PAPER-III
ENVIRONMENTAL SCIENCE

Signature and Name of Invigilator

1. (Signature) _____

   (Name) _____

2. (Signature) _____

   (Name) _____

OMR Sheet No. : .....
(To be filled by the Candidate)

Roll No. | | | | | | | | |
(In figures as per admission card)

Roll No._____
(In words)

J 8 9 1 4

Time : **2 ½** hours] [Maximum Marks : **150**

Number of Pages in this Booklet : **12**

Number of Questions in this Booklet : **75**

Instructions for the Candidates

1. Write your roll number in the space provided on the top of this page.
2. This paper consists of seventy five 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 this cover page. Do not accept a booklet without sticker-seal and do not accept an 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.**
   (iii) After this verification is over, the OMR Sheet Number should be entered on this Test Booklet.
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 : Ⓐ Ⓑ ● Ⓓ
   where (C) is the correct response.
5. Your responses to the items are to be indicated in the **OMR Sheet given inside the Booklet only.** If you mark at any place other than in the circle in the OMR Sheet, it will not be evaluated.
6. Read instructions given inside carefully.
7. Rough Work is to be done in the end of this booklet.
8. If you write your Name, Roll Number, Phone Number or put any mark on any part of the OMR Sheet, except for the space allotted for the relevant entries, which may disclose your identity, or use abusive language or employ any other unfair means such as change of response by scratching or using white fluid, you will render yourself liable to disqualification.
9. You have to return the test question booklet and Original OMR Sheet to the invigilators at the end of the examination compulsorily and must not carry it with you outside the Examination Hall. You are, however, allowed to carry original question booklet and duplicate copy of OMR Sheet on conclusion of examination.
10. **Use only Blue/Black Ball point pen.**
11. **Use of any calculator or log table etc., is prohibited.**
12. **There is no negative marks for incorrect answers.**

परीक्षार्थियों के लिए निर्देश

1. इस पृष्ठ के ऊपर नियत स्थान पर अपना रोल नम्बर लिखिए ।
2. इस प्रश्न-पत्र में पचहत्तर बहुविकल्पीय प्रश्न हैं ।
3. परीक्षा प्रारम्भ होने पर, प्रश्न-पुस्तिका आपको दे दी जायेगी । पहले पाँच मिनट आपको प्रश्न-पुस्तिका खोलने तथा उसकी निम्नलिखित जाँच के लिए दिये जायेंगे, जिसकी जाँच आपको अवश्य करनी है :
   (i) प्रश्न-पुस्तिका खोलने के लिए उसके कवर पेज पर लगी कागज की सील को फाड़ लें । खुली हुई या बिना स्टीकर-सील की पुस्तिका स्वीकार न करें ।
   (ii) **कवर पृष्ठ पर छपे निर्देशानुसार प्रश्न-पुस्तिका के पृष्ठ तथा प्रश्नों की संख्या को अच्छी तरह चैक कर लें कि ये पूरे हैं । दोषपूर्ण पुस्तिका जिनमें पृष्ठ/प्रश्न कम हों या दुबारा आ गये हों या सीरियल में न हों अर्थात् किसी भी प्रकार की त्रुटिपूर्ण पुस्तिका स्वीकार न करें तथा उसी समय उसे लौटाकर उसके स्थान पर दूसरी सही प्रश्न-पुस्तिका ले लें । इसके लिए आपको पाँच मिनट दिये जायेंगे । उसके बाद न तो आपकी प्रश्न-पुस्तिका वापस ली जायेगी और न ही आपको अतिरिक्त समय दिया जायेगा ।**
   (iii) इस जाँच के बाद OMR पत्रक की क्रम संख्या इस प्रश्न-पुस्तिका पर अंकित कर दें ।
4. प्रत्येक प्रश्न के लिए चार उत्तर विकल्प (A), (B), (C) तथा (D) दिये गये हैं । आपको सही उत्तर के वृत्त को पेन से भरकर काला करना है जैसा कि नीचे दिखाया गया है ।
   उदाहरण : Ⓐ Ⓑ ● Ⓓ
   जबकि (C) सही उत्तर है ।
5. प्रश्नों के उत्तर **केवल प्रश्न पुस्तिका के अन्दर दिये गये OMR पत्रक पर ही** अंकित करने हैं । यदि आप OMR पत्रक पर दिये गये वृत्त के अलावा किसी अन्य स्थान पर उत्तर चिह्नांकित करते हैं, तो उसका मूल्यांकन नहीं होगा ।
6. अन्दर दिये गये निर्देशों को ध्यानपूर्वक पढ़ें ।
7. कच्चा काम (Rough Work) इस पुस्तिका के अन्तिम पृष्ठ पर करें ।
8. यदि आप OMR पत्रक पर नियत स्थान के अलावा अपना नाम, रोल नम्बर, फोन नम्बर या कोई भी ऐसा चिह्न जिससे आपकी पहचान हो सके, अंकित करते हैं अथवा अभद्र भाषा का प्रयोग करते हैं, या कोई अन्य अनुचित साधन का प्रयोग करते हैं, जैसे कि अंकित किये गये उत्तर को मिटाना या सफेद स्याही से बदलना तो परीक्षा के लिये अयोग्य घोषित किये जा सकते हैं ।
9. आपको परीक्षा समाप्त होने पर प्रश्न-पुस्तिका एवं मूल OMR पत्रक निरीक्षक महोदय को लौटाना आवश्यक है और परीक्षा समाप्ति के बाद उसे अपने साथ परीक्षा भवन से बाहर न लेकर जायें । हालांकि आप परीक्षा समाप्ति पर मूल प्रश्न-पुस्तिका तथा OMR पत्रक की डुप्लीकेट प्रति अपने साथ ले जा सकते हैं ।
10. **केवल नीले/काले बाल प्वाईंट पेन का ही इस्तेमाल करें ।**
11. **किसी भी प्रकार का संगणक (कैलकुलेटर) या लाग टेबल आदि का प्रयोग वर्जित है ।**
12. **गलत उत्तरों के लिए कोई नकारात्मक अंक नहीं हैं ।**

