (c) Kundermaukh - Kolar - Khetri - Jaharia
   (d) Kolar - Khetri - Jaharia - Kundermaukh

8. Which area in J&K does contain limestone ?

(a) Doda (b) Kupwara

(c) Kargil (d) Poonch

9. The diameter of tropical cyclones is about :

(a) 75 to 100 miles (b) 100 to 300 miles

(c) 350 to 550 miles (d) None of the above

10. Major pollutant behind the Bhopal Gas Tragedy was :

(a) Methyl purporate (b) Methyl cyanide

(c) Methyl isoformate (d) Methyl isocyanate

11. The atmosphere is held to the earth by the gravitational pull. 95% of earth's atmosphere lies within _____ from the surface of earth :

(a) 15 km (b) 20 km

(c) 25 km (d) 30 km

12. Which of the following is *must* to determine the climate ?

(a) Distance of earth from the sun

(b) Movement of earth around the sun

(c) Geometry of the earth-atmosphere system

(d) None of the above

13. The pedogenic regime of calcification is commonly associated with :

(a) Hot and humid areas (b) Cool and temperate areas

(c) Mid-latitude steep lands (d) Coastal areas

14. Geographically, mature soils of Peninsular India include mainly :

(a) Alluvial soils and red soils

(b) Black soils and alluvial soils

(c) Lateritic soils and alluvial soils

(d) Red soils, black soils and lateritic soils

15. Which country loses highest among of top soils from its crop lands due to erosion ?

(a) India (b) Brazil

(c) China (d) USA

16. The most important factor for desertification is :

(a) Wind erosion (b) Over grazing

(c) Water erosion (d) Deforestation

17. Fluidicity of water is maintained by :

(a) Rapid formation and dissociation of hydrogen bonds between water molecules

(b) Delayed formation and dissociation of hydrogen bonds between water molecules

(c) Greater electronegativity of oxygen than hydrogen

(d) All the above

18. Little leaf/leaf rosetting is deficiency disease of :

(a) Zn (b) Mn

(c) Fe (d) B

19. Which biogeochemical cycle does not necessarily have to involve decomposers ?

(a) Carbon (b) Nitrogen

(c) Phosphorus (d) None of the above

20. How much solar energy is required to run the hydrological cycle in nature ?

(a) 6.0×10^{20} KJ yr^{-1} (b) 7.1×10^{20} KJ yr^{-1}

(c) 8.2×10^{20} KJ yr^{-1} (d) 9.3×10^{20} KJ yr^{-1}

21. In human body which tissue is best indicator of lead accumulation ?

(a) Fatty tissues (b) Bones

(c) Brain (d) Blood

22. Aspirin is the name of organic compound :

(a) Hydroxy benzoic acid
(b) Acetyl salicylic acid
(c) Phenyl salicylate
(d) Ethyl salicylate

23. Synthetic polymer which resembles natural rubber is :

(a) Chloroprene
(b) Glyptal
(c) Neoprene
(d) None of the above

24. A vitamin that contains both nitrogen and sulphur is :

(a) Vitamin A
(b) Vitamin B_1
(c) Vitamin B_{12}
(d) Vitamin C

25. Emersion effect is related to :

(a) Decrease in photosynthesis in presence of high light intensity
(b) Decrease in photosynthesis when lights of two different wavelengths are provided together
(c) Increase in photosynthesis in presence of monochromatic light
(d) Increase in photosynthesis when lights of two different wavelengths are produced together

26. Substrate phosphorylation occurs during :

(a) Fumaric acid $\rightarrow$ Malic acid
(b) Oxalo succinic acid $\rightarrow$ α-Ketoglutaric acid
(c) Succinic acid $\rightarrow$ Fumaric acid
(d) α-Ketoglutaric acid $\rightarrow$ Succinic acid

27. Cytokinins are mostly produced in :

(a) Shoot apex
(b) Root apex
(c) Young leaves
(d) Lateral buds

28. The seeds of tomato cannot germinate in the presence of light and hence are known as :

(a) Negatively photoblastic
(b) Non photoblastic
(c) Light sensitive seeds
(d) Photoblastic

29. At the time of origin of life, the surface temperature of earth was :

(a) 90 – 100°C (b) 50 – 60°C

(c) 35 – 40°C (d) 10 – 15°C

30. Termination of polypeptide chain is brought about by :

(a) UUG, UAG and UCG (b) UAA, UAG and UGA

(c) UUG, UGC and UCA (d) UCG, GCG and ACC

31. Two bacteria most useful in Genetic Engineering are :

(a) *Escherichia* and *Agrobacterium* (b) *Rhizobium* and *Azotobacter*

(c) *Nitrosomonas* and *Klebsiella* (d) *Rhizobium* and *Diplococcus*

32. Which of the following diseases are caused by pathogenic protozoa ?

I. Coccidiosis II. Babesiosis

III. Snoring disease IV. Johne's disease

(a) I and II (b) I, II and IV

(c) II and IV (d) I, II and III

33. In detritus food chain, transfer of food is :

(a) Detrite (dead organic matter) → Detrivores → Decomposers

(b) Detrite → Microbes → Detrivores → Decomposers

(c) Detrivores → Organic matter → Microbes → Decomposers

(d) Grass → Detrivores → Decomposers

34. The climax community is characterized by a relation of production (P) and respiration (R) :

(a) P = R (b) P < R

(c) P > R (d) All the above

35. On the basis of trophic status Dal lake can be categorized as :

(a) Mesotrophic (b) Oligotrophic

(c) Eutrophic (d) Hypertrophic

36. Mammals like aye-aye and jumping hares are found in :

(a) Palaeartic region (b) Oriental region

(c) Ethopian region (d) Neoarctic region

37. Lichens, bioindicators of air quality, are extremely sensitive to two common atmospheric pollutants :

(a) NO_2 and SO_2 (b) O_3 and SO_2

(c) CO_2 and NO_2 (d) O_3 and NO_2

38. What minerals are found in the runoff from agricultural land and treated and untreated sewage effluents, which are highly responsible for eutrophication of water bodies ?

