Paper : **II**

Subject : **ENVIRONMENTAL SCIENCE**

Subject Code : **29**

Roll No. | | | | | | | | |

(Figures as per admission card)

OMR Sheet No. : _____

BOOKLET SERIAL NO.

Name & Signature of Invigilator/s

Signature : _____

Name : _____

Time : 2 Hours | Maximum Marks : 200

Number of Pages in this Booklet : **16** | Number of Questions in this Booklet : **100**

ಅಭ್ಯರ್ಥಿಗಳಿಗೆ ಸೂಚನೆಗಳು

1. ಈ ಪುಟದ ಮೇಲ್ತುದಿಯಲ್ಲಿ ಒದಗಿಸಿದ ಸ್ಥಳದಲ್ಲಿ ನಿಮ್ಮ ರೋಲ್ ನಂಬರನ್ನು ಬರೆಯಿರಿ.
2. ಈ ಪತ್ರಿಕೆಯು ಬಹು ಆಯ್ಕೆ ವಿಧದ ನೂರು (100) ಪ್ರಶ್ನೆಗಳನ್ನು ಒಳಗೊಂಡಿದೆ.
3. ಪರೀಕ್ಷೆಯ ಪ್ರಾರಂಭದಲ್ಲಿ, ಪ್ರಶ್ನೆ ಪುಸ್ತಿಕೆಯನ್ನು ನಿಮಗೆ ನೀಡಲಾಗುವುದು. ಮೊದಲ 5 ನಿಮಿಷಗಳಲ್ಲಿ ನೀವು ಪುಸ್ತಿಕೆಯನ್ನು ತೆರೆಯಲು ಮತ್ತು ಕೆಳಗಿನಂತೆ ಕಡ್ಡಾಯವಾಗಿ ಪರೀಕ್ಷಿಸಲು ಕೋರಲಾಗಿದೆ.
   (i) ಪ್ರಶ್ನೆಪುಸ್ತಿಕೆಗೆ ಪ್ರವೇಶಾವಕಾಶ ಪಡೆಯಲು, ಈ ಹೊದಿಕೆ ಪುಟದ ಅಂಚಿನ ಮೇಲಿರುವ ಪೇಪರ್ ಸೀಲನ್ನು ಹರಿಯಿರಿ. ಸ್ಟಿಕ್ಕರ್ ಸೀಲ್ ಇಲ್ಲದ ಅಥವಾ ತೆರೆದ ಪುಸ್ತಿಕೆಯನ್ನು ಸ್ವೀಕರಿಸಬೇಡಿ.
   (ii) **ಪುಸ್ತಿಕೆಯಲ್ಲಿನ ಪ್ರಶ್ನೆಗಳ ಸಂಖ್ಯೆ ಮತ್ತು ಪುಟಗಳ ಸಂಖ್ಯೆಯನ್ನು ಮುಖಪುಟದ ಮೇಲೆ ಮುದ್ರಿಸಿದ ಮಾಹಿತಿಯೊಂದಿಗೆ ತಾಳೆ ನೋಡಿರಿ. ಪುಟಗಳು/ಪ್ರಶ್ನೆಗಳು ಕಾಣೆಯಾದ ಅಥವಾ ದ್ವಿಪ್ರತಿ ಅಥವಾ ಅನುಕ್ರಮವಾಗಿಲ್ಲದ ಅಥವಾ ಇತರ ಯಾವುದೇ ವ್ಯತ್ಯಾಸದ ದೋಷಪೂರಿತ ಪುಸ್ತಿಕೆಯನ್ನು ಕೂಡಲೆ 5 ನಿಮಿಷದ ಅವಧಿ ಒಳಗೆ, ಸಂವೀಕ್ಷಕರಿಂದ ಸರಿ ಇರುವ ಪುಸ್ತಿಕೆಗೆ ಬದಲಾಯಿಸಿಕೊಳ್ಳಬೇಕು. ಆ ಬಳಿಕ ಪ್ರಶ್ನೆಪತ್ರಿಕೆಯನ್ನು ಬದಲಾಯಿಸಲಾಗುವುದಿಲ್ಲ, ಯಾವುದೇ ಹೆಚ್ಚುಸಮಯವನ್ನೂ ಕೊಡಲಾಗುವುದಿಲ್ಲ.**
4. ಪ್ರತಿಯೊಂದು ಪ್ರಶ್ನೆಗೂ (A), (B), (C) ಮತ್ತು (D) ಎಂದು ಗುರುತಿಸಿದ ನಾಲ್ಕು ಪರ್ಯಾಯ ಉತ್ತರಗಳಿವೆ. ನೀವು ಪ್ರಶ್ನೆಯ ಎದುರು ಸರಿಯಾದ ಉತ್ತರದ ಮೇಲೆ, ಕೆಳಗೆ ಕಾಣಿಸಿದಂತೆ ಅಂಡಾಕೃತಿಯನ್ನು ಕಪ್ಪಾಗಿಸಬೇಕು.