ENVIRONMENTAL SCIENCE
Paper – III

Note : This paper contains **seventy five (75)** objective type questions of **two (2)** marks each. **All** questions are compulsory.

1. Chemosynthesis involves CO_2 fixation using energy derived from

(A) Sunlight
(B) Infrared radiation
(C) UV-radiation
(D) Inorganic and Organic compounds

2. Wind in the mountain-valley regions are of

(A) Microscale
(B) Mesoscale
(C) Macroscale
(D) Synoptic scale

3. In tropical region an aircraft is flying at an altitude of 10 km. At that altitude the temperature is – 40 °C. What is the ambient temperature on the ground ?

(A) 24 °C
(B) 40 °C
(C) 30 °C
(D) 20 °C

4. **Assertion (A) :** Upper atmosphere shields life on earth.

Reason (R) : Ultraviolet radiations are absorbed in the upper atmosphere.

Choose the correct answer :

Codes :

(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 the correct explanation of (A).
(C) (A) is true and (R) is false.
(D) (A) is false and (R) is true.

5. The molar extinction coefficient of proline ninhydrin complex at 520 nm is 0.34 $\mu M^{-1}Cm^{-1}$. A solution of the proline ninhydrin complex has an absorbance of 0.68 in a one centimeter cuvette. The concentration (μM) of proline is

(A) 0.5
(B) 0.2312
(C) 2.312
(D) 2

6. The principal components of photochemical smog in urban areas are

(A) SO_2 and NO_2
(B) SPM and CO
(C) SPM and NO_2
(D) Oxides of Nitrogen, Hydrocarbons and Ozone.

7. The amount of a particular gas dissolved in water depends on

(i) its solubility in water.
(ii) its partial pressure at the air/water interface or sediment/ water interface.
(iii) the water temperature.
(iv) the levels of salts in the water.

Identify the correct answer :

(A) (i) and (ii) only
(B) (ii), (iii) and (iv) only
(C) (i), (ii) and (iii) only
(D) (i), (ii), (iii) and (iv)

8. A 50 ml solution of pH = 1 is mixed with a 50 ml solution of pH = 2. The pH of the mixture will be nearly

(A) 0.76 (B) 1.26
(C) 1.76 (D) 2.26

9. The solubility product of the following type of reaction :

$Al(OH)_3 \longrightarrow Al^{3+} + 3\overset{\ominus}{O}H$ is

(A) $Ksp = (Al)(OH)$

(B) $Ksp = (Al^{3+})(3\overset{\ominus}{O}H)$

(C) $Ksp = (Al^{3+})(\overset{\ominus}{O}H)^3$

(D) $Ksp = (Al^{3+})(\overset{\ominus}{O}H)$

10. Cells grown in medium containing isotope sulphur 35 will show radio labelling in

(A) membrane lipids

(B) membrane proteins

(C) glycogen

(D) nucleic acid

11. A stream flowing at 10.0 m^3/s has a tributary feeding it with a flow of 5.0 m^3/s. The stream concentration of chloride upstream at the junction is 20.0 mg/L and the tributary chloride concentration is 40 mg/L. Treating chloride as a conservative substance and assuming complete mixing of the two streams, find the down stream concentration.

