



# VPM CLASSES

UGC NET, GATE, CSIR NET, IIT-JAM, IBPS, CSAT/IAS, SLET, CTET, TIFR, NIMCET, JEST, JNU, ISM etc.

## **UGC NET - ENVIRONMENTAL SCIENCE MOCK TEST PAPER**

### **PAPER - II**

- *This paper contains 50 objective type questions*
- *Each question carries 2 marks.*
- *Attempt all the questions.*
- *Pattern of questions : MCQs*
  
- *Total marks : 100*
- *Duration of test : 1.5 Hours*

## **VPM CLASSES**

For IIT-JAM, JNU, GATE, NET, NIMCET and Other Entrance Exams

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## PAPER – II

1. Air quality standards are based on:
  - (A) Climate and topography
  - (B) Ambient air quality alone
  - (C) Dose of a pollutant
  - (D) Method of measurement
2. The unleaded petrol, as an automotive fuel, should not have the lead levels exceeding:
  - (A) 0.05 g/L
  - (B) 0.15 g/L
  - (C) 0.25 g/L
  - (D) 0.50 g/L
3. A major part of air pollution load lies in:
  - (A) Troposphere
  - (B) Stratosphere
  - (C) Thermosphere
  - (D) Ionosphere
4. Which is the correct order of the degree of weathering of the following rocks:
  - (A) Dunite > Basalt > Granite > Rhyolite
  - (B) Basalt > Dunite > Granite > Rhyolite
  - (C) Rhyolite > Granite > Dunite > Basalt
  - (D) None of these
5. Interior of the earth is inferred through:
  - (A) Deep continental drilling

- (B) Deep ocean drilling  
(C) Seismic soundings  
(D) Heat flow measurements
6. The minimum thickness to be used in biodegradable carry bags should be:  
(A) 5 microns  
(B) 10 microns  
(C) 15 microns  
(D) 20 microns
7. The criteria indicates the water pollution are:  
(A) pH, COD, BOD, DO  
(B) pH, Coliform, COD, DO  
(C) Coliform, COD, BOD  
(D) BOD, DO, Coliform
8. Intake of lead may primarily cause the damage of  
(A) Brain  
(B) Lung  
(C) Liver  
(D) Kidney
9. Air Pollution Tolerance Index (APTI) of vegetation is calculated using:  
(A) Pb content, SO<sub>2</sub> content and NO<sub>x</sub> content in air  
(B) Ascorbic acid, total chlorophyll and pH of  
(C) SPM, pH of water and soil types of the area  
(D) Landscape of the area; SO<sub>2</sub> and NO<sub>x</sub> levels in air

10. The state having the largest forest cover in India is:
- (A) Andhra Pradesh
  - (B) Orissa
  - (C) Maharashtra
  - (D) Chattisgarh
11. Coal mine workers are prone to victims of one of the following diseases:
- (A) Pneumoconiosis
  - (B) Byssinosis
  - (C) Asbestosis
  - (D) Silicosis
12. The number of oxygen molecules required for the complete combustion of 1 molecule of propane is:
- (A) 2
  - (B) 3
  - (C) 4
  - (D) 5
13. Which one of the following is necessary for the growth and maintenance of animal bones and teeth:
- (A) Hydrogen
  - (B) Oxygen
  - (C) Phosphates
  - (D) Sulphur
14. Which of the following organisms are used as components of biofertilisers ?
- (A) Blue green algae only

- (B) Coliform bacteria and mushrooms  
 (C) N-fixing bacteria only  
 (D) Blue green algae and N-fixing bacteria
15. Which one of the following photochemical reactions is correct:
- (A)  $\text{SO}_2 \xrightarrow{h\nu} \text{SO}_2^*$   
 (B)  $\text{N}_2\text{O} + h\nu \longrightarrow \text{N}_2 + \text{O}^*$   
 (C)  $\text{O}_3 + h\nu \longrightarrow \text{O} + \text{O}_2$   
 (D)  $\text{O}_2 + h\nu \longrightarrow \text{O}_2 + e$
16. **Assertion (A)** : CFCs destroy ozone molecules in stratosphere  
**Reason (R)** : CFCs have very high global warming potential
- (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; (R) is false  
 (D) (A) is false; (R) is true
17. Match the List I and II. Select the correct answer using the codes given below the lists:
- | <b>List - I</b>                                     | <b>List - II</b> |
|---|------------------|
| (a) Environmental Protection Act                    | (i) 1991         |
| (b) Air (Prevention and Control of Pollution) Act   | (ii) 1974        |
| (c) Water (Prevention and Control of Pollution) Act | (iii) 1981       |
| (d) Public Liability Insurance Act                  | (iv) 1986        |