   ಉದಾಹರಣೆ : (A) (B) ● (D)

   (C) ಸರಿಯಾದ ಉತ್ತರವಾಗಿದ್ದಾಗ.
5. ಈ ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆಯ ಜೊತೆಯಲ್ಲಿ **ಕೊಟ್ಟಿರುವ OMR ಉತ್ತರ ಹಾಳೆಯಲ್ಲಿ ನಿಮ್ಮ ಉತ್ತರಗಳನ್ನು ಸೂಚಿಸತಕ್ಕದ್ದು.** OMR ಹಾಳೆಯಲ್ಲಿ ಅಂಡಾಕೃತಿಯಲ್ಲದೆ ಬೇರೆ ಯಾವುದೇ ಸ್ಥಳದಲ್ಲಿ ಉತ್ತರವನ್ನು ಗುರುತಿಸಿದರೆ, ಅದರ ಮೌಲ್ಯಮಾಪನ ಮಾಡಲಾಗುವುದಿಲ್ಲ.
6. OMR ಉತ್ತರ ಹಾಳೆಯಲ್ಲಿ ಕೊಟ್ಟ ಸೂಚನೆಗಳನ್ನು ಜಾಗರೂಕತೆಯಿಂದ ಓದಿರಿ.
7. ಎಲ್ಲಾ ಕರಡು ಕೆಲಸವನ್ನು ಪುಸ್ತಿಕೆಯ ಕೊನೆಯಲ್ಲಿ ಮಾಡತಕ್ಕದ್ದು.
8. ನಿಮ್ಮ ಗುರುತನ್ನು ಬಹಿರಂಗಪಡಿಸಬಹುದಾದ ನಿಮ್ಮ ಹೆಸರು ಅಥವಾ ಯಾವುದೇ ಚಿಹ್ನೆಯನ್ನು, ಸಂಗತವಾದ ಸ್ಥಳ ಹೊರತು ಪಡಿಸಿ, OMR ಉತ್ತರ ಹಾಳೆಯ ಯಾವುದೇ ಭಾಗದಲ್ಲಿ ಬರೆದರೆ, ನೀವು ಅನರ್ಹತೆಗೆ ಬಾಧ್ಯರಾಗುತ್ತೀರಿ.
9. ಪರೀಕ್ಷೆಯು ಮುಗಿದನಂತರ, ಕಡ್ಡಾಯವಾಗಿ OMR ಉತ್ತರ ಹಾಳೆಯನ್ನು ಸಂವೀಕ್ಷಕರಿಗೆ ನೀವು ಹಿಂತಿರುಗಿಸಬೇಕು ಮತ್ತು ಪರೀಕ್ಷಾ ಕೊಠಡಿಯ ಹೊರಗೆ OMRನ್ನು ನಿಮ್ಮೊಂದಿಗೆ ಕೊಂಡೊಯ್ಯಕೂಡದು.
10. ಪರೀಕ್ಷೆಯ ನಂತರ, ಪರೀಕ್ಷಾ ಪ್ರಶ್ನೆಪತ್ರಿಕೆಯನ್ನು ಮತ್ತು ನಕಲು OMR ಉತ್ತರ ಹಾಳೆಯನ್ನು ನಿಮ್ಮೊಂದಿಗೆ ತೆಗೆದುಕೊಂಡು ಹೋಗಬಹುದು.
11. **ನೀಲಿ/ಕಪ್ಪು ಬಾಲ್‌ಪಾಯಿಂಟ್ ಪೆನ್ ಮಾತ್ರವೇ ಉಪಯೋಗಿಸಿರಿ.**
12. **ಕ್ಯಾಲ್ಕುಲೇಟರ್, ವಿದ್ಯುನ್ಮಾನ ಉಪಕರಣ ಅಥವಾ ಲಾಗ್ ಟೇಬಲ್ ಇತ್ಯಾದಿಯ ಉಪಯೋಗವನ್ನು ನಿಷೇಧಿಸಲಾಗಿದೆ.**
13. **ಸರಿ ಅಲ್ಲದ ಉತ್ತರಗಳಿಗೆ ಋಣ ಅಂಕ ಇರುವುದಿಲ್ಲ.**
14. **ಕನ್ನಡ ಮತ್ತು ಇಂಗ್ಲೀಷ್ ಆವೃತ್ತಿಗಳ ಪ್ರಶ್ನೆಪತ್ರಿಕೆಗಳಲ್ಲಿ ಯಾವುದೇ ರೀತಿಯ ವ್ಯತ್ಯಾಸಗಳು ಕಂಡುಬಂದಲ್ಲಿ, ಇಂಗ್ಲೀಷ್ ಆವೃತ್ತಿಗಳಲ್ಲಿರುವುದೇ ಅಂತಿಮವೆಂದು ಪರಿಗಣಿಸಬೇಕು.**

