Test Booklet Code & Serial No.
प्रश्नपत्रिका कोड व क्रमांक

A

Paper-II

ENVIRONMENTAL SCIENCE

Signature and Name of Invigilator

1. (Signature) .....

(Name) .....

2. (Signature) .....

(Name) .....

Seat No. | | | | | | |

(In figures as in Admit Card)

Seat No. .....

(In words)

OMR Sheet No. | | | | | | |

(To be filled by the Candidate)

APR - 31217

Time Allowed : 1¼ Hours] **[Maximum Marks : 100**

Number of Pages in this Booklet : **16**

Number of Questions in this Booklet : **50**

Instructions for the Candidates

1. Write your Seat No. and OMR Sheet No. in the space provided on the top of this page.
2. This paper consists of **50** objective type questions. Each question will carry *two* marks. *All* questions of Paper-II will be compulsory, covering entire syllabus (including all electives, without options).
3. At the commencement of examination, the question booklet will be given to the student. In the first 5 minutes, you are requested to open the booklet and compulsorily examine it as follows :
   (*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 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 missing pages/ questions or questions repeated or not in serial order or any other discrepancy should not be accepted and correct booklet should be obtained from the invigilator within the period of 5 minutes. Afterwards, neither the Question Booklet will be replaced nor any extra time will be given. The same may please be noted.**
   (*iii*) After this verification is over, the OMR Sheet Number should be entered on this Test Booklet.
4. Each question 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.

   (A) (B) ● (D)

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 at the end of this booklet.
8. If you write your Name, Seat 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, you will render yourself liable to disqualification.
9. You have to return original OMR Sheet to the invigilator at the end of the examination compulsorily and must not carry it with you outside the Examination Hall. You are, however, allowed to carry the Test 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 marking for incorrect answers.**

विद्यार्थ्यांसाठी महत्त्वाच्या सूचना

1. परिक्षार्थींनी आपला आसन क्रमांक या पृष्ठावरील वरच्या कोपऱ्यात लिहावा. तसेच आपणांस दिलेल्या उत्तरपत्रिकेचा क्रमांक त्याखाली लिहावा.
2. सदर प्रश्नपत्रिकेत **50** बहुपर्यायी प्रश्न आहेत. प्रत्येक प्रश्नास **दोन** गुण आहेत. या प्रश्नपत्रिकेतील **सर्व** प्रश्न सोडविणे अनिवार्य आहे. सदरचे प्रश्न हे या विषयाच्या संपूर्ण अभ्यासक्रमावर आधारित आहेत.
3. परीक्षा सुरू झाल्यावर विद्यार्थ्याला प्रश्नपत्रिका दिली जाईल. सुरुवातीच्या 5 मिनीटांमध्ये आपण सदर प्रश्नपत्रिका उघडून खालील बाबी अवश्य तपासून पहाव्यात.
   (*i*) प्रश्नपत्रिका उघडण्यासाठी प्रश्नपत्रिकेवर लावलेले सील उघडावे. सील नसलेली किंवा सील उघडलेली प्रश्नपत्रिका स्विकारू नये.
   (*ii*) **पहिल्या पृष्ठावर नमूद केल्याप्रमाणे प्रश्नपत्रिकेची एकूण पृष्ठे तसेच प्रश्नपत्रिकेतील एकूण प्रश्नांची संख्या पडताळून पहावी. पृष्ठे कमी असलेली/कमी प्रश्न असलेली/प्रश्नांचा चूकीचा क्रम असलेली किंवा इतर त्रुटी असलेली सदोष प्रश्नपत्रिका सुरुवातीच्या 5 मिनिटातच पर्यवेक्षकाला परत देऊन दुसरी प्रश्नपत्रिका मागवून घ्यावी. त्यानंतर प्रश्नपत्रिका बदलून मिळणार नाही तसेच वेळही वाढवून मिळणार नाही याची कृपया विद्यार्थ्यांनी नोंद घ्यावी.**
   (*iii*) वरीलप्रमाणे सर्व पडताळून पहिल्यानंतरच प्रश्नपत्रिकेवर ओ.एम.आर. उत्तरपत्रिकेचा नंबर लिहावा.
4. प्रत्येक प्रश्नासाठी (A), (B), (C) आणि (D) अशी चार विकल्प उत्तरे दिली आहेत. त्यातील योग्य उत्तराचा रकाना खाली दर्शविल्याप्रमाणे ठळकपणे काळा/निळा करावा.
   उदा. : जर (C) हे योग्य उत्तर असेल तर.