**Code:**

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

18. Garnet is a metamorphic product of

- (A) Feldspar
- (B) Quartzite
- (C) Mica
- (D) Serpentine

19. 1 kW-hour of energy is equivalent to:

- (A) 460 KCal
- (B) 1250 KCal
- (C) 860 KCal
- (D) 760 KCal

20. The dominant gas in biogas is:

- (A) CH<sub>4</sub>
- (B) C<sub>2</sub>H<sub>5</sub>
- (C) CO<sub>2</sub>
- (D) NO<sub>2</sub>

21. Match the following lists I and II and select the correct answer using the code given below the lists:

### List-I

- (a) Fluvial
- (b) Shallow Marine
- (c) Glacial
- (d) aeolian

### List-II

- (i) Moraines
- (ii) Loess
- (iii) Oxbow lake
- (iv) Spits and Bar

### Code:

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

22. Which of the following pairs is not correctly matched:
- A. Tropical zone – Hot, winterless
  - B. Sub-tropical zone – Hot with cool winter
  - C. Temperate zone – Warm summer with pronounced winter
  - D. Alpine zone – Long summer with short severe winter
23. The hydraulic conductivity or the coefficient of permeability of which of the following media is the highest:
- (A) Clay
  - (B) Sand
  - (C) Gravel
  - (D) Sandstone
24. Aquatic organisms are very sensitive to:
- (A) Salinity

- (B) pH  
 (C) Temperature  
 (D) Dissolved oxygen
25. Which of the following acts as a trigger for a landslide to occur:  
 (A) Vegetation loss  
 (B) Rainfall  
 (C) Animal movement  
 (D) Vehicular movement
26. After sodium chloride, which of the following compounds has the maximum concentration in sea water:  
 (A) Magnesium sulphate  
 (B) Calcium sulphate  
 (C) Magnesium chloride  
 (D) Potassium sulphate
27. The directions for the regulation, prohibition or the closure of any industry are given by:  
 (A) State government  
 (B) Central government  
 (C) State Pollution Control Board  
 (D) Central Pollution Control Board
28. Match the lists I and II. Select the correct answer using the code given below the lists :

**List-I (Category of Area)**

(a) Commercial area

**List-II (Daytime Noise standards in dB)**

(i) 75

- (b) Residential area (ii) 50  
 (c) Industrial area (iii) 65  
 (d) Silence zones (iv) 55

**Code:**

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

29. Liquid ammonia can be used in refrigeration because of its  
 (A) High basicity  
 (B) High dipole moment  
 (C) High heat of vaporization  
 (D) Non-toxic nature
30. Which of the following methods is suitable for hypothesis testing:  
 (A) Two way analysis of variance  
 (B) t-test  
 (C) Cluster Analysis  
 (D) Correlation and regression
31. Box model is mainly employed for analyzing the:  
 (A) Dispersal of atmospheric pollutions  
 (B) Predictor and Prey populations  
 (C) Birth and death rates  
 (D) Discharge of a waste into groundwaters

32. Among the following which country has lowest per capita green house gas emission ?

- (A) France
- (B) India
- (C) China
- (D) Mexico

33. Match the List I and II. Select the correct answer using the code given below the lists :

**List-I**

- A. Tropical forest
- B. Conifer forest
- C. Mangroves
- D. Deciduous forest

**List-II**

- (i) Sunderbans
- (ii) Himachal Pradesh
- (iii) Rajasthan
- (iv) Silent valley

**Code:**

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

34. Imhoff tank is used for:

- (A) Filtration and Flocculation
- (B) Sludge digestion and sedimentation
- (C) Demineralization