Instructions for the Candidates

1. Write your roll number in the space provided on the top of this page.
2. This paper consists of Hundred multiple-choice type of questions.
3. At the commencement of examination, the question booklet will be given to you. In the first 5 minutes, you are requested to open the booklet and compulsorily examine it as below :
   (i) To have access to the Question Booklet, tear off the paper seal on the edge of the cover page. Do not accept a booklet without sticker seal or open booklet.
   (ii) **Tally the number of pages and number of questions in the booklet with the information printed on the cover page. Faulty booklets due to pages/questions missing or duplicate or not in serial order or any other discrepancy should be got replaced immediately by a correct booklet from the invigilator within the period of 5 minutes. Afterwards, neither the Question Booklet will be replaced nor any extra time will be given.**
4. Each item has four alternative responses marked (A), (B), (C) and (D). You have to darken the circle as indicated below on the correct response against each item.

   Example : (A) (B) ● (D)

   where (C) is the correct response.
5. Your responses to the questions are to be indicated in the **OMR Sheet kept inside this Booklet.** If you mark at any place other than in the circles in the OMR Sheet, it will not be evaluated.
6. Read the instructions given in OMR carefully.
7. Rough Work is to be done in the end of this booklet.
8. If you write your name or put any mark on any part of the OMR Answer Sheet, except for the space allotted for the relevant entries, which may disclose your identity, you will render yourself liable to disqualification.
9. You have to return the OMR Answer Sheet to the invigilators at the end of the examination compulsorily and must NOT carry it with you outside the Examination Hall.
10. You can take away question booklet and carbon copy of OMR Answer Sheet after the examination.
11. **Use only Blue/Black Ball point pen.**
12. **Use of any calculator, electronic gadgets or log table etc., is prohibited.**
13. **There is no negative marks for incorrect answers.**
14. **In case of any discrepancy found in the Kannada translation of a question booklet the question in English version shall be taken as final.**

ENVIRONMENTAL SCIENCE
Paper – II

Note : This paper contains **Hundred (100)** objective type questions. **Each** question carries **two (2)** marks. **All** questions are **compulsory**.

1. Replacement rate of a species along an altitude/habitat condition is called as

(A) α - diversity

(B) β - diversity

(C) γ - diversity

(D) d - diversity

2. The Anerobic method of mechanical compositing as practised in India is called the

(A) Bangalore method

(B) Indore method

(C) Nagapur method

(D) Bhopal method

3. Which of these is not the typical characteristics of urban heat Island ?

(A) Waste heat

(B) Low water quality

(C) Rolling Blackouts

(D) Low-nighttime temperatures

4. First satellite of NASA was

(A) Sputnik 2

(B) Explorer 1

(C) Sputnik 1

(D) Terra 1

5. Refer to the data in the table and calculate the standard deviation of the revenue earned by the IPL teams in 2019.

IPL Team	**Revenue earned in 2019 (Million dollars)**
Rajasthan	62
Hyderabad	93
Mumbai	126
Bangalore	75
Kolkata	34

(A) $ 34, 387, 498

(B) $ 36, 385, 468

(C) $ 38, 285, 428

(D) $ 42, 285, 328

6. Scatter diagram is

(A) A plot of non-paired observations

(B) A plot of paired observations

(C) A plot of positive linear relationship

(D) A plot of negative linear relationship

7. Although human ear can hear sound of all frequencies varying from 20 to 20,000 Hz, most sensitive to frequencies in the range of

(A) 100 to 500 Hz

(B) 500 to 5,000 Hz

(C) 5,000 to 10,000 Hz

(D) 10,000 to 20,000 Hz

8. The instrument which provide electromagnetic radiation of specified wavelength or a brand of wavelengths to illuminate the earth surface are called

