

Answer Key: Assistant Professor (Environment Science)

Q No	Key
1	B
2	B
3	B
4	D
5	C
6	B
7	D
8	D
9	A
10	A
11	B
12	B
13	B
14	B
15	D
16	B
17	B
18	C
19	C
20	B
21	A
22	A
23	C
24	D
25	B

Q No	Key
26	B
27	A
28	C
29	D
30	B
31	A
32	C
33	C
34	C
35	A
36	B
37	C
38	B
39	A
40	A
41	C
42	D
43	B
44	D
45	D
46	B
47	C
48	C
49	A
50	D

Test Booklet

Series

A

Test Booklet No.

**Test Booklet for the Post of
Assistant Professor Environmental Science**

Name of Applicant Answer Sheet No.

Applicant ID/Roll No. : Signature of Applicant :

Date of Examination: Signature of the Invigilator(s)
1.

Time of Examination : 2.

Duration : 1 Hour]

[Maximum Marks : 50

IMPORTANT INSTRUCTIONS

- (i) The question paper is in the form of Test-Booklet containing **50 (Fifty)** questions. All questions are compulsory. Each question carries four answers marked (A), (B), (C) and (D), out of which only one is correct. Choose the correct option or the most appropriate option.
- (ii) On receipt of the Test-Booklet (Question Paper), the candidate should immediately check it and ensure that it contains all the pages, i.e., **50** questions. Discrepancy, if any, should be reported by the candidate to the invigilator immediately after receiving the Test-Booklet.
- (iii) A separate Answer-Sheet is provided with the Test-Booklet/Question Paper. On this sheet there are **50** rows containing four circles each. One row pertains to one question.
- (iv) The candidate should write his/her Application ID/Roll number at the places provided on the cover page of the Test-Booklet/Question Paper and on the Answer-Sheet and **NOWHERE ELSE**.
- (v) No second Test-Booklet/Question Paper and Answer-Sheet will be given to a candidate. The candidates are advised to be careful in handling it and writing the answer on the Answer-Sheet.
- (vi) For every correct answer of the question **One (1) mark will be awarded**. There will be negative marking and 1/4 (0.25) mark will be deducted for every incorrect answer.
- (vii) Marking shall be done only on the basis of answers responded on the Answer-Sheet.
- (viii) To mark the answer on the Answer-Sheet, candidate should **darken** the appropriate circle in the row of each question with Blue or Black pen.
- (ix) For each question only **one** circle should be **darkened** as a mark of the answer adopted by the candidate. If more than one circle for the question are found darkened or with one black circle any other circle carries any mark, the answer will be treated as incorrect.
- (x) The candidates should not remove any paper from the Test-Booklet/Question Paper. Attempting to remove any paper shall be liable to be punished for use of unfair means.
- (xi) Rough work may be done on the blank space provided in the Test-Booklet/Question Paper only.
- (xii) *Mobile phones (even in Switch-off mode) and such other communication/programmable devices are not allowed inside the examination hall.*
- (xiii) No candidate shall be permitted to leave the examination hall before the expiry of the time.

DO NOT OPEN THIS QUESTION BOOKLET UNTIL ASKED TO DO SO.

Environmental Science

[P.T.O.

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1. Which of the common mineral is not a silicate?
(A) Quartz (B) Calcite
(C) Pyroxene (D) Feldspar

2. Which of the following mode of expressing concentration is independent of temperature?
(A) Molarity (B) Molality
(C) Normality (D) Formality

3. Which of the following combinations is/are correct?
(a) FTIR (i) Functional groups
(b) ICPAES (ii) Detection of metals in water
(c) XRD (iii) Surface topography & composition
(d) SEM (iv) Crystal structure of materials
(A) (a) – (i), (b) – (ii), (c) – (iii), (d) – (iv)
(B) (a) – (i), (b) – (ii), (c) – (iv), (d) – (iii)
(C) (a) – (i), (b) – (iv), (c) – (iii), (d) – (ii)
(D) (a) – (iv), (b) – (ii), (c) – (iii), (d) – (i)

4. One Dobson unit, represents the ozone layer of thickness :
(A) One-thousandth of a millimetre
(B) One-tenth of a centimetre
(C) One-hundredth of a centimetre
(D) One-hundredth of a millimetre