(a) Phosphorus and carbon (b) Potassium and arsenic

(c) Nitrogen and phosphorus (d) Sodium, calcium and magnesium

39. Biodegradable plastics contain :

(a) Poly hydroxy butyrate (b) Cross linked glycols

(c) Straight glycols (d) Biodegradable cellulose

40. Sound becomes hazardous noise pollution at level :

(a) Above 30 dB (b) Above 80 dB

(c) Above 100 dB (d) Above 120 dB

41. Which pesticide is a herbicide ?

(a) Malathion (b) Lindane

(c) BHC (d) 2,4–D

42. Which one of the disease is water borne ?

(a) Hydrophobia (b) Malaria

(c) Cholera (d) Yellow fever

43. The cardinal principle in waste management is :

(a) Reduction, reuse and recycle (b) Effective management

(c) Use of latest technique (d) Collection of solid waste

44. Sewage treatment in which a portion of decomposer bacteria present in wastewater is recycled in the beginning of the process :

(a) Cyclic treatment
(b) Activated sludge treatment
(c) Primary treatment
(d) Tertiary treatment

45. Domestic cooking gas consists mostly of :

(a) Methane and ethane
(b) Ethylene and carbon monoxide
(c) Butane and isobutane
(d) Acetylene and hydrogen

46. Which of the high altitude plants of J&K state are included in Guiness Book of World Records ?

(a) *Picrorhiza kurrooa and Taxus wallichiana*
(b) *Stellaria decumbens and Taxua wallichiana*
(c) *Christolea himalayensis and Picrorhiza kurrooa*
(d) *Arenaria bryophylla and Christolea himalayensis*

47. An example for *In-situ* biological conservation method is to establish :

(a) Seed banks
(b) Botanical gardens
(c) Zoos
(d) Biosphere reserves

48. Which among the following is generally the best way to extract energy from biomass having a high moisture content ?

(a) Gasification
(b) Pyrolysis
(c) Anaerobic digestion
(d) Hydrolysis and distillation

49. Which of the following plants yield cardiac stimulant and tonic ?

(a) *Rauwolfia*
(b) *Aconitum*
(c) *Digitalis*
(d) *Dioscorea*

50. In nitrogen cycle *Nitrosomonas* converts :

(a) Ammonia into nitrates
(b) Ammonia into nitrites
(c) Nitrites into nitrates
(d) Nitrates into N_2 gas

51. Which of the following species of rhinoceros is said to be most critically endangered species ?

(a) Indian one-horned rhino
(b) Javan rhino
(c) African black rhino
(d) Sumatran rhino

52. In India, where one can find Siberian Crane (*Grus leucogeranus*) ?

(a) Hokarsar wetland, Kashmir, J&K
(b) Sultanpur Lake Bird Sanctuary, Haryana
(c) Keolado National Park, Bharatpur, Rajasthan
(d) Chilka Lake Bird Sanctuary, Orissa

53. Among the following ozone depleting potential is maximum in case of :

(a) Halon 1301
(b) $HCFC_{22}$
(c) CFC_{115}
(d) CFC_{12}

54. Photochemical smog consists of :

(a) O_3, SO_x and hydrocarbons
(b) O_3, PAN and NO_x
(c) SO_2, CO_2 and hydrocarbons
(d) SO_2, PAN and smoke

55. Match list I and list II and select the correct answer using codes given below the lists :

(A) Ozone depletion
(B) CO_2 reduction
(C) Sustainable development
(D) Hazardous waste

(I) Basel convention
(II) Kyoto protocol
(III) Rio-summit
(IV) Montreal protocol

CODE :

	A	B	C	D
(a)	I	IV	III	II
(b)	IV	II	III	I
(c)	II	III	IV	I
(d)	IV	III	II	I

56. The fourth international conference on environmental education was held at_____ in_____

(a) Jaipur in 1987
(b) Tiblisi in 1997
(c) Ahmedabad in 2007
(d) Delhi in 2008

57. The formula 3x Median –2x Mean is used to find :

(a) Mode
(b) Median
(c) Arithmetic mean
(d) Geometric mean

58. The relationship between standard deviation (SD) and variance is :

(a) $SD = -\sqrt{Variance}$
(b) $SD = +\sqrt{Variance}$
(c) $SD = -(Variance)^2$
(d) $Variance = \sqrt{SD}$

59. Which statistical device helps in analyzing the covariation of two or more variables ?

(a) Regression
(b) Median
(c) Standard deviation
(d) Correlation

60. There are n persons ($n \geq 3$) among whom are A and B, who are made to stand in a row in random order. Probability that there is exactly one person between A and B is :

(a) $\frac{n-2}{n(n-1)}$
(b) $\frac{2(n-2)}{n(n-1)}$
(c) $\frac{2}{n^2}$
(d) $\frac{n(n-1)(n-2)}{2}$

Environmental Science - 2010

1. It appears that Laplace's nebular hypothesis is just the modified version of :
   (a) Chamberlin's hypothesis (b) James Jeans Hypothesis
   (c) Russell's hypothesis (d) None of these

2. Which type of soil is ideal for growing cotton ?
   (a) Alluvial soil (b) Red soil
   (c) Laterite soil (d) Regur soil

3. In which fashion wind moves soil particles having size 0.1-0.5mm ?
   (a) Hopping (b) Rolling
   (c) Both (a) & (b) (d) None of these

4. Which type of rock is Gneiss ?
   (a) Sedimentary (b) Igneous
   (c) Metamorphic (d) Any of these

5. Chenab originates from the confluence of river/s :
   (a) The Chandra (b) The Bhaga
   (c) Both (a) & (b) (d) The Bhaga and the Satluj

6. Specific aspect/s of the environmental change affected by population dynamic is/ are :
   (a) Climate change (b) Land use change
   (c) Both (a) & (b) (d) None of these

7. In nature Graphite occurs in the form of :
   (a) Vein (b) Dissemination
   (c) Amorphous (d) All of these

8. In J&K zinc is found at :
   (a) Rampur (b) Buniyar
   (c) Uri (d) Karnah

9. Which of the following have the potential to generate Tsunami ?
   (a) Earthquakes (b) Landslides
   (c) Volcanic eruptions (d) All of these

10. Chernobyl accident released how many curies of radioactivity ?
    (a) 10-25 million curie (b) 25-50 million curie
    (c) 50-100 million curie (d) 100-150 million curie

11. Which layer of atmosphere protects the earth from meteoroids ?
    (a) Mesosphere (b) Stratosphere
    (c) Troposphere (d) Thermosphere

12. The rocks of the crust fall into which two major categories ?
    (a) Mafic and Basalt (b) Granite and Felsic
    (c) Sial and Sima (d) None of these

13. Different soil horizons are in :
    (a) direct contact with their immediate neighbours
    (b) indirect contact with their immediate neighbours
    (c) Either (a) or (b)
    (d) None of these

14. As per Green indicators 2004, GWI denotes :
    (a) Green World Index (b) Green World Indicator
    (c) Green Wealth Indicator (d) Green Wealth Index

15. Desertification is :
    (a) Developmental problem (b) Environmental problem
    (c) Both (a) & (b) (d) None of these

16. Typical Indian climate is represented by :
    (a) Tropical zone (b) Sub tropical zone
    (c) Arid zone (d) Alpine zone

17. Which one of the following is the incorrect statement ?
    (a) Alkalinity refers to buffering
    (b) General hardness measures the cations
    (c) Carbonate hardness measures the sulphates and other anions
    (d) All fresh water sources contain calcium and magnesium

18. Which one is not a trace element ?
    (a) Mn (b) Mg
    (c) Zn (d) Cu

19. PVC is generally referred as :
    (a) Homopolymer (b) Co-polymer
    (c) Monomer (d) None of these

20. Tryptophan is involved in the formation of :
    (a) Auxin (IAA) in plants (b) Nicotinamide (vitamin B_3) in animals
    (c) Both (a) & (b) (d) None of these