(A) Sensors

(B) Passive sensors

(C) Active sensors

(D) Both passive and active sensors

9. Match the List – I and List – II.

List – I	**List – II**
a) National Mission for Green India	i) Energy efficiency
b) National Mission for Sustainable Agriculture	ii) Protection of forest cover
c) National Mission for Sustainable Habitat	iii) Awareness on threats of climate change
d) National Mission for Climate Change	iv) Soil and water conservation

Identify the correct codes :

Codes :

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

10. Subsidence inversion can be related to a

(A) Radiation

(B) Tornado

(C) Cyclone

(D) Anticyclone

11. NRLM of Ministry Of Rural Development (MORD), Govt. of India is renamed as

(A) Deendayal Antayodaya Yojana

(B) Sardar Patel Antayodaya Yojana

(C) Madan Mohan Malviya Antayodaya Yojana

(D) Lokmanya Tilak Antayodaya Yojana

12. What is the number of Tiger reserves in India under the National Tiger Conservation Authority ?

(A) 25 (B) 30

(C) 35 (D) 50

13. Photochemical smog occurs in warm, dry and sunny climate, one of the following is not amongst the components of photochemical smog, identify it.

(A) NO_2

(B) O_3

(C) SO_2

(D) Unsaturated hydrocarbons

14. The Keystone predator species maintain diversity in a community by

(A) Preying on community dominant species

(B) Coevolving with prey

(C) Inclusion of other predators

(D) Discouraging competitiveness

15. The unit of ozone is

(A) dB (B) ppb

(C) ppm (D) DU

16. NICRA stands for

(A) National Innovations on Climate Resilient Agriculture

(B) National Innovations to Climate Responsive Agriculture

(C) National Innovations on Climate Risk Adaptation

(D) National Integration of Climate Resilient Agriculture

17. The Home-range of an Elephant herd is

(A) 100 – 300 Sq. Kms.

(B) 200 – 1000 Sq. Kms.

(C) 250 – 2500 Sq. Kms.

(D) 250 – 3500 Sq. Kms.

18. According to the principle of uniformatarianism

(A) Geological processes we observe today have operated in the past

(B) Geologic process in the past operated at the same rate as they do today

(C) All of the planets formed from a uniform solar nebula

(D) Early earth was covered by a uniform magma ocean

19. What was the atmospheric CO_2 concentration during 2018 as per world meterological organization ?

(A) ~ 205 ppm

(B) ~ 350 ppm

(C) ~ 405 ppm

(D) ~ 305 ppm

20. Which one of the following equipments is employed for the removal of particulate matter above 50µ in size ?

(A) Fabric filter

(B) Cyclone

(C) Gravity settling chamber

(D) Electrostatic precipitator

21. Working Group – II contribution to the IPCC's Fifth Assessment Report (WGIIAR5) evaluates

(A) How pattern of risks and potential benefits are shifting due to climate change since 2015 when the MDGs era comes to a conclusion with the end of the year 2016.

(B) How pattern of risks and potential benefits are shifting due to climate change since 2012 the third international conference on sustainable development.

(C) How pattern of risks and potential benefits are shifting due to climate change since 2007 when the fourth Assessment Report (AR4) was released

(D) How pattern of risks and potential benefits are shifting due to climate change since 2001 when the Third Assessment Report (AR3) was released.

22. The most important cause for turtle mortality in India is

(A) Coastal development

(B) Climate change

(C) Eco-tourism

(D) Incidental catch

23. Which rock type would make the best aquifer ?

(A) Shale

(B) Mudstone

(C) Sandstone

(D) Basalt

24. The order of vegetation development in 10 m deep pond will be

(A) Floating→Submerged→Reed→ Herb

(B) Submerged→Reed→Floating→ Herb

(C) Floating→Submerged→ Herb → Reed

(D) Submerged→Floating→Reed→ Herb

25. In urban air pollution, the most poisonous gas is supposed to be carbon monoxide. It is hazardous because

(A) It is carcinogenic in nature

(B) It causes blindness

(C) It affects our sense of smell

(D) It combines with haemoglobin

26. Deepor Beel is a

(A) Ramsar site located in Uttarakhand and known for conservation of avifauna including migratory birds

(B) Ramsar site located in Assam and known for conservation of avifauna including migratory birds