5. Consider the following statements :
(a) Chromium (III) chemical species is more toxic than Chromium (VI)
(b) Dimethyl mercury is more toxic than methylmercury ion
(c) Arsenic (III) is more toxic than Arsenic (V)
Which of the above statements is/are correct?
(A) (b) only (B) (a), (b) and (c)
(C) (c) only (D) (a) and (c) only

6. A solution of chemical 'P' having its 0.18 mol/L concentration has an absorbance of 0.40. Another solution of 'P' under the same conditions has an absorbance of 0.32. What is the concentration of this solution of 'P'?
(A) 0.108 mol/L (B) 0.144 mol/L
(C) 0.10 mol/L (D) 0.35 mol/L

7. Which of the following statements is NOT correct with regard to chemical analysis by flame photometer?
- (A) The intensity of the colour tells us the amount of the element present
 - (B) The wavelength of the colour identifies the element present
 - (C) The ions absorb the energy from the flame and get excited
 - (D) When ions return from excited state to ground state, it absorbs the radiation of a characteristic frequency.
8. Which of the following characteristic is not true for the r-strategists?
- (A) Small organisms with high fecundity
 - (B) Produce many offsprings each of which has a relatively low probability of surviving to adulthood
 - (C) Survivorship curve is concave
 - (D) High level of social organization
9. A country has population of 350 million and an annual growth of population 2.0% at $t = 0$. There after the population stabilises at 1.4 billion. How long it will take for the population to reach 0.7 billion?
- (A) ~41.2 years
 - (B) ~17.9 years
 - (C) ~5 years
 - (D) ~35.0 years
10. Match the following and choose which of the following combinations is/are correct?
- | | |
|--------------------|-----------------|
| (a) Dispersion | (i) Succession |
| (b) Stratification | (ii) Population |
| (c) Climax | (iii) Community |
| (d) Integrity | (iv) Ecosystem |
- (A) (a) – (ii), (b) – (iii), (c) – (i), (d) – (iv)
 - (B) (a) – (iii), (b) – (i), (c) – (ii), (d) – (iv)
 - (C) (a) – (ii), (b) – (iv), (c) – (iii), (d) – (i)
 - (D) (a) – (ii), (b) – (iii), (c) – (i), (d) – (iv)
11. The process of 'Nebulisation' in Atomic Absorption Spectrophotometry is to
- (A) Convert the liquid sample to gaseous form
 - (B) Convert the liquid sample into small droplets
 - (C) Sublimate the sample
 - (D) Solubilisation of the solute.

12. What is the correct sequence in decreasing order of hardness among the following :
- (a) Quartz
 - (b) Fluorite
 - (c) Gypsum
 - (d) Topaz
- (A) $a > b > c > d$ (B) $d > a > b > c$
 (C) $d > c > a > b$ (D) $d > b > c > a$
13. Under the clear sunny day, the maximum depth of the ocean at which photosynthesis can occur is :
- (A) 10 m (B) 250 m
 - (C) 80 m (D) 600 m
14. Which type of plume is obtained when atmospheric conditions are stable above the plume and unstable below?
- (A) Lofting (B) Fumigating
 - (C) Fanning (D) Coning
15. Life Cycle Assessment does not include
- (A) Life Cycle Inventory of the product
 - (B) Quantitative improvement in the process of the product
 - (C) Life Cycle Impact Analysis
 - (D) Emergency Preparedness Plan
16. Pyrolysis of Solid Waste refers to
- (A) High temperature aerobic incineration
 - (B) High temperature anaerobic distillation of waste for energy generation
 - (C) Ambient aerobic distillation
 - (D) Ambient anaerobic distillation
17. Water has the following chemical composition :
- $[Ca^{2+}] = 15 \text{ mg/L};$
 $[Mg^{2+}] = 10 \text{ mg/L};$
 $[SO_4^{2-}] = 30 \text{ mg/L};$
 The total hardness of water will be
- (A) 55 mg/L as $CaCO_3$ (B) 80 mg/L as $CaCO_3$
 - (C) 160 mg/L as $CaCO_3$ (D) 40 mg/L as $CaCO_3$