21. The reservoir pool of gaseous cycles of matter is :
    (a) Lithosphere (b) Atmosphere
    (c) Hydrosphere (d) Both (b) & (c)

22. Water cycle is made up of 2 overlapping cycles, which are :
    (a) Ground water and atmospheric water cycles
    (b) Surface water and atmospheric water cycles
    (c) Larger global and smaller local water cycles
    (d) Oceanic fresh water cycles

23. Fragile bone may result due to toxicity of :
    (a) Cd (b) Pb
    (c) Hg (d) None of these

24. Paracetamol can be taken by a person :
    (a) Using anti-coagulants (b) Allergic to aspirin
    (c) Both (a) & (b) (d) None of these

25. Which of the following compounds had very important role in pre-biotic evolution ?
    (a) NO (b) SO_3
    (c) SO_2 (d) CH_4

26. In pure state chlorophyll b is :
    (a) Bluish green (b) Olive green
    (c) Yellowish green (d) Any of these

27. Stress hormone is :
(a) Gibberellic acid (b) Abscisic acid
(c) Auxin (d) Cytokinin

28. Which one of the following has no effect on seed dormancy ?
(a) Auxins (b) Cytokinins
(c) Gibberellins (d) Abscisic acid

29. Maximum energy is liberated on respiratory breakdown of :
(a) Proteins (b) Carbohydrates
(c) Fats (d) Nucleic acids

30. Which form of DNA occurs under physiological conditions of cells ?
(a) A-DNA (b) B-DNA
(c) C-DNA (d) D-DNA

31. The first genetically engineered human insulin (Humulin) was launched by an American company on :
(a) 5th July 1983 (b) 5th July 1993
(c) 15th June 1985 (d) None of these

32. Which of following statements is incorrect ?
(a) The first order consumers in the fresh water pond include larva of may-fly and dragon-fly
(b) Floating populations of plankton are present in high reaches of perennial rivers
(c) Eutrophic lakes are relatively shallow lakes
(d) Smabar lake of Rajasthan contains saline or brackish water

33. Which of the groups represent rooted submerged stage of hydrosere ?
(a) *Typha, Fragmites and Sagittaria*
(b) *Carex, Juncus and Eleocharis*
(c) *Hydrilla, Elodea and Utricularia*
(d) *Lemna, Azolla and Wolffia*

34. Important edible fresh water fishes of India are :
(a) *Hilsa, Salmon, Eel* (b) *Sardine, Pomphret*
(c) *Labeo, Calbasu, Catla* (d) *All of these*

35. The burn in pine seedling is caused by pollutant :
(a) SO_2 (b) PAN
(c) NO (d) None of these

36. Presence of diatoms in water is an indication of :
(a) Pollution by sewage (b) Adequate oxygen in water
(c) Petroleum deposits (d) All of these

37. A lake which has no significant outflow, either through rivers or underground diffusion is called ?
(a) Meromictic lake (b) Crater lake
(c) Oxbow lake (d) Endorheic lake

38. Filtration over activated carbon removes :
(a) Residual suspended matter (b) Residual toxins
(c) Biofilms (d) All of these

39. Bioindicator of soil pesticide is :
(a) Actinomycetes (b) Yeasts
(c) Cyanobacteria (d) Filamentous fungi

40. In India, on an average, what percentage of municipal solid waste generated can be recycled ?
(a) 5-10 % (b) 20-25%
(c) 30-35% (d) 40-50%

41. World Forest Day is celebrated on :
(a) March 21 (b) April 22
(c) May 17 (d) October 2

42. Which of the following water-borne disease usually provides protection against a second attack ?
(a) Infectious Hepatitis (A) (b) Cholera
(c) Amoebiasis (d) None of these

43. Parathion is a/an :
(a) Organochlorine (b) Organophosphate
(c) Carbamate (d) None of these

44. Noise affects :
    (a) Eye sight, colour perception, night vision
    (b) Heart rate, blood pressure, work performance
    (c) Hearing, sleep, conversation
    (d) All of these

45. Which one is not a grade of coal ?
    (a) Racid
    (b) Anthracite
    (c) Bituminous
    (d) Lignite

46. Hand made papers :
    (a) Reduce pollution
    (b) Help in saving trees
    (c) Provide solution of unemployment
    (d) All of these

47. Dachigam has been declared as National Park in the year :
    (a) 1981
    (b) 1983
    (c) 1985
    (d) 1986

48. Which one of the following groups is not listed as endangered or rare plant species in Red Data Book ?
    (a) *Abies delavayi, Acanthephippium, Aconitum*
    (b) *Adinandra, Aglaia, Amblyanthus, Vanda*
    (c) *Populus, Potameia, Psilotum, Rheum*
    (d) *Hordeum vulgare, Secale cereal, Sorghum vulgare, Eleucine coracana*

49. In order to control malaria, offensive measures can be taken against :
    (a) Malaria
    (b) Malarial parasites
    (c) Both (a) & (b)
    (d) None of these

50. Which of the following is not included in IUCN Red list category ?
    (a) Least concern
    (b) Extinct in the wild
    (c) Lower risk
    (d) High concern

51. The Oriental and Australian regions are separated from each other by an imaginary line called :
    (a) Lombok's line
    (b) Bali's line
    (c) Wallace's line
    (d) None of these

52. Inside the root nodule the Rhizobia change their form to cells called :
    (a) Rhizomoids (b) Rhizoides
    (c) Bacteroids (d) Bacteriomoids

53. Ozone hole was first discovered by :
    (a) J E Farman (b) I E Fosterman
    (c) TJ Rogerman (d) None of these

54. Smog arises by the interaction of :
    (a) Hydrocarbons and sulphur dioxide
    (b) Hydrocarbons and nitrogen oxide
    (c) Sulphur dioxide and nitrogen oxide
    (d) All of these

55. Which one was not among the basic conspicuous issues discussed during Earth Summit ?
    (a) Greenhouse gas emission (b) Forests
    (c) Population (d) NGOs

56. Internationally, environmental education gained recognition when the UN conference was held in 1972 at ?
    (a) Sweden (b) Turkey
    (c) Brazil (d) Iran

57. Which one of the following statements is incorrect ?
    (a) The value of median is influenced by abnormally large or small values
    (b) The arithmetic mean does not get affected by the fluctuations of the sampling
    (c) Arithmetic explanation of median is not possible
    (d) Mode is rarely used for medical and higher biological scientific calculations

58. Mean values of Hb% of 20 males and 20 females were calculated as 13.5 and 14 mg/100ml with SD as 3 and 4 respectively. The co-efficient of variation of both males and females will be :
    (a) Males 20.20% & females 25.50%
    (b) Males 22.22% & females 28.57%
    (c) Males 24.50% & females 30.57%
    (d) Males 28.27 % & females 34.20%