- (D) Distillation
35. A solar cell is basically a:
- (A) a type semiconductor
  - (B) n type semiconductor
  - (C) p-n diode
  - (D) p-n-p transistor
36. The information system useful to identify the location of a point is:
- (A) CIS
  - (B) GPS
  - (C) Clinometer
  - (D) Compass
37. The 'mean' that stands for relative importance of different items in a data set is
- (A) Weighted mean
  - (B) Harmonic mean
  - (C) Arithmetic mean
  - (D) Geometric mean
38. Stoke's Law of Settling Velocity is represented by
- (A)  $V \propto d$
  - (B)  $V \propto \frac{1}{n}$
  - (C)  $V = \frac{1}{d}$
  - (D)  $V = cd$

39. The temperature required to fuse Deuterium and Tritium nuclei is of the order of:
- (A)  $\sim 10^5$  °k
  - (B)  $\sim 10^8$  °k
  - (C)  $\sim 10^4$  °k
  - (D)  $\sim 10^6$  °k
40. Landfill sites can be permitted in:
- (A) Wetlands
  - (B) Flood plains
  - (C) Habitats of endangered species and recharge zones for local drinking water supplies
  - (D) Abandoned mines with impermeable barrier at the bottom with a leachate recycling system
41. The satellite which has been put into orbit recently capable of producing high resolution thematic data is
- (A) IRS-2D
  - (B) EDUSAT
  - (C) RESOURCESAT
  - (D) LANDSAT
42. The atmosphere is chemically homogenous upto an altitude of:
- (A) 10km
  - (B) 30km
  - (C) 50km
  - (D) 80km

43. At which stage of an ecological succession, an ecosystem exhibits total photosynthesis equal to respiration?
- (A) Pioneer  
(B) Climax  
(C) Virgin  
(D) Mid-seral
44. Formation of marble can be represented by
- (A)  $\text{CaSiO}_3 \rightarrow \text{Ca}^{+2} + \text{SiO}_3^{-2}$   
(B)  $\text{CaO} + \text{CO}_2 \rightarrow \text{CaCO}_3$   
(C)  $\text{CaCO}_3 \rightarrow \text{CaO} + \text{CO}_2$   
(D)  $\text{CaCO}_3 + \text{SiO}_2 \rightarrow \text{CaSiO}_3 + \text{CO}_2$
45. Methamoglobinemia is actually caused by water pollution containing
- (A)  $\text{NO}_2$   
(B)  $\text{NO}_3^-$   
(C)  $\text{NH}_4^+$   
(D)  $\text{NO}_2^-$
46. Which is the best and simple method to determination of fluorine in ground water?
- (A) Atomic Absorption spectrometry  
(B) Spectrophotometry  
(C) Flame photometry  
(D) Ion-selective electrode

**Read the passage below and answer questions that follow based on your understanding of the passage:**

Forests in India are fast disappearing at a rate of about 0.6% per year equivalent to about 7.3 million ha. This renders all the closed tropical forests disappear within 177 years, At this rate of destruction of tropical forests, about 20-25% of the worlds plant species would have been lost by the year 2000. By another estimate 90% of tropical forest area containing about 505 varieties of world plant species will be destroyed during the next 20 years. By another estimate 1000 species/year would become extinct. This figure is expected to rise to 10,000 species/year. During the next 20 years, about one million species are likely to disappear.

Loss of biodiversity is severe in agricultural ecosystems too. During green revolution, thousands of wild crop varieties were replaced with a few hybrid species. This resulted in slight disappearance of genetic resources of crop plants, especially of wheat and rice. With the disappearance of the plants, the associated microorganism and fauna were also lost. Further indiscriminate use of fertilizers and insecticides reduced the microbial species diversity live stock populations are already homogenized and their diversity is extinct.

Much of the fragile breeding and feeding grounds of almost 2/3rd of the world's oceanic fish have been destroyed. Endangered marine life in India lists about 8 species of marine mammals, 5 species of marine turtles, 1 species of hemichordate, 3 species of cephalochordate, 10 species of crab etc.

Major cause of loss of biodiversity is the expansion of agricultural practices. Biological diversity is replaced by biological uniformity or monoculture in the name of green revolution in agriculture, white revolution in dairying and blue revolutions is to ensure food security and prevent "hunger disaster".

Biodiversity is also lost due to reclamation for building dams, factories highways, mining operations etc. In the forested regions. Illegal trade and poaching of wild life also damaged biodiversity. Thus, biodiversity is destroyed by anthropogenic activities.