   (A) (B) ● (D)

5. या प्रश्नपत्रिकेतील प्रश्नांची उत्तरे **ओ.एम.आर. उत्तरपत्रिकेतच दर्शवावीत.** इतर ठिकाणी लिहीलेली उत्तरे तपासली जाणार नाहीत.
6. आत दिलेल्या सूचना काळजीपूर्वक वाचाव्यात.
7. प्रश्नपत्रिकेच्या शेवटी जोडलेल्या कोऱ्या पानावरच कच्चे काम करावे.
8. जर आपण ओ.एम.आर. वर नमूद केलेल्या ठिकाणा व्यतिरीक्त इतर कोठेही नाव, आसन क्रमांक, फोन नंबर किंवा ओळख पटेल अशी कोणतीही खूण केलेली आढळून आल्यास अथवा असभ्य भाषेचा वापर किंवा इतर गैरमार्गाचा अवलंब केल्यास विद्यार्थ्याला परीक्षेस अपात्र ठरविण्यात येईल.
9. परीक्षा संपल्यानंतर विद्यार्थ्याने मूळ ओ.एम.आर. उत्तरपत्रिका पर्यवेक्षकांकडे परत करणे आवश्यक आहे. तथापी, प्रश्नपत्रिका व ओ.एम.आर. उत्तरपत्रिकेची द्वितीय प्रत आपल्याबरोबर नेण्यास विद्यार्थ्यांना परवानगी आहे.
10. **फक्त निळ्या किंवा काळ्या बॉल पेनचाच वापर करावा.**
11. **कॅलक्युलेटर किंवा लॉग टेबल वापरण्यास परवानगी नाही.**
12. **चुकीच्या उत्तरासाठी गुण कपात केली जाणार नाही.**

Environmental Science

Paper II

Time Allowed : 75 Minutes] **[Maximum Marks : 100**

Note : This paper contains **Fifty (50)** multiple choice questions. Each question carries **Two (2)** marks. Attempt *All* questions.

1. Palustrine wetlands are called marshes, bog and tens are :

   (A) Acidic

   (B) Neutral

   (C) Alkaline

   (D) Oligotrophic

2. Surfactants or surface active agents are large organic molecules responsible in the waste water treatment :

   (A) Foaming on the waste water treatment

   (B) Encourage waste water treatment

   (C) Allow oxygen to saturate

   (D) Help to create upper photic zone

3. Analysis of polluted water will show the following patterns of the result :

   (A) High DO – High BOD

   (B) Low DO – Low BOD

   (C) Low DO – High BOD

   (D) No variations in DO and BOD.

4. A biological treatment of sewage where organisms are in suspension found in :

   (A) Trickling filters

   (B) Biological rotating contractor

   (C) Activated sludge

   (D) Upflow sewage blanket

5. Species with wide geographical ranges develop locally adapted population are known as :

(A) Species

(B) Genera

(C) Ecotypes

(D) Phyllum

6. Convention on International Trade for Endangered Species (CITES) has prepared list of species into various categories also known as appendix. The list of species which are to totally banned are in :

(A) Appendix-II

(B) Appendix-III

(C) Appendix-I

(D) Appendix-D

7. In ecology the relative degree of tolerance is seen in an organism. The term stenothermal is related to temperature :

(A) Narrow range of tolerance

(B) Wide range of tolerance

(C) Sensitive to tolerance

(D) Stenocious

8. To assess the presence of pathogenic bacteria and effectiveness of disinfection process which of the following analysis is done ?