59. The reason of relationship between two variables is clearly indicated in :

(a) Correlation analysis (b) Regression analysis

(c) Both (a) & (b) (d) None of these

60. A bag contains 3 red, 6 white and 7 blue balls. What is the probability that two balls drawn are white and blue ?

(a) 16/3 (b) 7/20

(c) 3/21 (d) 3/16

ENVIRONMENTAL SCIENCE

1. The second stage of evolution of different components of earth as described by Chamberlain denotes :
   (a) the period of planetesimal accession
   (b) the actual geological period
   (c) the period of dominant vulcanism
   (d) none of the above
2. Which one of the following *does not* pertain to scientific concept in the origin of solar system and earth ?
   (a) dihybrid concept
   (b) trihybrid concept
   (c) monistic concept
   (d) dualistic concept
3. Laterite soils are composed of :
   (a) little clay and much gravel of red sand stones
   (b) organic material, much clay and iron
   (c) large proportion of decomposed mineral grains
   (d) none of the above
4. Regur soils occur mainly in :
   (a) Maharashtra, Western Madhya Pradesh and Gujarat
   (b) Tamil Nadu, Karnataka and Andhra Pradesh
   (c) Orissa, Jharkhand and Andhra Pradesh
   (d) None of the above
5. Soil erosion is a serious problem in :
   (a) hills
   (b) arid areas
   (c) semi-arid areas
   (d) all of the above

6. Soil erosion has been called as creeping death of soil by :

(a) Raw

(b) Burges

(c) van der Drift

(d) Rama Rao

7. Exfoliation weathering is also known as :

(a) spalling

(b) sheeting

(c) onion weathering

(d) isolation weathering

8. The frequency of rock falls depends on :

(a) aridity humidity factor

(b) lithological and structural characteristics of rock

(c) both (a) and (b)

(d) none of the above

9. Which one of the following statements is *not* correct ?

(a) Himalayan rivers perform intense erosional activity

(b) Himalayan rivers are perennial

(c) Himalayan rivers flow through shallow valleys

(d) Himalayan rivers have made spectacular gorges

10. The drainage basin of river Krishna is shared by :

(a) Maharashtra, Karnataka and Andhara Pradesh

(b) Kerala, Karnataka and Tamil Nadu

(c) Maharashtra, Gujarat and Madhya Pradesh

(d) Maharashtra, Orissa and Jharkhand

11. Population growth rate by 1990's was decreasing in most of the countries and the decline was greatest in :

(a) India

(b) China

(c) Indonesia

(d) USA

12. Over population is a situation when :

(a) there is a large size of population

(b) resources are few

(c) resources are too few for the size of the population

(d) population in a country grows rapidly

13. In India the total in-situ reserves of Bauxite as on 1st, April 2000 are :

(a) 1075 million tonnes

(b) 2050 million tonnes

(c) 3075 million tonnes

(d) 4050 million tonnes

14. Koyna hydro power project is in :

(a) Maharashtra

(b) Tamil Nadu

(c) Karnataka

(d) Kerala

15. Occurrence of dry Gas has been reported in Kashmir Division by :

(a) Oil and Natural Gas Commission

(b) Natural Gas Commission

(c) Commission for Natural Gas and Oil

(d) Oil and Natural Gas Committee

16. In Kashmir Division galena deposits have been reported from :

(a) Sumbhar [Anantnag]

(b) Lashtial [Baramula]

(c) Wuyan [Srinagar]

(d) None of the above

17. When two solutions differ from each other by 1 pH unit it means that one solution has :

(a) 5 times the hydrogen ion concentration of the other

(b) 10 times the hydrogen ion concentration of the other

(c) 50 times the hydrogen ion concentration of the other

(d) 100 times the hydrogen ion concentration of the other

18. In unpolluted region the pH of rain water is :

(a) 6.7

(b) 7.0

(c) 5.6

(d) 6.5

19. Iodine requirement for an adult human is :

(a) 50 µg

(b) 100 µg

(c) 150 µg

(d) 200 µg

20. Which of the following elements is *not* essential to all plants and animals ?

(a) Sulphur

(b) Zinc

(c) Copper

(d) Barium

21. Who received a Nobel prize for formulating a polymeric structure for rubber in 1953 ?

(a) Staudinger

(b) Strausberger

(c) Bohr

(d) Gibbs

22. Cellulose fibres :

(a) can be made to bent and twist

(b) do not stretch much

(c) both (a) and (b)

(d) none of the above

23. Steroids are a class of hormones made from :

(a) amino acids

(b) cholesterol

(c) proteins

(d) none of the above

24. A compound that *cannot* be synthesized by a given organism but is vital for its survival or health is :

(a) glycogen

(b) protein

(c) vitamin

(d) lactose

25. Frankia is associated with :

(a) nitrification

(b) denitrification

(c) nitrogen fixation

(d) ammonification

26. Sedimentary type of biogeochemical cycle is found in case of :

(a) nitrogen

(b) sulphur

(c) carbon

(d) oxygen

27. Hydrological cycle is driven by evaporative power of solar radiation which is approximately.....per cent of the total radiation reaching the outer atmosphere.