(A) 26.7 mg/L

(B) 30.2 mg/L

(C) 22.6 mg/L

(D) 35.2 mg/L

12. Assume that dilution factor p for an unseeded mixture of waste and water is 0.03. The DO of the mixture is initially 9.0 mg/L and after 5 days, it has dropped to 3.0 mg/L. The reaction rate constant 'K' has been found to be 0.22 / day. Five day BOD of the water will be

(A) 200 mg/L (B) 150 mg/L

(C) 100 mg/L (D) 75 mg/L

13. Nudation is generally caused by

(A) migration of species

(B) climate change

(C) invasion of foreign species

(D) modification of habitat

14. Which one of the following is the best tool to study the interacting residues in protein-ligand interaction ?

(A) X-ray crystallography

(B) Circular dichroism spectroscopy

(C) UV – Vis spectroscopy

(D) Fluorescence spectroscopy

15. During centrifugation, if the centrifugal force is F_C, buoyant force is F_b, and frictional force is F_f, which of the following equations expresses the sedimentation of the molecule ?

(A) $F_C = F_b - F_f$

(B) $F_C = F_b + F_f$

(C) $F_C = \frac{F_b - F_f}{2}$

(D) $F_C = \frac{F_b + F_f}{2}$

16. Match the List – I with List – II and choose the correct answer from the given codes :

List – I (Lakes)	**List – II (Characteristics)**
a. Oligotrophic lakes	i. More nutrient concentration
b. Dystrophic lakes	ii. Magmatic water
c. Eutrophic lakes	iii. Low nutrient concentration
d. Volcanic lakes	iv. Low pH and high humic acid conditions

Codes :

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

17. The earthworm used for composting is
(a) Crassiclitellata excavata
(b) Octochaetona serrata
(c) Lumbricus terrestris
(d) Eisenia foetida
Choose the correct answer :
(A) (a) and (b) only
(B) (b) and (d) only
(C) (b) and (c) only
(D) (a) and (d) only

18. The amount of the living material present in different trophic levels at a given time is called
(a) standing crop
(b) standing state
(c) biomass
(d) biosphe
Choose the correct answer :
(A) (a) and (c) are correct.
(B) (d) is correct.
(C) (b) is correct.
(D) (c) and (b) are correct.

19. Many orchids use trees as a surface to grow. This is an example of
(A) Commensalism
(B) Mutualism
(C) Parasitism
(D) Predation

20. The *r*– strategist is a
(A) small organism that has a short life, produces many offsprings and does not reach carrying capacity.
(B) small organism that has a longer life, produces offsprings and does not reach carrying capacity.
(C) small organism that has a short life, produces numerous offsprings and reach carrying capacity.
(D) medium organism that has a short life, produces numerous offsprings and reach carrying capacity.

21. Under the Rhino relocation project, during 1987, Rhinoes were introduced in
(A) Assam
(B) Meghalaya
(C) West Bengal
(D) Madhya Pradesh

22. Which of the following is an endangered bird species ?
(A) Kashmir stag
(B) Great Indian Bustard
(C) Hangul
(D) Black buck

23. In India, Crocodile breeding project started for the first time in
(A) Tamil Nadu
(B) West Bengal
(C) Odisha
(D) Goa

24. Identify the correct sequence of materials in terms of their porosity.
(A) Sand > clay > gravel
(B) Clay > sand > gravel
(C) Gravel > sand > clay
(D) Gravel > clay > sand

25. For an aquifer of gravel having cross sectional area of 4 m^2 and a depth of 2.5 m, how much water could potentially be extracted ? (The porosity and specific yield of gravel are 25% and 20% respectively.)
(A) 0.5 m^3
(B) 0.25 m^3
(C) 0.125 m^3
(D) 1 m^3

26. The layers formed by thermal stratification in lakes are

(A) Epilimnion, Midlimnion, Hypolimnion

(B) Epilimnion, Oligolimnion, Hypolimnion

(C) Epilimnion, Dystrolimnion, Hypolimnion

(D) Epilimnion, Thermocline, Hypolimnion

27. On an aerial photograph, the focal length (f) of the camera lens is 6 inches and flying height (H) over the datum line is 15,000 ft. What is scale of the aerial photograph ?

