

BSubject Code :- 21020
વિષય કોડ :- 21020Que. Paper Series
પ્રશ્નપુસ્તિકા કોડ**Environmental Science
(Science)**

Candidate's Roll No.

Supervisor's Signature

Time : 1 Hours
Total Ques. : 50
Total Marks : 50

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Instructions to Candidates / ઉમેદવારોને સૂચના

- (1) There are 50 questions in the Test Booklet. The answer of each question is any one out of A, B, C and D. Four alternatives are given with the question. You have to answer all the questions.
- (2) Each correct answer carries (1)one mark. For each wrong multiple answer for each question will be treated as wrong. No negative marking for wrong answer.
- (3) You have to answer on the OMR Sheet is given separately to you. For example : Which State of India has the longest Sea Coast ?
(A) Maharashtra (B) Tamil Nadu
(C) Gujarat (D) Andra Pradesh
In OMR Answer Sheet :
(A) (B) (C) (D)
The true answer is "C". Hence circle of "C" is blackened (encode).
- (4) Don't write anything on the Test Booklet.
- (5) Use blue/black inked ballpoint pen for filling responses in the OMR Answer Sheet. Any other ink, pen or Pencil is strictly prohibited.
- (6) During exam from candidate, if any false matter, guide, cheats, slips, any handwritten material, any printed material, mobile phone, pager, calculator or any electronic equipments are found he/she will be disqualified.
- (7) Gossips, making noise or disobeying instructions given by Invigilator will be considered disobedience.
- (8) Do Rough Work on last page.

Do not open the Question Booklet until ask to do so.

- (1) આ પ્રશ્નપુસ્તિકામાં કુલ 50 પ્રશ્નો છે. પ્રત્યેક પ્રશ્નનો સાચો ઉત્તર A, B, C અને D પૈકી કોઈ એક છે. પ્રશ્નની સાથે જ ચારેય વિકલ્પો આપવામાં આવેલા છે. તમારે બધા જ પ્રશ્નોના ઉત્તર આપવાના છે.
- (2) પ્રત્યેક પ્રશ્નના સાચા ઉત્તર માટે 1(એક) ગુણ છે. એક કરતા વધુ વિકલ્પ ડાર્ક કરનાર જવાબને ખોટો ગણવામાં આવશે. ખોટા જવાબ માટે કોઈ ગુણ કપાત થશે નહીં.
- (3) ઉત્તર આપવા માટે અલગ ઉત્તરવહી (OMR SHEET) આપી છે. ઉત્તર નીચેના ઉદાહરણ પ્રમાણે આપવાના છે. ભારતનું કયું રાજ્ય સૌથી લાંબો દરિયા-કિનારો ધરાવે છે ?
(A) મહારાષ્ટ્ર (B) તામિલનાડુ
(C) ગુજરાત (D) આંધ્રપ્રદેશ
ઉત્તરવહી (OMR SHEET)માં

(A) (B) (C) (D)

- (4) ઉપરોક્ત પ્રશ્નનો સાચો ઉત્તર "C" છે. આથી "C"નું વર્તુળ કાળું (encode) કરેલ છે.
- (5) આ પ્રશ્નપુસ્તિકામાં કશું જ લખવાનું નથી.
- (6) ઉત્તરવહીમાં ઉત્તરો વાદળી / કાળી શાહીની બોલપોઈન્ટ પેનથી આપવાનાં છે. અન્ય શાહી, પેન કે પેન્સિલનો ઉપયોગ કરી શકાશે નહીં.
- (7) પરીક્ષા દરમ્યાન ઉમેદવાર પાસેથી કોઈ પણ સાહિત્ય, ગાઈડ, માર્ગદર્શિકા, કાપડી, સ્લીપો, અન્ય હસ્તલિખિત કે પ્રિન્ટેડ સાહિત્ય, મોબાઈલ ફોન, પેજર, કેલ્ક્યુલેટર કે અન્ય વીજાણુ ઉપકરણો હોવાનું જણાશે તો ઉમેદવારને ગેરલાયક ગણવામાં આવશે.
- (8) ચાલુ પરીક્ષા દરમ્યાન અંદરોઅંદર ગુસપુસ કરવી, અવાજ કરવો કે નિરીક્ષકની સૂચનાઓનું ઉલ્લંઘન કરવું તે ગેરશિસ્ત ગણાશે.
- (8) રફકામ છેલ્લાં પેજ પર કરવું.