(a) 5

(b) 10

(c) 15

(d) 20

28. Large store of water in polar ice caps has :

(a) little effect on hydrological cycle

(b) great effect on hydrological cycle

(c) no effect on hydrological cycle

(d) none of the above

29. Clinical lead poisoning occurs when blood lead levels rise to :

(a) 25 µg/dl

(b) 40 µg/dl

(c) 60 µg/dl

(d) 80 µg/dl

30. To obtain the Eco mark the maximum concentration of lead in tea leaves [according to BIS] should be :

(a) <10 ppm

(b) <6.5 ppm

(c) <3.5 ppm

(d) <4.8 ppm

31. A useful drug that can cause severe errosive gastritis if taken with alcohol :

(a) paracetamol

(b) antihistamine

(c) aspirin

(d) none of the above

32. The antidote for paracetamol poisoning is :

(a) penicillamine

(b) deferrioxamine

(c) N-acetylcysteine

(d) none of the above

33. According to Cosmozoic theory, life originated from :

(a) spores of other planets

(b) non-living organic matter

(c) special creation

(d) none of the above

34. Hypothesis of Panspermia was propounded by :

(a) Preyer

(b) Ambarzumian

(c) Arrhenius

(d) Spallanzani

35. When amount of NADP available is low :

(a) only pigment system I is active

(b) only pigment system II is active

(c) both pigment systems [I and II] are active

(d) none of the above

36. High carbon dioxide consumption point is found in :

(a) C_3 plants

(b) C_4 plants

(c) CAM plants

(d) lichens

37. Rate of respiration increases :

(a) at high CO_2 concentration

(b) at very high temperature

(c) in well hydrated plants

(d) in intense light

38. For two molecules of glucose, glycolysis uses and produces ATP molecules :

(a) 4 and 8

(b) 2 and 4

(c) 2 and 8

(d) 2 and 2

39. Type I restriction enzymes are :

(a) non-specific in their cleavage

(b) specific in their cleavage

(c) suitable for gene manipulation

(d) none of the above

40. Pomato is a novel somatic hybrid formed by the fusion of protoplasts of :

(a) pea and tomato

(b) pea and potato

(c) tomato and potato

(d) carrot and potato

41. Gum is obtained from :

(a) *Acacia sapota*

(b) *Bosewallia serrata*

(c) *Sterculia urens*

(d) All of the above

42. Fish and sea fishes are rich sources of minerals especially :

(a) calcium

(b) potassium

(c) sodium

(d) magnesium

43. Ozone and PAN exert their biochemical effects by producing :

(a) carbonium

(b) free radicals

(c) H^+ ion

(d) Ozonides

44. Acrolein, an air pollutant is a type of :

(a) aldehyde

(b) ketone

(c) paraffin

(d) olefin

45. In oligotrophic lakes and water bodies, there is :

(a) excessive growth of algae

(b) depletion of dissolved oxygen

(c) nutrient enrichment

(d) none of the above

46. If too much organic matter is added to water, :

(a) all available oxygen will be used up

(b) fishes and other forms of aquatic life will die

(c) anaerobic bacteria will begin to breakdown the waste

(d) all of the above

47. Cork from oak tree is one of the best ecologically friendly resource as :

(a) cork is harvested by peeling layers of trees

(b) removing cork helps it grow better

(c) cork is not harvested by cutting down the trees

(d) none of the above

48. Wind power, a non-polluting energy, is used in :

(a) remote power

(b) hybrid system

(c) both (a) and (b)

(d) none of the above

49. In the mountains of South-west China the population of Giant Panda is as few as :

(a) 500

(b) 1000

(c) 1500

(d) 1800

50. According to Final Technical Report of National Biodiversity Strategy and Action Plan, India has lost :

(a) over 50 per cent of its forest cover and 40 per cent of its mangroves

(b) over 40 per cent of its forest cover and 50 per cent of its mangroves

(c) over 30 per cent of its forest cover and 70 per cent of its mangroves

(d) over 70 per cent of its forest cover and 30 per cent of its mangroves

51. The helminth parasite which inhabits the lymph vessels is :

(a) *Ascaris*

(b) *Wuchereria*

(c) *Enterobius*

(d) *Ancylostoma*

52. Pyorrhoea caused by *Entamoeba gingivalis* is transmitted by :

(a) flies

(b) kissing

(c) air

(d) mosquito bite

53. Madagascar and Mauritius are included in which zoogeographic region of the world ?

(a) Neotropical region

(b) Neoarctic region

(c) Ethiopian region

(d) Oriental region

54. Vertical distribution of life in aquatic habitats is referred to as :

(a) bathymetric distribution

(b) altitudinal distribution

(c) both (a) and (b)

(d) none of the above

55. 'Superbug' was created, to mop up all types of hydrocarbons in the oil, from different strains of :

(a) *Bacillus*

(b) *Pseudomonas*

(c) *Clostridium*

(d) *Azotobacter*

56. *Thiobacillus* bacteria can accumulate which metal, for reuse from waste waters and industrial sites ?

(a) copper

(b) silver

(c) aluminium

(d) none of the above

57. Square of standard deviation is termed as :

(a) variance

(b) quartiles

(c) percentiles

(d) root mean square deviation

58. The statistical method which helps us to estimate or predict the unknown value of one variable from the known value of the related variable is called :

(a) correlation

(b) scatter diagram

(c) regression

(d) dispersion

59. When a mean deviation is divided by the average used in finding out the mean deviation itself, the resulting quantity is described as the :

(a) coefficient of mean deviation

(b) coefficient of standard deviation

(c) coefficient of variance

(d) none of the above

60. Correlation studies can be represented by :

(a) scatter diagram

(b) correlation graph

(c) both (a) and (b)

(d) none of the above

ENVIRONMENTAL SCIENCE

1. The thickness of earth's core is

   (A) 2883 km

   (B) 2895 km

   (C) 3475 km

   (D) 6370 km

2. Which of the following groups of geological periods are included in Cenozoic era ?

   (A) Holocene, Oligocene, Pliocene and Miocene

   (B) Eocene, Oligocene, Miocene and Pliocene

   (C) Cretacious, Carboniferous, Cambrian and Devonian

   (D) Migocene, Eocene, Jurassic and Triassic

3. To which group does the black cotton soil of India belong ?

   (A) Laterite

   (B) Podozol

   (C) Chermozen

   (D) Alluvial

4. Laterization occurs in :

   (A) Warm, humid areas

   (B) Poorly drained areas

   (C) Cool temperate areas

   (D) Riverine tracts

5. Which country loses higher amount of top soil from its croplands due to erosion ?

   (A) Brazil

   (B) China

   (C) India

   (D) USA

6. Gully erosion have already degraded the land in India to the tune of :

(A) 10 lakh hectares

(B) 40 lakh hectares

(C) 70 lakh hectares

(D) 100 lakh hectares

7. The pedogenic regime of calcification is commonly associated with :

(A) Hot and humid areas

(B) Cool and temperate areas

(C) Mid latitude steep lands

(D) Coastal areas

8. The essential constituent of igneous rock is :

(A) Carbon

(B) Calcium

(C) Magnesium

(D) Silica

9. Which one of the longest dam in India ?

(A) Bhakra

(B) Damodar

(C) Hirakud

(D) Narmada

10. Of which river system does the Teesta form a part ?

(A) Ganga

(B) Brahmaputra

(C) Indus

(D) Godavari

11. The average density of population in India as per 2001 census was :

(A) 39 persons / km^2

(B) 117 persons / km^2

(C) 324 persons / km^2

(D) > 600 persons / km^2

12. Which are the factors leading to the development of nucleated settlements?

I Universal availability of rainfall

II Rough terrain

III Danger to life and property

IV Plain topography

(A) I and IV

(B) I, II and IV

(C) II, III and IV

(D) III and IV

13. Copper—gold—iron—coal are connected with

(A) Kolar—Kundremukh—Khetri—Jharia

(B) Khetri—Kolar—Kundermukh—Jharia

(C) Kundermukh—Kolar—Khetri—Jharia

(D) Kolar—Khetri—Jharia—Kundermukh

14. Hydropower derived from water, is one of the earliest sources of energy. Where was the first hydel plant set-up in 1897 in India?

(A) Shimla

(B) Dehra Dun

(C) Kullu

(D) Darjiling

15. Which area of the J&K State does not contain limestone ?

(A) Doda

(B) Kupwara

(C) Poonch

(D) Kargil

16. In Kashmir Valley the Kerawas (*Waduras*) better development in the :

(A) Northern region

(B) Southern region

(C) Eastern region

(D) Western region

17. Fluidicity of water is maintained by

(A) Delayed formation and dissociation of hydrogen bonds between water molecules.