(A) TOC

(B) BOD

(C) COD

(D) Total coliform

9. Mega-diversity region of the world are assigned on the basis of :

(A) Ecosystem richness

(B) Species richness

(C) Richness of genera

(D) Community richness

10. Succession controlled and motivated by man is termed as :

(A) Autogenic succession

(B) Induced succession

(C) Allogenic succession

(D) Secondary succession

11. During nitrification, BOD is higher than true value of the waste water due to :

(A) Oxidation of carbonaceous material

(B) Accumulation of fatty substance

(C) Suspended material

(D) All of the above

12. According to Myers, 2000, the number of hotspot in the world are :

(A) 25

(B) 10

(C) 17

(D) 13

13. In Xerosere ecological succession pioneer species are :

(A) Lichens

(B) Trees

(C) Shrubs

(D) Climbers

14. Microorganisms that derive their energy from oxidising inorganic compounds and use carbon dioxide as their carbon source are known as :

(A) Autotrophs

(B) Heterotrophs

(C) Chemoautotroph

(D) Saprotroph

15. The first national park of India "Jim Corbett National Park" was established in :

(A) 1905

(B) 1936

(C) 1971

(D) 1948

16. On molecule to molecule basis, the heat trapping potential is maximum of :

(A) CO_2

(B) CH_4

(C) Water vapour

(D) SO_2

17. The only Floating National Park of India is :

(A) Jim Corbett

(B) Kaziranga

(C) Keoladeo Ghana

(D) Keibul Lamjao

18. Method of measurement of dust pollution is based on :

(A) Titration

(B) Gravimetric analysis

(C) Gas chromatography

(D) Bomb calorimeter

19. What is the particle size (in micron) in the dust pollution adversely affecting the alveoli of the human lungs ?

(A) PM 200

(B) PM 100

(C) PM 10

(D) PM 2.5

20. Decanter equipment is used in treatment of :

(A) Water pollution effluent treatment

(B) Air pollution gaseous treatment

(C) Soil contamination

(D) Noise pollution from loudspeakers

21. The Environment (Protection) Act was promulgated in the year :

(A) 1981

(B) 1974

(C) 1986

(D) 1977

22. Hospital wastes are :

(A) Inflammable

(B) Infectious

(C) Reactive

(D) Corrosive

23. Which one of the following is *not* the allotrope of carbon ?

(A) Graphite

(B) Diamond

(C) C_2^{2-}

(D) C_{60}

24. Nitrogen content in urea is :

(A) 46%

(B) 36%

(C) 26%

(D) 16%

25. Permanent hardness of water is due to the presence of :

(A) Carbonates and bicarbonates

(B) Carbonates and nitrates

(C) Sulphates and chlorides

(D) All of the above

26. Which one of the following is an ozone depleting substance (ODS) group ?

(A) Methyl acetate, ferric chloride, HFC, CFC

(B) Methyl bromide, methane, CCl_4, CFC

(C) Methyl chloroform CCl_4, HFC, CFC

(D) Acetone, CCl_4, methyl bromide, CFC

27. Which of the following has decreasing solubility with increasing temperature ?

(A) K_2SO_4

(B) KNO_3

(C) $Ce_2(SO_4)_3$

(D) $KClO_3$

28. Which one of the following is most abundant in the atmosphere ?

(A) He

(B) Ne

(C) Ar

(D) Xe

29. Number of moles present in one kilogram of solvent is called as :

(A) Normality

(B) Molarity

(C) Molality

(D) None of the above

30. Which of the following can not be performed by gas chromatography ?

(A) VOC determination

(B) Drug impurity profile

(C) Sodium determination in water sample

(D) Lubricant analysis

31. The following compounds are used as flocculators :

(A) K_2SO_4 and starch

(B) H_2SO_4 and activated silica

(C) Polyacrylamide and starch

(D) Starch and K_2SO_4

32. If an object, such an apple, is lifted above your head, the input energy is stored in a form called :

(A) Gravitational potential energy

(B) Chemical energy

(C) Kinetic energy

(D) Electrical energy

33. The severe convective storms (Thunder storms) are generally common over NE India during :

(A) Winter

(B) Summer monsoon season

(C) Premonsoon season

(D) Nov-Dec.