ઉત્તરવહી (OMR Answer sheet) બે પ્રતમાં છે. પરીક્ષા પૂરી થયા બાદ ઉત્તરવહી (OMR Answer Sheet)ની પ્રથમ સ્કેનિંગ પ્રત (Scanning Copy) વર્ગ નિરીક્ષકને પરત કર્યા બાદ જ વર્ગખંડ છોડવાનો રહેશે. તેમ કરવામાં કસૂર થયેથી શિસ્તભંગનાં પગલાં ગણી પરીક્ષા માટે જે તે ઉમેદવારને ગેરલાયક ઠેરવવામાં આવશે. બીજી ઉમેદવાર પ્રત (Candidate Copy) ઉમેદવાર સાથે લઈ જઈ શકશે. પ્રશ્નપુસ્તિકા અને બીજી પ્રત ઉમેદવાર પોતાની જોડે લઈ જઈ શકશે.

- 1 Which of the following pertains to "high-waste approach" in dealing with the solid and hazardous wastes?
- (A) Burying and burning
 - (B) Recycling
 - (C) Composting
 - (D) Reusing
- 2 Which one of the following is used in manufacturing flexible plastic bags and sheets?
- (A) Polystyrene (PS)
 - (B) Polyethylene terephthalate (PET)
 - (C) Low density polyethylene (LDPE)
 - (D) TEFLON
- 3 Coagulation is a chemical process, in which charged particles or colloids undergo?
- (A) Stabilization
 - (B) Destabilization
 - (C) Attraction
 - (D) Precipitation
- 4 In a one-way ANOVA, explained variance was found to be 8.0 and unexplained variance was 3.67. The F-ratio is:
- (A) 0.46
 - (B) 4.26
 - (C) 2
 - (D) 2.18
- 5 In total global emission of CO₂, India's contribution is about:
- (A) 3%
 - (B) 6%
 - (C) 10%
 - (D) 9%

- 6 Under Air Act 1981, which body is empowered to set standards for Ambient Air quality ?
- (A) MoEF
 - (B) Ministry of Home Affairs
 - (C) CPCB
 - (D) State Ministry of Home Affairs
- 7 The reaction of OH radicals with which of the following species generates hydrogen atom?
- (A) CH_4
 - (B) NH_3
 - (C) CO
 - (D) NO_2
- 8 Night-time tropospheric chemistry is dominated by which of the following radicals ?
- (A) NO_3
 - (B) $\cdot\text{OH}$
 - (C) HO_2
 - (D) $\cdot\text{O}$
- 9 Biodiesel is produced from oils and fats using:
- (A) Trans-esterification
 - (B) Anaerobic digestion
 - (C) Pyrolysis
 - (D) Fermentation
- 10 A developmental project requires both environmental clearance as well as approval under
- (A) Water Act, 1974
 - (B) Forest (Conservation) Act, 1980
 - (C) National Environmental Tribunal Act, 1995
 - (D) Air Act, 1981

- 11 Which one of the following waste may undergo exothermic self-accelerating decomposition?
- (A) Organic peroxides
 - (B) Arsenic bearing sludge
 - (C) Organochlorines
 - (D) Vinylchlorides
- 12 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) $F_C = F_b - F_f/2$
 - (D) $F_C = F_b + F_f/2$
- 13 Which one of the following is the best tool to study the interacting residues in protein-legand interaction?
- (A) X-ray crystallography
 - (B) Circular dichroism spectroscopy
 - (C) UV-Vis spectroscopy
 - (D) Fluorescence spectroscopy
- 14 Chemosynthesis involves CO_2 fixation using energy derived from
- (A) Sunlight
 - (B) Infrared radiation
 - (C) UV-radiation
 - (D) Inorganic and Organic compounds
- 15 Wind in the mountain-valley regions are of:
- (A) Microscale
 - (B) Mesoscale
 - (C) Macroscale
 - (D) Synoptic scale