(B) Rapid formation and dissociation of hydrogen bonds between water molecules

(C) Greater electronegativity of oxygen than hydrogen

(D) All the above

18. Dipole moment (degree of polarity) of water is :

(A) 0.90 debye

(B) 1.49 debye

(C) 1.64 debye

(D) 1.84 debye

19. Little leaf/leaf rosetting is a deficiency disease of :

(A) Fe (Iron)

(B) Mn (Manganese)

(C) Zn (Zinc)

(D) B (Boron)

20. Which of the following is *not* an essential micro-nutrient ?

(A) Boron

(B) Nickel

(C) Manganese

(D) Molybdenum

21. Synthetic polymer which resembles natural rubber is :

(A) Neoprene

(B) Chloroprene

(C) Glyptal

(D) None of the above

22. $F_2C = CF_2$ is a monomer of :

(A) Teflon

(B) Glyptal

(C) Nylon-6

(D) Buna-S

23. Sucrose is made up of :

(A) D-glucose + L-fructose

(B) D-glucose + D-fructose

(C) L-glucose + L-fructose

(D) L-fructose + L-glucose

24. The vitamin that contains nitrogen and sulphur is :

(A) Vitamin A

(B) Vitamin B_1

(C) Vitamin B_{12}

(D) Vitamin C

25. Which biogeochemical cycle does *not* necessarily have to involve decomposers

(A) Carbon

(B) Nitrogen

(C) Phosphorus

(D) None of the above

26. Nitrification is a process in which :

(A) Ammonia is converted into Nitrate

(B) Ammonia is converted into Nitrite

(C) Nitrite is converted into Ammonia

(D) Nitrate is converted into Ammonia

27. How much solar energy is required to run the hydrological cycle in nature ?

(A) 6.0×10^{20} KJ Yr^{-1}

(B) 7.1×10^{20} KJ Yr^{-1}

(C) 8.2×10^{20} KJ Yr^{-1}

(D) 9.3×10^{20} KJ Yr^{-1}

28. Water cycle is made up of two overlapping cycles. These are :

(A) Groundwater and atmospheric water cycle

(B) Surface water and atmospheric cycle

(C) Larger global and smaller local H_2O cycle

(D) Oceanic and freshwater cycles

29. Which part of human body is most affected by chronic lead toxicity ?

(A) Muscles and bones

(B) Nervous system

(C) Reproductive system

(D) Blood-vascular system

30. Which one of the following metals causes systematic poisoning in man ?

(A) Zinc

(B) Manganese

(C) Selenium

(D) Lead

31. Aspirin is an acetylation product of :

(A) *o*-hydroxyl benzoic acid

(B) *o*-dihydroxy benzene

(C) *m*-hydroxyl benzoic acid

(D) *p*-dihydroxy benzene

32. Which of the following is non-narcotic analgesic drug ?

(A) Aspirin

(B) Phenyl-butazone

(C) Both (A) and (B)

(D) Paracetamol

33. Organic compounds first evolved on earth and required for origin of life were :

(A) Urea and amino acids

(B) Proteins and nucleic acids

(C) Proteins and amino acids

(D) Urea and nucleic acids

34. Eukaryotes developed around :

(A) 1.6 billion years ago

(B) 2.0 billion years ago

(C) 2.5 billion years ago

(D) 2.8 billion years ago

35. Emersion effect is related to

(A) Decrease in photosynthesis in presence of high light intensity

(B) Decrease in photosynthesis when lights of two different wavelengths are provided together

(C) Increase in photosynthesis in presence of monochromatic light

(D) Increase in photosynthesis when lights of two different wavelengths are provided together

36. Photophosphorylation is synthesis of :

(A) ADP from ATP

(B) Glucose 6-phosphate from glucose

(C) ATP from ADP

(D) $NADP^+$ from NAD^+

37. Connecting link between glucolysis and Krebs cycle is / before entering Krebs cycle pyravate is changed to :

(A) Oxaloacetate

(B) PEP

(C) Pyruvate

(D) Acetyl CoA

38. Substrate phosphorylation occurs during

(A) Fumaric acid → Malic acid

(B) Oxalo-succinic acid → α-ketoglutaric acid

(C) Succinic acid → fumaric acid

(D) α-ketoglutaric acid → Succinic acid

39. Widely used tool in genetic engineering of crop plants is :

(A) Protoplast fusion

(B) Transposon

(C) Microinjection

(D) Agrobacterium mediation

40. Restriction endonucleases (enzymes) are used in genetic engineering because they :

(A) can join DNA fragments

(B) cut DNA at specific base sequence

(C) cut DNA at variable sites

(D) are proteolytic enzymes which degrade harmful proteins

41. Which of the following cluster is purely useful animals to man :

(A) *Apis, Laccifera and Hirudanaria*

(B) *Naja, Heloderma and Python*

(C) *Apis, Bombyx and Cirrhina mirigala*

(D) *Bubalus bubalus, Panthera leo and Neptunus*

42. Which of the following plants yield cardiac stimulant and tonic :

(A) *Rauwolfia*

(B) *Aconitum*

(C) *Digitalis*

(D) *Dioscorea*

43. Lichens, bioindicators of air quality, are extremely sensitive to two common atmospheric pollutants

(A) NO_2 and SO_2

(B) O_3 and SO_2

(C) CO_2 and NO_2

(D) O_3 and NO_2

44. Photochemical smog consists of :

(A) O_3, SO_x and hydrocarbons

(B) O_3, PAN and NO_x

(C) SO_2, CO_2 and hydrocarbon

(D) SO_2, PAN and smoke

45. Which algal group is the best indicator of water pollution ?

(A) Cyanophyceae

(B) Chlorophyceae

(C) Baçillariophyceae

(D) Desmidaceae

46. Which minerals are found in the run-off from agricultural land and treated and untreated sewage effluents, which are highly responsible for eutrophication of water bodies ?