(C) Ramsar site located in Nagaland known for conservation of amphibians

(D) Ramsar site located in Manipur known for conservation of Hilsa fish

27. Twin Pit Toilet design was built under which programme of Government of India ?

(A) Swachtha hi Seva

(B) Swach Bharath Abhiyan

(C) Ek Bharath Shresht Bharath

(D) Gramin Swachtha Abhiyan

28. Rivers that receives water from groundwater seepage are termed as

(A) Effluent rivers

(B) Consequent rivers

(C) Influent rivers

(D) Braided rivers

29. What is the built up area required for eligibility to obtain GRIHA certification ?

(A) 1000 Sq. m^2

(B) 1500 Sq. m^2

(C) 2500 Sq. m^2

(D) 3500 Sq. m^2

30. Metamorphic rocks form a significant proportion of

(A) Oceanic crust

(B) Continental crust

(C) Shields and core of mountain

(D) Oceanic crust and continental crust

31. A species when established in new area is called as

(A) Aggregation

(B) Ecesis

(C) Migration

(D) Stabilization

32. **Assertion (A)** : Sanitary landfills can no longer be used for the disposal of solid waste in India.

Reason (R) : The leachator from sanitary landfills may be pollute the ground water.

(A) Both (A) and (R) are true and (R) is the correct explanation of (A)

(B) Both (A) and (R) are true and (R) is not a correct explanation of (A)

(C) (A) is true but (R) is false

(D) (A) is false but (R) is true

33. Biodiversity hotspots are earth's most biologically rich-yet threatened regions.

Assertion (A) : Contain atleast 1500 species of vascular plants found nowhere else an Earth (known as "endemic" species).

Reason (R) : Not with standing having to have lost atleast 70% of its primary native vegetation.

(A) Both (A) and (R) are true but (R) is not the correct reason for (A)

(B) Both (A) and (R) are true and (R) is the correct reason for (A)

(C) Both (A) and (R) are false

(D) (A) is true but (R) is false

34. What is the special chemical component required to reduce No_X emissions in BSVI Diesel engine ?

(A) Deionised water

(B) Reduced urea

(C) Reduced sulfur

(D) Diesel exhaust fluid

35. The second stage Biochemical Oxygen Demand (BOD) as shown in figure below is due to

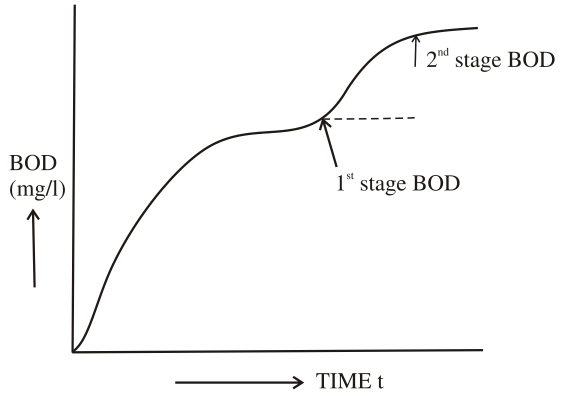

Fig.

(A) Increased activity of biomass

(B) Interference by certain chemical reaction

(C) Experimental error

(D) Nitrification demand

36. Saalu Marada Timmakka received Indira Priyadarshini Vrikshamitra Award in

(A) 1990 (B) 1997

(C) 2005 (D) 2018

37. Blue-carbon strategies for carbon sequestration is mainly achieved by

(A) Marine fungi

(B) Coral reefs

(C) Angiosperms

(D) Macroalgae

38. Photosynthesis is an example of

(A) Condensation reaction

(B) Exothermic reaction

(C) Reversible reaction

(D) Endothermic reaction

39. Earth summit held at Rio de Janeiro was related to one of the following. Identify the correct one.

(A) Survey of natural resources

(B) Afforestation and deforestation

(C) Conservation of environment

(D) Species assessment

40. The formulation for BOD assimilation in a River should include

(A) BOD rate constant and sedimentation of organic matter

(B) Sedimentation of organic matter only

(C) BOD rate constant

(D) Pathogenic bacterial decay coefficient

41. Changing consumption pattern is

(A) 13th SDGs

(B) Chapter 4 in Section – I of Agenda 21

(C) Chapter 26 in Section – III of Agenda 21

(D) 7th MDGs

42. **Assertion (A)** : Warming of the climate system is unequivocally resulting in urban heat Islands.

Reason (R) : At continental, regional and ocean basic scales numerous changes have been observed including changes in precipitation amounts and wind pattern.