18. What will be the Sludge Volume Index (SVI), if 100 ml of sludge collected in 30 minutes on drying weighs 500 mg?
(A) 115 (B) 125
(C) 200 (D) 100
19. After 5 days of incubation at 20°C, the residual dissolved oxygen in blank was 8.80 mg/L and in a 0.1 percent dilution of the waste was 3.20 mg/L. What is the 5-day BOD of the waste?
(A) 56 mg/L (B) 560 mg/L
(C) 5600 mg/L (D) 56000 mg/L
20. Which of the following products are produced during digestion of organic biodegradable fraction of municipal solid wastes in the absence of oxygen?
(A) CO₂ and H₂ (B) CH₄ and CO₂
(C) CH₄, CO₂ and H₂ (D) O₂ and H₂S
21. Which article of Constitution of India places an obligation on the State to protect the environment and wildlife?
(A) Article 48A (B) Article 51A
(C) Article 21A (D) Article 28A
22. According to Biomedical Waste Management Rules, 2016 of the Government of India, which coloured non-chlorinated plastic bags should be used for the collection of human anatomical waste?
(A) Yellow (B) Red
(C) White (D) Blue
23. Which Act is widely considered to have been a response to the Bhopal Gas Tragedy?
(A) Hazardous & Other Waste (Management & Transboundary Movement) Rules, 2016
(B) Air (Prevention and Control of Pollution) Act, 1981
(C) Environmental Protection Act, 1986
(D) Water (Prevention and Control of Pollution) Act, 1974
24. Which pair is NOT correctly matched?
(A) Environmental Auditing – ISO 14010
(B) Reducing GHGs – ISO I4064
(C) Life Cycle Assessment – ISO 14040
(D) Environmental Labelling – ISO 14012

25. If the impact level of a development project is not visible in the screening stage of EIA, then what step should be adopted?
- (A) Scoping stage is to be followed.
 (B) A rapid EIA study is to be conducted.
 (C) Detail EIA study is to be conducted.
 (D) The project should be given Environmental Clearance.
26. A container has 3 green and 4 red balls identical in size. Two balls are drawn at random one after the other. If the balls are not replaced, what is the probability that both the balls are red?
- (A) $1/7$ (B) $2/7$
 (C) $16/49$ (D) $4/7$
27. Match the following and choose which of the following combinations is/are correct?
- (a) One-way ANOVA (i) Testing significance of difference of more than 2 sample means
 (b) Chi-square Test (ii) Testing goodness of fit of a distribution
 (c) Z-Test (iii) Testing the significance between two large sized samples
 (d) t-test (iv) Testing significance between two small sized samples
- (A) (a)–(i), (b)–(ii), (c)–(iii), (d)–(iv)
 (B) (a)–(iii), (b)–(i), (c)–(ii), (d)–(iv)
 (C) (a)–(i), (b)–(iv), (c)–(iii), (d)–(ii)
 (D) (a)–(ii), (b)–(iii), (c)–(i), (d)–(iv)
28. Which of the following compounds in dirty dozen's list of persistent organic pollutants (POPs) are formed as a byproduct of other compounds and not released directly in the environment?
- (a) DDT
 (b) Polychlorinated dibenzo-p-dioxins
 (c) Hexachlorobenzene
 (d) Dibenzofurans
- (A) (a), (b) and (d) only (B) (a), (b) and (c) only
 (C) (b) and (d) only (D) (b), (c) and (d) only
29. During remote sensing of the vegetation cover, the spectral reflection of vegetation over electromagnetic radiation spectrum depends upon
- (A) Pigmentation in the leaf (B) Structure of the leaf
 (C) Moisture content of the leaf (D) All of these

30. Which of the following is an incorrect pair with respect to Ramsar wetland sites and their location?
- (A) Renuka Wetland – Himachal Pradesh
 (B) Bhoj Wetlands – Gujarat
 (C) Wular Lake – Jammu and Kashmir
 (D) Chilka Lake – Odisha
31. Which pair is matched correctly?
- (A) Arsenic – Black foot disease
 (B) Mercury – Blue baby syndrome
 (C) Fluoride – Minamata disease
 (D) Nitrate – Skeletal fluorosis
32. Which city was awarded as the cleanest city as part of the Azadi@75 Swachh Survekshan, 2022 under Swachh Bharat Mission – Urban 2.0?
- (A) Surat (B) Bhopal
 (C) Indore (D) Mysuru
33. Under the GRIHA Rating Norms, a building securing 75 points on a 100 points scale will be assigned which of the following certification in the form of star rating?
- (A) Two Star (B) Three Star
 (C) Four Star (D) Five Star
34. What is the CFC number for halocarbon $\text{CF}_2\text{ClCFCl}_2$?
- (A) 132 (B) 134
 (C) 113 (D) 143
35. Match the following and choose the correct combinations from the options given below :
- (a) Chipko Movement (i) Medha Patkar
 (b) Silent Valley Movement (ii) Panduranga Hegde
 (c) Narmada Bachao Andolan (iii) Sunderlal Bahuguna
 (d) Appiko Movement (iv) Kerala Sastra Sahitya Parishad
- (A) (a) – (iii), (b) – (iv), (c) – (i), (d) – (ii)
 (B) (a) – (iii), (b) – (i), (c) – (ii), (d) – (iv)
 (C) (a) – (i), (b) – (iv), (c) – (iii), (d) – (ii)
 (D) (a) – (ii), (b) – (iii), (c) – (i), (d) – (iv)