(A) Phosphorus and carbon

(B) Potassium and arsenic

(C) Nitrogen and phosphorus

(D) Sodium and calcium

47. Which among the following is generally the best way to extract energy from biomass having a high moisture content ?

(A) Gasification

(B) Pyrolysis

(C) Anaerobic digestion

(D) Hydrolysis and distillation

48. Least polluting energy generating technique among the following is :

(A) Magnetic hydrodynamics

(B) Thermal power

(C) Fission bases nuclear energy

(D) Photovoltaic

49. Which of the following species of rhinoceros is said to be most critically endangered species ?

(A) Indian one-horned rhino

(B) Javan rhino

(C) African black rhino

(D) Sumatran rhino

50. An example of *in situ* biological conservation method is to establish :

(A) Seed Banks

(B) Botanical gardens

(C) Zoos

(D) Biosphere reservoir

51. Which of the following diseases are caused by pathogenic protozoa

I Coccidiosis

II Babesiosis

III Snoring disease

IV Johne's disease

(A) I and II

(B) I, II and IV

(C) II and IV

(D) I, II and III

52. The helminth parasite of man which inhabits the lymph vessels and causes elephantiasis :

(A) Enterobius

(B) Ancyclostoma

(C) Wucheria

(D) Taenia

53. Mammals like aye-aye and jumping hares are found in :

(A) Palaearctic region

(B) Oriental region

(C) Ethopian region

(D) Neoarctic region

54. Which zoogeographical region is the largest :

(A) Oriental

(B) Neotropical

(C) Australian

(D) Palaearctic

55. The biodegradative ability of *Pseudomonas* is attributed to :

(A) Resistance to adverse conditions

(B) Presence of plasmids

(C) Presence of sialic acid in cell wall

(D) Presence of hydroxylose enzyme

56. Mycorrhiza helps in the uptake of which nutrient :

(A) Nitrate

(B) Potassium

(C) Phosphorus

(D) Molybdenum

57. The relationship between standard deviation and variance is :

(A) Standard Deviation = $-\sqrt{\text{Variance}}$

(B) Standard deviation = $+\sqrt{\text{Variance}}$

(C) Standard Deviation = $-$ (Variance)^2

(D) Variance = $\sqrt{\text{Standard Deviation}}$

58. Standard deviation expressed as a percentage of mean is called :

(A) Coefficient of variation

(B) Mean deviation

(C) Standard error

(D) None of the above

59. The value of probability is always :

(A) Less than 1

(B) Less than 0

(C) Greater than 1

(D) Between 0–1

60. The value of correlation coefficient between two variables lie between :

(A) 0 and α

(B) $-\alpha$ and $+\alpha$

(C) 0 and 1

(D) -1 and $+1$

ENVIRONMENTAL SCIENCE

1. Water coexists in all its three phases in equilibrium at a temperature of 273.16K at a pressure of :

   (A) 0.004 atm

   (B) 0.005 atm

   (C) 0.006 atm

   (D) 0.007 atm

2. Which radioactive substance is used for determining the age of organic material in the age group of 100 to 1,00,000 years ?

   (A) C^{14}

   (B) Rb^{87}

   (C) K^{40}

   (D) U^{238}

3. During which epoch of the tertiary period did the modern birds appear on the earth ?

   (A) Eocene

   (B) Palaeocene

   (C) Oligocene

   (D) Miocene

4. The effectiveness of water as a chemical weathering agent may be enhanced by :

   (A) local climate

   (B) chemical stability of the rock

   (C) both (A) and (B)

   (D) None of the above

5. More than half of the world human population occupies only about :

(A) 5% of the land

(B) 10% of the land

(C) 15% of the land

(D) 20% of the land

6. The iron catastrophe was a critical moment in the evolutionary history of earth when iron located in one of the following depths got liquefied. The depth was :

(A) Surface layer of the earth

(B) 100-400 km

(C) 200-500 km

(D) 400-800 km

7. Which of the following measures is used to tackle soil erosion by water as well as wind ?

(A) Netting

(B) Terracing

(C) Contour ploughing

(D) All of the above

8. On an average the residence time of water in atmosphere is :

(A) 2-4 days

(B) 8-10 days

(C) 4-6 days

(D) 6-7 days

9. In the context of human population, the number of persons per unit area of agricultural (arable) land available within a country is known as its :

(A) Arithmetic density

(B) Physiological density

(C) Agricultural density

(D) None of the above

10. Which one of the following is *not* a polyester ?

(A) Dacron

(B) Vycron

(C) Vycra

(D) All the three are polyesters

11. Bakelite is a condensation polymer of :

(A) Phenol and Formaldehyde

(B) Phenol and Acetaldehyde

(C) Formaldehyde and Benzoic acid

(D) Ethylene glycol and Formaldehyde

12. The total carbon content stored in the oceans is about 3197×10^{15} mol C. Of this major portion is in the form of :

(A) Soluble organic carbon

(B) Carbonates and bicarbonates

(C) Biomass

(D) All the components are of equal importance

13. Which of the following is *not* a polysaccharide ?

(A) Amylopectin

(B) Amylose

(C) Cellobiose

(D) All the above are polysaccharides

14. Fibrous proteins are *not* present in :

(A) Fibrinogen

(B) Myosin

(C) Collagen

(D) Keratin

15. Heating of C_6H_5ONa at about 400 K with CO_2 under pressure followed by acetylation results in the formation of :

(A) N-Acetyl-p-phenatidine

(B) N-Acetyl-p-aminophenol

(C) Phenyl salicylate

(D) Acetyl-salicylic acid

16. Which of the following heavy metals reacts directly with the red blood cell membrane, causing it to become fragile and more susceptible to hemolysis that may lead to anemia ?

(A) Cadmium

(B) Lead

(C) Chromium

(D) Nickel

17. Which of the following statements is/are true according to Plate Tectonics ?

(A) The outer portion of the earth, called lithosphere, is composed of large rigid units called plates

(B) The plates move in response to the flow of the heat-softened liquid outer core

(C) Both (A) and (B)

(D) None of the above

18. The contribution of the ground water resource of the world (which is approximately 7 million km^3) to the global hydrological cycle is about :

(A) 0.1%

(B) 0.5%

(C) 1.0%

(D) 1.2%

19. Dehydrogenation of isocitric acid results in the formation of oxalosuccinic acid and the latter on decarboxylation forms :

(A) Succinyl-CoA

(B) Succinic acid

(C) α-Ketoglutaric acid

(D) None of the above

20. Which of the following is used as an anti-inflammatory medicine ?

(A) Butazolidine

(B) Aspirin

(C) Both (A) and (B)

(D) None of the above

21. The adverse health effects caused by the ingestion or inhalation of cadmium include :

(A) Renal tubular dysfunction

(B) High blood pressure

(C) Both (A) and (B)

(D) None of the above

22. The largest reservoir within the phosphorus cycle is the earth's crust, where the total quantity of phosphorus stored (in 10^{15} mol P) is about :

(A) 6.78

(B) 3.78

(C) 1.78

(D) 9.78

23. Conversion of Citric acid to Isocitric acid through the sequence Citric Acid $\rightarrow$ cis-aconitic acid $\rightarrow$ Isocitric acid requires the enzyme :

(A) Isocitrate dehydrogenase

(B) Aconitase

(C) Aconitase followed by Isocitrate dehydrogenase

(D) Isocitrate dehydrogenase followed by Aconitase

24. Natural rubber is obtained from the plant :

(A) *Crotalaria juncea*

(B) *Hevea brasiliensis*

(C) Both (A) and (B)

(D) None of the above

25. Pushm (pashmina) wool is obtained from :

(A) *Moschus moschiferus*

(B) *Panthelops hodgsoni*

(C) *Ovis ammon*

(D) *Capra siberica*

26. Which one is the *correct* sequence of transformation of Fructose-6-phosphate during Blackman's reaction ?

(A) $\rightarrow$ Erythrose-4-phosphate $\rightarrow$ 1, 7-Sedoheptulose diPO_4 $\rightarrow$ Sedoheptulose-7-PO_4 $\rightarrow$ Ribose-5-PO_4

(B) $\rightarrow$ 1, 7-Sedoheptulose diPO_4 $\rightarrow$ Erythrose-4-phosphate $\rightarrow$ Sedoheptulose-7-PO_4 $\rightarrow$ Ribose-5-PO_4