(A) 1 : 30,000

(B) 1 : 10,000

(C) 1 : 5,000

(D) 1 : 25,000

28. Which of the following substrate will have highest reflectance value ?

(A) Silt loam with 20% moisture.

(B) Clay with 36% moisture.

(C) Silt loam with 0.8% moisture.

(D) Clay with 2% moisture.

29. **Assertion (A) :** For sustainable development of a region, proper land use planning is required.

Reason (R) : Land use planning involves inputs of soil types, rock types, seismicity, weather pattern and socio-economic conditions of a region.

Codes :

(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 the correct explanation of (A).

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

(D) (A) is false and (R) is true.

30. Tundra is a biome characterized by

(A) stunted trees and permanently frozen sub-surface soil.

(B) coniferous trees and permanently frozen sub-surface soil.

(C) lack of trees and permanently frozen sub-surface soil.

(D) evergreen trees and permanently frozen sub-surface soil.

31. Acid mine drainage occurs when

(A) the combined action of O_2, H_2O and certain bacteria cause sulphur in coal to form H_2SO_4.

(B) the combined action of H_2O and certain bacteria cause sulphur in coal to form H_2SO_4.

(C) the combined action of O_2 and certain bacteria cause sulphur in coal to form H_2SO_4.

(D) the combined action of SO_2 and certain bacteria with coal to form H_2SO_4.

32. In accordance with the Saffir – Simpson hurricane scale, a cyclonic storm of category 5 should have wind speeds

(A) $> 69\ ms^{-1}$

(B) $50 - 58\ ms^{-1}$

(C) $59 - 69\ ms^{-1}$

(D) $33 - 42\ ms^{-1}$

33. **Assertion (A) :** Large scale OTEC development may not be good for environment.

Reason (R) : Release of CO_2 from ocean depths into the atmosphere could exacerbate GHG effect.

Codes :

(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 the correct explanation of (A).

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

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

34. In a methane fuel cell, what will be the voltage of the cell and its efficiency ?

(Given : $\Delta G^\circ = 8 \times 10^5$ Joules/gm – mole $\Delta H^\circ = 8.8 \times 10^5$ Joules / gm – mole and Faraday's constant = 96500 coulomb/ gm-mole)

(A) ~ 1.23 Volts, ~ 90.9%

(B) ~ 1.04 Volts, ~ 90.9%

(C) ~ 1.15 Volts, ~ 11%

(D) ~ 2.13 Volts, ~ 92%

35. The coefficient of performance for an ideal wind mill is

(A) 3/8

(B) 5/16

(C) 2/5

(D) 16/27

36. Assume that the energy released during the combustion of methane is 900 kJ/mol. Its carbon intensity is

(A) 13.3 gc/MJ

(B) 15.3 gc/MJ

(C) 19.7 gc/MJ

(D) 24.2 gc/MJ

37. In a nuclear fusion reactor it is envisaged to use a liquid blanket of Li to absorb fast neutrons from D+T reaction. How many neutrons are produced as a result of ${}^{7}_{3}Li + {}^{1}_{0}n$?

(A) 1

(B) 2

(C) 3

(D) 4

38. In an ideal MHD power plant, the electrical efficiency corresponding to maximum power production is

(A) 50%

(B) 75%

(C) 25%

(D) 100%

39. Energy intensity is a measure of

(A) effectiveness of energy utilisation

(B) energy produced per unit area

(C) energy produced per unit volume

(D) energy produced per unit area per unit time

40. One of the criteria for characterizing a region as ABC hotspot is that the annual mean anthropogenic Aerosol Optical Depth (AOD) is greater than