36. Specific mortality of members of a population is expressed by
(A) Life Table (B) Survivorship Curve
(C) Rate of Mortality (D) Rate of Fecundity
37. To survive and avoid competition for the same resources, a species usually occupies only part of its fundamental niche in a particular community or ecosystem. This is called
(A) Geographical isolation (B) Mutualism
(C) Realized Niche (D) Broad Niche
38. The sequence of fossil fuels in order of higher to lower heating value is as follows :
(A) Coal, Petroleum, Natural Gas, Hydrogen
(B) Hydrogen, Natural Gas, Petroleum, Coal
(C) Hydrogen, Coal, Petroleum, Natural Gas
(D) Natural Gas, Petroleum, Coal, Hydrogen
39. In a Breeder reactor
(A) Neutrons first convert a fertile material into fissile material and then sustain the fission reaction
(B) Neutrons first start the fission reaction and fissile material is a by-product
(C) Fissile material produces fertile material
(D) Ratio of amount of fissile material produced to fissile material consumed should be less than one
40. For a negatively skewed distribution, which is the correct relation?
(A) Arithmetic mean < Median < Mode
(B) Arithmetic mean < Mode < Median
(C) Arithmetic mean > Median > Mode
(D) Median = Mode > Arithmetic mean
41. Three coloured sheets of equal thickness are placed in a light beam. Each sheet absorbs 20% of light incident on it. What is the intensity of light transmitted after the third plate?
(A) 9.0% (B) 30.5%
(C) 51.2% (D) 40.0%

42. In a volumetric titration, a 20 ml aqueous HCl solution, needs 10 ml of 0.1 N NaOH for complete neutralization.

The concentration of HCl Solution is

- (A) 0.2 N (B) 0.002 N
(C) 0.01 N (D) 0.05 N

43. Match the List-I and List-II. Identify the correct answer from the code given below :

- | List-I | List-II |
|---------------|---|
| (a) ISO 14021 | (i) Principles and Procedures |
| (b) ISO 14022 | (ii) Self declaration of environmental claims |
| (c) ISO 14023 | (iii) Symbols |
| (d) ISO 14024 | (iv) Testing and verification methods |
- (A) (a) – (i), (b) – (ii), (c) – (iii), (d) – (iv)
(B) (a) – (ii), (b) – (iii), (c) – (iv), (d) – (i)
(C) (a) – (iii), (b) – (iv), (c) – (i), (d) – (ii)
(D) (a) – (iv), (b) – (i), (c) – (iii), (d) – (ii)

44. The half-life period of a radioactive substance is 50 h. How much time it would take for its 75% disintegration?

- (A) 25 h (B) 75 h
(C) 150 h (D) 100 h

45. Superfund is related with

- (A) Protection of ozone layer from CFCs
(B) Growing of trees in devastated forests
(C) Production of wild animals using genetic engineering
(D) Cleaning sites contaminated with hazardous substances

46. The presence of ammonia in groundwater may indicate a nearby

- (A) Coal mine (B) Municipal solid waste dumping site
(C) Thermal power plant (D) Granite quarry

47. A species having a dominating influence on the structure and function of a community or ecosystem is known as

- (A) Fundamental species (B) Functional species
(C) Keystone species (D) Indicator species

48. The environmental lapse rate during day time is governed by

- (i) Wind speed
- (ii) Sunlight
- (iii) Topographical features
- (iv) Cloud cover

Choose the correct answer :

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

49. Wastes are known to be corrosive if the pH is

- (A) ≤ 2
- (B) ≤ 3
- (C) ≤ 4
- (D) ≤ 5

50. Which pair is NOT correctly matched?

- (A) Bhagirathi river – Tehri Dam
- (B) Narmada river – Sardar Sarovar Dam
- (C) Krishna river – Almatti Dam
- (D) Gomati river – Loktak Dam

ROUGH WORK