(C) $\rightarrow$ 1, 7-Sedoheptulose diPO_4 $\rightarrow$ Sedoheptulose-7-PO_4 $\rightarrow$ Ribose-5-PO_4 $\rightarrow$ Erythrose-4-phosphate

(D) $\rightarrow$ Sedoheptulose-7-PO_4 $\rightarrow$ 1, 7-Sedoheptulose-diPO_4 $\rightarrow$ Ribose-5-PO_4 $\rightarrow$ Erythrose-4-phosphate

27. Which of the below mentioned plants is listed as endangered by the IUCN ?

(A) *Papaver somniferum*

(B) *Limum usitatessimum*

(C) *Aconitum heterophyllum*

(D) None of the above

28. Major soil types found in Maharashtra are :

(A) Black and alluvial

(B) Alluvial and laterite

(C) Black and red

(D) Red and alluvial

29. The light energy utilized by green plants for photosynthesis forms :

(A) Less than 10% of the total light incident on earth

(B) Less than 5% of the total light incident on earth

(C) Less than 2% of the total light incident on earth

(D) Less than 1% of the total light incident on earth

30. Buffer capacity of water is large in :

(A) Strongly acidic and strongly basic solution

(B) Strongly acid and weakly basic solution

(C) Weakly acidic and strongly basic solutions

(D) Solutions of intermediate pH

31. The unconsolidated products of mechanical and chemical weathering that cover almost all of the earth's land surface are called :

(A) Regolith

(B) Xenolith

(C) Lopolith

(D) Batholith

32. Soil erosion rates are highest in areas with :

(A) fine-grained soils and periodic intense rainfall

(B) steep slopes and periodic intense rainfall

(C) fine-grained soils, steep slopes and periodic intense rainfall

(D) None of the above

33. Which of the following rivers is connected with the Bay of Bengal ?

(A) Chambal

(B) Betwa

(C) Both (A) and (B)

(D) None of the above

34. The markhor, which has been designated as an endangered animal as per the Jammu and Kashmir Wildlife Act, is zoologically known as :

(A) *Capra capra*

(B) *Capra falconeri*

(C) *Capra siberica*

(D) *Procapra picticaudata*

35. Hirakud dam is associated with :

(A) Godavari river system

(B) Mahanadi river system

(C) Krishna river system

(D) Tapi river system

36. Coastal belt across India is mainly characterized by :

(A) Laterite soil

(B) Desert soil

(C) Alluvial soil

(D) Red soil

37. Majority of the trace elements are :

(A) *s*-block elements

(B) *d*-block elements

(C) Both (A) and (B)

(D) None of the above

38. For predicting the best value of X for given Y, we make use of :

(A) Regression equation of Y on X

(B) Regression equation of X on Y

(C) Means of X and Y series

(D) None of the above

39. The correlation coefficient between two variables is 0.8, then the coefficient of determination is :

(A) 0.64

(B) 0.89

(C) 0.80

(D) 1.00

40. Leh district is situated between the east longitudes of :

(A) 75° 45' and 85° 20'

(B) 70° 45' and 76° 20'

(C) 78° 45' and 86° 20'

(D) 75° 45' and 80° 20'

41. Slipped tendon disease (Perosis) in the chicken has been related with the deficiency of :

(A) Cobalt

(B) Manganese

(C) Mercury

(D) Cadmium

42. The main problem associated with the release of Nitrogen oxides into the stratosphere is the :

(A) production of acid rain

(B) production of photochemical smog

(C) depletion of ozone

(D) All of the three

43. Diarrhial diseases are infections of intestinal tract and are mainly caused by :

(A) *Salmonella* spp., *Treponema pollidum, Yersinia pestis* and *Shigella* spp.

(B) *E. coli, Vibrio cholerae, Salmonella* spp. and *Shigella* spp.

(C) *E. coli, Vibrio cholerae, Treponema pallidum* and *Yersinia pestis*

(D) *E. coli, Salmonella* spp., *Treponema pallidum* and *Yersinia pestis*

44. Most of the iron ore deposits in India are found in :

(A) Peninsular India

(B) Himalayan Belt

(C) Northern India

(D) None of the above

45. The first bioherbicide developed in 1981 for controlling the growth of milk weed was mycoherbicide based on the fungus :

(A) *Rhizopus nigricans*

(B) *Puccinia recondita*

(C) *Phytophthora palmivora*

(D) None of the above

46. Which of the following regions has Himalayan as well as Karakoram Mountain ranges ?

(A) Jammu

(B) Kashmir

(C) Ladakh

(D) None of the above

47. Which of the following microbes has been genetically engineered so as to use it for the production of human insulin, interferons, interleukin, etc. :

(A) *Escherichia coli*

(B) *Pseudomonas putida*

(C) *Rhizobium meliloti*

(D) *Pseudomonas fluorescence*

48. The product of two regression coefficients is :

(A) > 1

(B) 1

(C) < 1

(D) None of the above

49. The presence of *Escherichia coli* and/or *Aerobacter aerogenes* in a water body is an indication of the entry of :

(A) contaminated wastes from industrial units into it

(B) organic wastes from human settlements into it

(C) Both (A) and (B)

(D) None of the above

50. Weil's disease, is associated with :

(A) Air pollution

(B) Water pollution

(C) Both (A) and (B)

(D) None of the above

51. GGU and GGC codons code for the amino acid :

(A) Glutamic acid

(B) Glycine

(C) Alanine

(D) None of the above

52. Globally anthropogenic output of sulphur dioxide gas, produced mainly as a result of fossil fuel burning, accounts for :

(A) 1.6×10^{12} mol S a^{-1}

(B) 2.6×10^{12} mol S a^{-1}

(C) 3.6×10^{12} mol S a^{-1}

(D) None of the above

53. The fish *Neoceratodus* is a characteristic feature of which of the following zoogeographical realms ?

(A) African

(B) Australian

(C) Nearctic

(D) Neotropical

54. In a simultaneous throw of two dice, the probability of getting a total of 6 is :

(A) 2/36

(B) 3/36

(C) 4/36

(D) 5/36

55. *Alligator* is present in which of the following zoogeographical realms ?

(A) Palaearctic

(B) Nearctic

(C) Both (A) and (B)

(D) None of the above

56. Among the various types of coal the least carbon content is found in :

(A) Anthracite coal

(B) Bituminous coal

(C) Lignite coal

(D) Brown coal

57. Most commonly used green manure in India is :

(A) Cluster bean

(B) Berseem

(C) Both (A) and (B)

(D) None of the above

58. Human disease caused by protozoans includes :

(A) Trichomoniasis

(B) Meningitis

(C) Both (A) and (B)

(D) None of the above

59. Incubation period in case of malarial parasite, *Plasmodium vivax*, is :

(A) 2-4 days

(B) 10-17 days

(C) 30-40 days

(D) None of the above

60. Which of the following bacteria has been successfully used as a microbial insecticide ?

(A) *Bacillus thuringiensis*

(B) *Bacillus buschlii*

(C) *Beggiatoa mirabilis*

(D) *Bacillus coli*