(A) (A) is the consequence of (R)

(B) (A) is true (R) is false

(C) (A) and (R) are false

(D) (A) and (R) are independent of each other

43. Aichi Target is the outcome of which among the following protocol/summits ?

(A) Kyoto protocol

(B) Nagoya protocol

(C) Copenhagen climate summit

(D) Bali Communique

44. How many biogeographic region in India are reported ?

(A) 05 (B) 10

(C) 15 (D) 08

45. The following reactions take place during anerobic digestion of organics

1. Acid regression
2. Acid fermentation
3. Methane production
4. Alkaline fermentation

The correct sequence of the reaction is

(A) 1 2 3 4

(B) 1 2 4 3

(C) 2 1 4 3

(D) 2 3 1 4

46. Ecologically India is divided into

(A) 18 agroecological regions

(B) 20 agroecological regions

(C) 21 agroecological regions

(D) 14 agroecological regions

47. Emission trading as set out in Article – 17 of the Kyoto Protocol provides for

(A) Annex-I parties to acquire certified emission reduction from other Annex-I parties

(B) Annex-II parties to acquire certified emission reduction from Annex-I parties

(C) Annex-II parties to acquire certified emission reduction from other Annex-II parties

(D) Annex-I parties to acquire certified emission reduction from Annex-II parties

48. The descent of oceanic lithosphere into the mantle is the process of _____

(A) Accretion

(B) Subduction

(C) Divergence

(D) Contraction fault

49. The National Food Security Act, 2013 aims to provide subsidized food grains to

(A) One third of India's population

(B) Half of the India's population

(C) All rural population

(D) Approximately two thirds of India's 1.2 billion people

50. Which of these species absorb Near Infrared Radiation and can be detected by NIRS ?

(A) O_2 (B) C

(C) N_2 (D) Cl_2

51. Which one of the following is correct for 'Ecotype' ?

(A) Plant species with a wide range of genetic distribution evolve into a local population

(B) Plant species distributed widely

(C) Plant species found in different ecosystem

(D) Plant species grows with pine forest

52. Match List – I and List – II :

List – I	List – II
a) Pollen grains	i) Photochemical smog
b) PAN	ii) Particulate pollution
c) CO_2	iii) Global warming
d) Cadmium	iv) Itai disease

Identify the correct codes :

Codes :

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

53. The unfolding of regular secondary structure causes

(A) Little increase in the entropy of protein

(B) Large decrease in the entropy of the protein

(C) No change in the entropy of the protein

(D) Large increase in the entropy of the protein

54. **Assertion (A)** : Ecosystem constitutes better life support for fulfilling the human needs and can be sustainable.

Reason (R) : The size and productivity of the ecosystem is limited by various ecosystem services such as provisioning, supporting, regulating and cultural.

Identify the correct answer :

(A) Both (A) and (R) are true and (R) is the correct explanation of (A)

(B) Both (A) and (R) are true but (R) is not correct explanation of (A)

(C) (A) is true but (R) is false

(D) (A) is false but (R) is true

55. The Travel Cost Method (TCM) is

(A) Used for calculating economic values of environmental goods

(B) Used for calculating economic values of medicinal plants products

(C) Used for calculating economic values of protected areas

(D) Used for calculating economic values of Ramsar sites

56. Tendency of some minerals to break along smooth, flat surface is known as

(A) Fracture (B) Cleavage

(C) Streak (D) Luster

57. Contingent valuation is

(A) a survey method of determining the economic value of a processed product

(B) a survey based method of determining the economic value of NTFPs

(C) a survey based method of determining the economic value of a non-market resource

(D) a survey based method of determining the economic value on environmental resource

58. Given below are two statements as Assertion (A) and other labelled as Reason (R).

Assertion (A) : Mass wasting is the downslope movement of material under the influence of gravity.

Reason (R) : Gravitational force acting parallel to a slope reduces the slope's strength.

(A) Both (A) and (R) are true and (R) is the correct explanation

(B) Both (A) and (R) are true and (R) is not the correct explanation

(C) (A) is true but (R) is false

(D) (A) is false but (R) is true

59. Match List – I and List – II :

List – I (Treatment process)	**List – II (Related terms)**
a) Oxidation ponds	i) Extended Aeration system
b) Lagoons	ii) Attached growth system
c) Activated sludge process	iii) Low cost treatment method
d) Trickling filter	iv) Algae-Bacteria symbiotic relationship

Identify the correct codes :

Codes :

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

60. Gandha Mardham Movement was taken up to prevent ecological degradation due to

(A) Iron mining

(B) Copper mining

(C) Bauxite mining

(D) Platinum mining

61. As per UN report published on October 11, 2018 which country has experienced the highest economic loss in last 20 years from climate related disasters