34. The total ozone of the atmosphere is mostly concentrated :

(A) Between 10-15 km

(B) Between 25-30 km

(C) Between 35-50 km

(D) Above 50 km

35. In an environmental analysis, potassium content is expected as 6.00 mg/l but the analyst reported its value as 6.03 mg/l percent error in the measurement is :

(A) 1%

(B) 0.5%

(C) 10%

(D) 5%

36. Approximate relationship between effective head flow rate of a hydrosite and power generated P in kW is given by (where 'H' is in meter and Q is in cubic meter per sec) :

(A) $P = 100 \times Q \times H$

(B) $P = 10 \times Q \times H^2$

(C) $P = 10 \times Q \times H$

(D) $P = Q \times H$

37. The energy contained in the wind in KE/sec is given by a relationship which is proportional to :

(A) V

(B) V^2

(C) V^3

(D) $V^{1/2}$

38. Most economic method of water conservation is :

(A) Construction of dams

(B) Interlinking of rivers

(C) Rainwater harvesting

(D) Watershed management

39. Groundwater arsenic contamination is known over the years in various parts of the world, the major incidence noted in Indian subcontinent is in :

(A) West Bengal and Bangladesh region

(B) Andhra Pradesh

(C) Maharashtra

(D) Punjab

40. The limit of 50 mg NO_3 per lit in ground water was originally set to protect babies against :

(A) Methanoglobinaemia

(B) Fluorosis

(C) Arsenicosis

(D) Minamata

41. Indus Water Treaty is in between :

(A) India and Bangladesh

(B) India and China

(C) India and Pakistan

(D) India and Afghanistan

42. Which of the following is most responsible for world water crisis ?

(A) Dams

(B) Floods

(C) Drought

(D) Population growth.

43. World water vision has its goal to provide safe and sufficient water to all by :

(A) 2010

(B) 2015

(C) 2020

(D) 2025

44. The slow uplift of the crust after glacial retreat is called :

(A) Isostatic rebound

(B) Isostatic stacking

(C) Isostatic retreat

(D) Elastic stacking

45. Temporal resolution refers to the temporal frequency with which a given scene can be imaged usually expressed in days, the highest temporal resolution is possible by geosynchronous observation systems like :

(A) METEOSAT

(B) SeaWiFS

(C) IRS-1C

(D) SPOT

46. A student measures pencil length as 10.2 cm against its standard length of 10 cm. Percent error in the measurement is :

(A) 1%

(B) 2%

(C) 10%

(D) 20%

47. How the air quality of an urban center will be classified for an exceedence factor more than 1.5 ?

(A) Low pollution

(B) Moderate pollution

(C) Critical pollution

(D) High pollution

48. The measure of the amount of oxygen required by aerobic micro-organisms to break down the organic compounds to less harmful substances such as carbon dioxide is called :

(A) COD

(B) BOD

(C) TOD

(D) NOD

49. Which ethanologenic bacteria has potential for bioethanol production from molasses sugar hydrolysate similar to *Saccharomyces cerevisiae* ?

(A) *Clostridium acetobutylicum*

(B) *Acetobacter suboxydans*

(C) *Schizosaccharomyces pombe*

(D) *Zymomonas mobilis*

50. What is the most beneficial byproduct obtained from molasses based ethanol production by *Saccharomyces cerevisiae* ?

(A) Glycerol

(B) Isopropanol

(C) Yeast cell biomass for animal feed

(D) Butanol

ROUGH WORK

ROUGH WORK