- 16 Blue baby syndrome is caused by:
- (A) Carbon monoxide
 - (B) Nitrate
 - (C) Fluoride
 - (D) Mercury
- 17 Assertion (A) : Upper atmosphere shields life on earth.
Reason (R) : Ultraviolet radiations are absorbed in the upper atmosphere.
Choose 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 the correct explanation of (A)
 - (C) (A) is true and (R) is false
 - (D) (A) is false but (R) is true
- 18 Wildlife Week is celebrated from :
- (A) 1st October to 7th October
 - (B) 15th October to 21st October
 - (C) 1st June to 7th June
 - (D) 15th June to 21st June
- 19 The principal components of photochemical smog in urban areas are:
- (A) SO₂ and NO₂
 - (B) SPM and CO
 - (C) SPM and NO₂
 - (D) Oxides of Nitrogen, Hydrocarbons and Ozone
- 20 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) only

- 21 Assertion (A) : Biosphere constitutes an excellent life-support system which is sustainable and can fulfil all human needs.
Reason (R) : The size and productivity of the Biosphere is limited by availability of water, nutrients and environmental conditions.
Identify the correct code.
- (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) (A) is false but (R) is true
- 22 Geostrophic wind occurs when pressure gradient force balances
- (A) Coriolis force
(B) Frictional force
(C) Centripetal force
(D) Coriolis and frictional force together
- 23 When the full potential of physical, chemical and biological factors, a species can use if there is no competition, it is called:
- (A) Fundamental niche (B) Ecological niche
(C) Realized niche (D) Competitive exclusion
- 24 The uppermost zone of atmosphere of earth, where shortwave ultraviolet radiations are absorbed is:
- (A) Troposphere (B) Stratosphere
(C) Mesosphere (D) Thermosphere
- 25 Match List-I with List-II which contains pollutant gases and their threshold (safe limit) values as per WHO standards.
- | (List I) (Pollutant Gas) | (List II) (Thresholds) |
|--------------------------|------------------------|
| a. CO | i. 2 ppm |
| b. SO ₂ | ii. 50 ppm |
| c. NO | iii. 0.08 ppm |
| d. PAN | iv. 25 ppm |
- Identify the correct code
- (A) a-ii, b-iii, c-i, d-iv (B) a-iv, b-ii, c-i, d-iii
(C) a-ii, b-i, c-iv, d-iii (D) a-iii, b-iv, c-ii, d-i

- 26 The band labelled as UV-C which is lethal to micro-organisms is:
- (A) 0.29 - 0.32 μm
 - (B) 0.2 - 0.29 μm
 - (C) 0.17 - 0.2 μm
 - (D) 0.07 - 0.21 μm
- 27 Which of the following species in the atmosphere is called atmospheric detergent?
- (A) Chlorine radical
 - (B) Hydroxyl radical
 - (C) Methyl radical
 - (D) Ozone radical
- 28 Identify the pair (element-health effect) which is correctly matched:
- (A) Lead-Methaemoglobinemia
 - (B) Arsenic-Kidney damage
 - (C) Mercury-Nervous disorder
 - (D) PAN - Hypoxemia
- 29 Which of the following organisms can act as primary consumer, secondary consumer, tertiary consumer or scavenger in different types of food chains?
- (A) Raven
 - (B) Tiger
 - (C) Snake
 - (D) Phytoplankton
- 30 The tendency of biological systems to resist change and to remain in a state of equilibrium is called:
- (A) Homeostatis
 - (B) Feedback mechanism
 - (C) Ecological efficiency
 - (D) Carrying capacity

- 31 Which of the following is not a type of ex situ conservation method?
- (A) Botanical garden
 - (B) Zoological park
 - (C) Wildlife sanctuaries
 - (D) Gene banks
- 32 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
- 33 Kyoto Protocol of 1997 introduced the concept of carbon trading in the year of
- (A) 2000
 - (B) 2004
 - (C) 2001
 - (D) 2002
- 34 Citizen's Charter on Environment in the Constitution of India is embodied in.
- (A) Article 48
 - (B) Article 48A
 - (C) Article 49A
 - (D) Article 51A
- 35 United Nation's Conference on Environment and Development was held in:
- (A) December, 1993
 - (B) June, 1992
 - (C) December, 1995
 - (D) November, 1996