(A) 0.3

(B) 0.5

(C) 0.8

(D) 0.1

41. The resultant of two noise levels of 50 dB and 55 dB is

(A) 58 dB

(B) 55.41 dB

(C) 52.5 dB

(D) 56.19 dB

42. Which of the following is used as a coagulant for removal of phosphates in water ?

(A) Aluminium sulphate

(B) Iron sulphate

(C) Copper sulphate

(D) Potassium chromate

43. Which of the following radionuclides has the longest half-life ?

(A) C^{14}

(B) Sr^{90}

(C) I^{131}

(D) Cs^{137}

44. Under anaerobic conditions nitrogenase catalises

(A) breakdown of atmospheric nitrogen

(B) oxidation of atmospheric nitrogen

(C) reduction of atmospheric nitrogen

(D) hydrolysis of nitrogenous compounds

45. Size range of atmospheric aerosols is

(A) 5nm – 100μm

(B) 100μm – 150μm

(C) 150μm – 200μm

(D) 0.01nm – 5nm

46. Which one of the following is used as microbial indicator of water contamination ?

(A) Coliform bacteria

(B) Giardia

(C) Cryptosporidium

(D) Tobacco mosaic virus

47. Elevated salt and Na^+ concentrations in soils are highly toxic to many plants, but relatively high tolerance level (to this toxicity) is seen in

(A) Sugarbeet

(B) Sugarcane

(C) Onion

(D) Lettuce

48. Which of the following hydrocarbons is emitted by vegetation ?

(A) Ocimene

(B) Xylene

(C) Acrolein

(D) 1, 3 - Pentadions

49. For particles of size > 5μm, the efficiency of cyclones can be as high as

(A) 50%

(B) 60%

(C) 80%

(D) 90%

50. Given the following parameters of a primary settling chamber :

Diameter = 50m, Depth = 2.5m, average detention time = 2 hours. How much quantity of waste water is being treated ?

(A) ~ 58928 m^3/day

(B) ~ 48321 m^3/day

(C) ~ 45321 m^3/day

(D) ~ 25321 m^3/day

51. A flat surface type electrostatic precipitator (ESP) has the following parameters : collector plate area A = 4600 m^2, volumetric flow rate Q = 200 m^3/s and effective drift velocity of flue gas = 0.15 m/s. What is the efficiency of the ESP ?

(A) ~ 0.968 (B) ~ 0.981

(C) ~ 0.975 (D) ~ 0.922

52. **Assertion (A) :** Cost-benefit analysis for assessment of natural systems is not merely concerned with the effects on environmental quality but seeks the conditions for sustainable use of the natural resources of a region.

Reason (R) : Cost-benefit analysis is not useful for small scale development projects, but is better suited for the analysis and evaluation of a regional development plan.

Identify the correct answer :

Codes :

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

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

(C) (A) is true and (R) is wrong.

(D) Both (A) and (R) are wrong.

53. Battelle-Columbus weighting – scaling checklist methodology for water-resources projects obtains base line data on how many environmental parameters ?

(A) 40

(B) 78

(C) 68

(D) 50

54. Match List – I with List – II and choose the correct answer from the codes given below :

List – I	**List – II**
a. Checklists methods	i. Involve preparation of a set of transparent maps, which represent the spatial distribution of an environmental characteristics
b. Overlays methods	ii. Highly structured approaches involving importance weightings for factors and appli-cation of scaling techniques
c. Adhoc methods	iii. Identification and evaluation of interactions between various activities and environmental parameters
d. Matrices methods	iv. Indicate broad areas of possible impacts by listing composite environmental parameters

Codes :

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

55. Match List – I with List – II and choose the correct answer from the codes given below :

List – I (Criteria of EIA Methodology)	**List – II (Component)**
a. Impact identification	i. Magnitude
b. Impact measurement	ii. Specificity
c. Impact communication	iii. Depth of analysis
d. Impact interpretation	iv. Comprehensive overall perspective

Codes :

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

56. Significant hazard/accident factor to be considered under risk assessment of distillaries are

(A) toxic gas release and human accident

(B) pressure wave and heat radiation

(C) toxic gas release and radiation

(D) pressure wave and toxic gas release

57. If 'I' is the impact of the population on the environment, 'P' is the size of the population, 'A' is the per capita affluence or consumption and 'T' is the damage caused by technologies, then which of the following equation is correct ?