(A) India

(B) China

(C) USA

(D) Bangladesh

62. A liquid mixture of complex hydrocarbons chain chains/compounds is known as

(A) Alcohol (B) Petroleum

(C) Aldehyde (D) Ketone

63. Secondary Treatment of Activated sludge process is the

(A) Aerated sludge in the aeration unit

(B) Sludge settled in the Humus tank

(C) Sludge in the secondary tank after aeration and rich in microbial mass

(D) Sludge in the secondary tank after aeration and rich in nutrients

64. The anticancer compound 'Taxol' is obtained from which plant species ?
Choose the right one :
(A) Valeriana Jatamansi
(B) Podophyllum hexandrum
(C) Aconitum heterophyllum
(D) Taxus baccata

65. Geographical indications means
(A) Socio-cultural significance of a product
(B) Socio-ecological significance of a products
(C) Geographic information of crops with relation to their cultural importance
(D) Any indications which define the goods as originating in the territory of a country or a region or locality in that territory

66. Carbon sequestration in soil is difficult due to
(A) Anthropogenic warming
(B) Uncontrollable feedback
(C) Soil-climate feedback
(D) Positive feedback

67. Types of texture sedimentary rocks can have are
(A) Fine-grained only
(B) Fine-grained and coarse-grained
(C) Fine-grained, medium-grained and coarse-grained
(D) Fine-grained, medium grained, coarse-grained and hard-grained

68. Large ecosystem on land represent with different types of vegetation and wildlife is called
(A) Ecology (B) National park
(C) Biome (D) Biodiversity

69. Consider the following treatment steps in a water treatment plant
1. Filtration
2. Aeration
3. Sedimentation with coagulation
4. Intake with screening
5. Disinfection

The correct sequence of these steps is
(A) 2 3 4 5 1
(B) 2 1 4 3 5
(C) 4 2 3 1 5
(D) 4 1 5 2 3

70. The first environmental law in India was enacted in the year
(A) 1947 (B) 1982
(C) 1974 (D) 1950

71. Climate forcing is a phenomenon which results in
(A) Altering the global energy balance
(B) Changes in the composition of Earth's atmosphere
(C) Fluctuations in the earth's orbit
(D) Variations in ocean circulation

72. Ecological Footprint is

(A) Consumption of ecological resources

(B) The demand placed on nature by individuals or nations

(C) Total harvest of ecological resources in a year

(D) Percentage of forest in an ecological region

73. Island arc are characterized by the

1. Extremely active subduction zone
2. Represents forearc basin
3. Fissure type of volcanic activity
4. Large negative Bouguer anomaly on the convex side of volcanic arc

(A) 1 2 3 4

(B) 1 3 4

(C) 1 2 4

(D) 2 3 4

74. Match List – I and List – II :

List – I (WQ parameters)	**List – II (Permissible value in drinking water)**
a) Total Hardness (mg/l)	i) < 5
b) Most probable number per 100 ml	ii) 0.3
c) Iron concentration (mg/l)	iii) 0
d) Turbidity (NTU)	iv) < 300

Select the correct answer using codes given below :

Codes :

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

75. The response of plants to environmental rhythms of light and darkness is known as

(A) Vernalization

(B) Phototrophism

(C) Photoperiodism

(D) Phototaxis

76. Which of these is the correct combination with respect to climate change ?

(A) Dutch submersion – Rising sea levels

(B) Australian Bushfire – Anti-El-nino

(C) California wildfire – Southern Oscillation

(D) Kiribati Phenomenon – Pacific acidification

77. Dependent variables are known as

(A) Rarely dependent

(B) Explanatory variables

(C) Random quantification of datasets

(D) Response variable, is affected by independent variables

78. Chemosynthesis is

(A) The process in which inorganic chemicals provide energy for synthesis of organic molecules

(B) The process in which organic molecules provide energy synthesis of inorganic chemicals

(C) Synthesis of inorganic chemicals within a short span of time

(D) Mixing of inorganic chemicals with organic molecules

79. A crescent shaped sand dune with the tips of the crescent pointing downwards

(A) Transverse (B) Barchan

(C) Linear (D) Parabolic

80. Match the following and choose the correct answer :

List – I	List – II
a) Origin of reptiles	i) Ordovician
b) Rise of dinosaurs	ii) Devonian
c) Origin of amphibians	iii) Triassic
d) First land plants	iv) Carboniferrous

Codes :

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

81. **Assertion (A)** : Alum is the most commonly used coagulant in water treatment.