- 36 The classical smog is mainly composed of:
- (A) Nox and smoke particulates
 - (B) O₃ and SO₂
 - (C) SO₂ and Nox
 - (D) SO₂ and smoke particulates
- 37 According to National 'ambient Air Quality Standards the annual average concentration of SPM in a residential area should not exceed
- (A) 80 µg/m³
 - (B) 100 µg/m³
 - (C) 140 µg/m³
 - (D) 200 µg/m³
- 38 Which method is used to separate molecules on the basis of their sizes?
- (A) Ion exchange chromatography
 - (B) Molecular exclusion chromatography
 - (C) Adsorption chromatography
 - (D) Thin layer chromatography
- 39 Which type of support media is used in different types of electrophoresis?
- (A) Agarose gel
 - (B) Polyacrylamide gel
 - (C) sodium dedecyl sulphate polyacrylamide gel
 - (D) All the above
- 40 Average composition of biodegradable waste in Municipal Solid Waste (MSW) of India is:
- (A) 30-35%
 - (B) 40-45%
 - (C) 55-65%
 - (D) 60-70%

- 41 The treatment method recommended for the human anatomical waste generated from hospital is:
- Chemical disinfection
 - Autoclaving
 - Incineration
 - All the above
- 42 An earthquake measuring over 8 on Richter Scale is rated as:
- Destructive
 - Major
 - Great
 - Damaging
- 43 Given below are two statements,. One labelled as Assertion (A) and the other labelled as Reason (R).
- Assertion (A) : Increasing temperature in the environment influences gonadal growth in fish.
- Reason (R) : Increase in day length causes increase in environmental temperature in summer. Choose the correct code:
- Both (A) and (R) are true and (R) is the correct explanation of (A)
 - Both (A) and (R) are true, but (R) is not the correct explanation of (A)
 - (A) is true but (R) is wrong
 - (A) and (R) are wrong
- 44 Match column I with Column II:
- | (Column I) | (Column II) |
|------------------------------|-------------|
| a. The Rio Summit | 1. 1997 |
| b. Johannesburg Earth Summit | 2. 1972 |
| c. Kyoto Protocol | 3. 1992 |
| d. The Stockholm conference | 4. 2002 |
- a-3, b-4, c-1, d-2
 - a-1, b-2, c-3, d-4
 - a-4, b-3, c-2, d-1
 - a-2, b-1, c-4, d-3
- 45 Nitrogen fixation in nature is not accomplished by:
- Lightning
 - Cyanobacteria
 - Rotifers
 - Bacteria in root nodules

- 46 Which country has opted out of Paris Agreement of Climate Change?
- (A) USA
 - (B) Canada
 - (C) Australia
 - (D) Russia
- 47 Under EIA notification of 14th September, 2006, preparation of EIA is not required for the projects falling in the
- (A) Category A projects
 - (B) Category B projects
 - (C) Category B1 Projects
 - (D) Category B2 projects
- 48 Match List-I with List -II and choose the correct answer from the codes given below:
- | (List I) (Air Pollutants) | (List II) (Sources/Activities) |
|---------------------------|--------------------------------|
| a. Carbon monoxide | 1. Coal burning |
| b. Nitrogen oxide | 2. Cigarette Smoking |
| c. Sulphur dioxide | 3. Chemical reaction with VOCs |
| d. Ozone | 4. Power and Industrial Plant |
- (A) a-2, b-4, c-1, d-3
 - (B) a-1, b-2, c-3, d-4
 - (C) a-3, b-1, c-4, d-2
 - (D) a-4, b-3, c-2, d-1
- 49 Red colour containers in the hospitals are used to dump
- (A) Waste from laboratory cultures
 - (B) Housekeeping waste
 - (C) Human waste
 - (D) Waste sharps
- 50 In alkaline soils, which of the following is not present in soluble state?
- (A) Phosphorous
 - (B) Calcium
 - (C) Nitrates
 - (D) Potassium

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