(A) $I = (P \times A)/T$

(B) $I = P \times A \times T$

(C) $I = T/(P \times A)$

(D) $I = P/(A \times T)$

58. According to Environment (Protection) Act, 1986 permissible limits of oil and grease in the effluents to be discharged into public sewers is

(A) 10 mg/*l*

(B) 20 mg/*l*

(C) 25 mg/*l*

(D) 30 mg/*l*

59. 'Reed swamp stage' is also referred to as

(A) submerged stage

(B) woodland stage

(C) rooted floated stage

(D) amphibious stage

60. Match List – I with List – II and choose the correct answer from the given codes :

List – I (Ecosystem types)	**List – II (Characteristics)**
a. Coral reefs	i. Still water
b. Deltas	ii. Saline water
c. Wetlands	iii. Brackish water
d. Rivers	iv. Fresh water

Codes :

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

61. Maximum energy content (KJ/kg) in a typical municipal solid waste is found in

(A) Plastic

(B) Leather

(C) Wood

(D) Textile

62. Public Liability Insurance Act was enacted in the year

(A) 1991

(B) 1993

(C) 1995

(D) 1997

63. A sample size of 17 observations is selected from a normal population with mean = 50. The sample mean and variance are 48 and 8 respectively. The value of t – statistic is

(A) 0.25

(B) – 2.82

(C) – 2.2

(D) 0.71

64. A class has equal number of boys and girls. The mean and standard deviation of their weights are $\bar{X}_g$ = 40 kg, S_g = 2 kg for girls and $\bar{X}_b$ = 50 kg, S_b = 2 kg for boys. What is the combined variance of the weights of the whole class ?

(A) 29 (B) 16

(C) 8 (D) 19

65. For a simple regression analysis involving the dependent variable Y and explanatory variable X, the following data is given :

No. of observations N = 40, $\Sigma X^2 = 2000$, $\Sigma Y^2 = 2000$, $\bar{X} = 20$, $\bar{Y} = 5$, standard error of estimate of Y on X, $S_{YX} = 4$. The explained variance is

(A) 360

(B) 860

(C) 500

(D) 580

66. A Ψ^2 distribution with 10 degrees of freedom has variance

(A) 10

(B) 20

(C) 5

(D) 40

67. The rank of the matrix $\begin{bmatrix} 1 & 1 & 1 \\ 1 & -1 & -1 \\ 3 & 1 & 1 \end{bmatrix}$ is

(A) 2

(B) 3

(C) 1

(D) Not possible to determine.

68. Which of the following is not an eigenvector of the matrix $\begin{bmatrix} 2 & 0 \\ 0 & 5 \end{bmatrix}$?

(A) $\begin{bmatrix} 1 \\ 0 \end{bmatrix}$

(B) $\begin{bmatrix} 0 \\ 1 \end{bmatrix}$

(C) $\begin{bmatrix} 0 \\ 2 \end{bmatrix}$

(D) $\begin{bmatrix} 1 \\ 1 \end{bmatrix}$

69. **Assertion (A) :** Ground level concentration of pollutants decreases when taller stacks are used.

Reason (R) : The ground level concentration varies inversely proportional to the height of the stacks.

Codes :

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

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

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

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

70. Assume that 5.3 billion people live in less developed countries, where average birth rate is 23 and infant mortality rate is 53. Then the total death due to infant mortality are

(A) 6.5×10^6/year

(B) 5.3×10^6/year

(C) 7.3×10^6/year

(D) 8.5×10^6/year

71. Which of the following act as 'natural sink for carbon' ?

I. Trees

II. Oceans

III. Soils

Choose the correct code :

(A) I only

(B) I and II only

(C) I, II and III

(D) II and III only

72. Match List – I with List – II and choose the correct answer from the codes given below:

List – I (GHGs)	**List – II (Atmospheric Lifetime) (Yrs)**
a. CFC-12	i. 12
b. Methane	ii. 50-200
c. CO_2	iii. 114
d. N_2O	iv. 100

Codes :

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

73. $REDD^+$ initiatives include

I. Forest carbon partnership facility

II. Forest investment programme

III. Sanitation for all

IV. Food security for all

Choose the correct code :

(A) I and IV only

(B) I and II only

(C) I, II and III only

(D) III and IV only

74. Match List – I with List – II and choose the correct answer from the codes given below:

List – I (Environment Related Treaties)	**List – II (Year)**
a. CITES	i. 1989
b. Basel	ii. 1973
c. UNFCCC	iii. 1997
d. Kyoto Protocol	iv. 1992

Codes :

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

75. Identify the correct sequence with reference to sensitization about environmental problems.

(A) Knowledge → Awareness → Attitude → Skill → Evaluation ability → Participation

(B) Knowledge → Awareness → Skill → Attitude → Participation → Evaluation ability

(C) Awareness → Knowledge → Attitude → Skill → Evaluation ability → Participation

(D) Awareness → Knowledge → Participation → Attitude → Skill → Evaluation ability

Space For Rough Work