Reason (R) : Alum is effective in killing pathogens present in water.

The correct option evaluating the above statement is

(A) Both (A) and (R) are true and Reason (R) is the correct explanation of (A)

(B) Both (A) and (R) are true but (R) is not the correct explanation of (A)

(C) (A) is true but (R) is false

(D) (A) is false but (R) is true

82. Which of the following is part of regulatory services ?

(A) Livelihood

(B) Soil and Nutrients

(C) Food

(D) Culture

83. **Assertion (A)** : Wind erosion is accelerated when soil is dry.

Reason (R) : Winds segregate dry humus, clay, silt and sand. The material with least density is carried the farthest.

(A) Both (A) and (R) are true

(B) (R) is not the correct reason for (A)

(C) (A) is true (R) is false

(D) Both (A) and (R) are false

84. Second law of thermodynamics states

(A) That with each successive energy transfer or transformation in a system less energy is available to do work

(B) That energy is conserved

(C) That energy is neither created nor destroyed under normal condition

(D) That energy may be transformed but total amount does not change

85. Waves in oceans are larger than those in lake because of

(A) Deeper water (B) Larger storms

(C) Greater fetch (D) Wave base

86. Temporary Hardness in water is caused by

(A) Dissolved carbondioxide

(B) Carbonates of calcium and magnesium

(C) Bicarbonates of sodium and potassium

(D) Carbonates and bicarbonates of calcium and magnesium

87. Shedding of leaves or plant part is caused due to the deficiency of

(A) Gibberellins

(B) Absicisic acid

(C) Cytokinins

(D) Auxins

88. Soil management land capability classes are numbered from one to eight. Choose the right combination.

(A) Class – I : Cannot be used for continuous cultivation

(B) Class – III : Soils have limitation and require special conservation measures

(C) Class – V : Soils are likely to erode

(D) Class – VII : Soils do not require extreme care for low intensity use

89. Ecological niche is defined as

(A) Environmental factors that determine a species distribution

(B) Ecological surrounding of a particular species

(C) Transition zone between two ecosystems

(D) Boundaries of an ecosystem

90. When a melting glacier deposit unsorted materials it is called as

(A) Glacial drift

(B) Till

(C) Stratified drift

(D) Moraines

91. Iron and manganese can be removed from water, by

(A) Activated carbon added

(B) Boiling of water

(C) Aeration followed by coagulation

(D) Chlorination

92. A mutually beneficial association between two organism is known as

(A) Symbiosis

(B) Commanalism

(C) Amenalism

(D) Parasites

93. During which conference of parties to the UNFCC was the program on ethical dimensions of climate change launched ?

(A) 19^{th} – Warsaw

(B) 16^{th} – Cancun

(C) 10^{th} – Buneos Aires

(D) 25^{th} – Madrid

94. Which of the following organisms can act as primary consumer, secondary consumer, tertiary consumer or scavenger in different types of food chain ?

(A) Zooplanktones

(B) Snake

(C) Raven

(D) Wild boar

95. A scientist examined puzzle pieces on map was

(A) Alfred Wegner

(B) John Wegner

(C) Samuel Wegner

(D) Jefferson Wegner

96. Which of them is not a typical character of Eutrophication ?

(A) Anoxic conditions in the hypolimnion

(B) High ammonium concentration and pH

(C) Pelagic fish sink to the bottom

(D) Floating macrophytes increase oxygenation

97. The Indian Wetland declared as "Tiger Conservation landscape"of global importance is

(A) Rudrasagar

(B) Nalsarovar

(C) Sunderbans

(D) Keoladeo National Park

Read the following passage carefully and answer Q. No. **98** to Q. No. **100** :

Earth is differentiated into layers. The outermost layer is the crust, which is divided into continental and oceanic portions. Below the crust is the upper mantle. The crust and upper mantle or lithosphere, overlie the asthenosphere, a zone that slowly flows. The asthenosphere is underlain by the solid lower mantle. Earth's core consists of an outer liquid portion and an inner solid portion.

98. A plate is composed of the

(A) Lower mantle and asthenosphere

(B) Asthenosphere and upper mantle

(C) Upper mantle and crust

(D) Continental and oceanic crust

99. The layer between upper mantle and lower mantle

(A) Lithosphere

(B) Crust

(C) Asthenosphere

(D) Oceanic crust

100. What fundamental process is thought to be responsible for plate motions ?

(A) Density differences between crust and mantle

(B) Outer liquid portion of core

(C) Subduction

(D) Convection cells

Space for Rough Work