47. Loss of biodiversity is primarily due to:
- (A) Green revolution
  - (B) White revolution
  - (C) Blue revolution
  - (D) Mining Activity
48. Decrease in India's forest cover is attributed mainly to:
- (A) Urbanization and Industrialization
  - (B) Agriculture and Dairying
  - (C) Rail and Road Construction
  - (D) Mining and Power Plants
49. About 90% of tropical forest area containing \_\_\_\_\_ varieties of world's plant species in the next twenty years.
- (A) 7.3 million
  - (B) 505
  - (C) 10,000
  - (D) 1000
50. The reduction of microbial species is due to:
- (A) Mining operations
  - (B) Application of chemical fertilizers
  - (C) Loss of wildlife

(D) Construction of highways.

## ANSWER KEY

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Answer	B	A	A	C	C	C	B	D	A	D	D	D	C	D	A	A	B	C	C	A
Question	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Answer	A	D	D	D	A	A	D	B	B	D	A	B	D	A	A	B	C	B	B	C
Question	41	42	43	44	45	46	47	48	49	50										
Answer	C	B	C	B	B	A	A	B	B	B										

## HINTS AND SOLUTION

- (B)** Air quality standards are the limits on the quantity of pollutants in air, that are not to be exceeded during a given period in a defined area. These are based on ambient air quality alone.
- (A)** A highly refined unleaded fuel for spark ignition engines blended to meet the requirements of modern automotive engines fitted with catalytic converters and designed to run on unleaded petrol. The unleaded petrol, as an automotive fuel, should not have the lead levels exceeding 0.05 g/L.
- (A)** Air Pollution, addition of harmful substances to the atmosphere resulting in damage to the environment, human health, and quality of life. A major part of air pollution load lies in troposphere. . If the load of pollutants added to the troposphere were

equally distributed, the pollutants would be spread over vast areas and the air pollution might almost escape our notice.

- 4.(C) Weathering** breaks rocks into smaller pieces. It is the effect of rainfall and temperature on rocks. Weathering occurs **in situ**. This means the rocks stay in the same place and are not moved. The correct order of the degree of weathering of these rocks is Rhyolite > Granite > Dunite > Basalt.
- 5.(C)** The interior **structure of the Earth** is layered in spherical shells, like an onion. Earth's internal structure is based on observations of topography and bathymetry, observations of rock in outcrop, samples brought to the surface from greater depths by volcanic activity, analysis of the seismic waves that pass through Earth, measurements of the gravity field of Earth, and experiments with crystalline solids at pressures and temperatures characteristic of Earth's deep interior.
- 6.(C)** Biodegradable bags are bags that are capable of being decomposed by bacteria or other living organisms. The minimum thickness to be used in biodegradable carry bags should be 15 microns.
- 7.(B) Water pollution** is the contamination of water bodies (e.g. lakes, rivers, oceans, aquifers and groundwater). Water pollution occurs when pollutants are directly or indirectly discharged into water bodies without adequate treatment to remove harmful compounds. The criteria indicates the water pollution are pH, Coliform, COD, DO.
- 8.(D)** Lead poisoning (also known as plumbism, colica pictorum, saturnism, Devon colic, or painter's colic) is a medical condition in humans and other vertebrates caused by increased levels of the heavy metal lead in the body. Lead interferes with a variety of body processes and is toxic to many organs and tissues including the heart, bones, intestines, kidneys, and reproductive and nervous systems.

- 9.(A)** Air Pollution Tolerance Index (APTI) is an index denotes capability of a plant to combat against air pollution. Air Pollution Tolerance Index (APTI) of vegetation is calculated using Pb content, SO<sub>2</sub> content and NO<sub>x</sub> content in air.
- 10.(D)** Chhattisgarh has the third largest area under forest cover after Madhya Pradesh and Arunachal Pradesh. In other words, 12 percent of India's forests are in Chhattisgarh. Of this, three percent is under very dense forests, 25.82 percent is moderately dense, 12.28 percent is open forests and 0.09 percent is scrub.
- 11.(D)** Coal mine workers are prone to victims of Silicosis. It is a type of pneumoconiosis caused by inhaling respirable crystalline silica. Quartz is a type of crystalline silica that causes silicosis in coal miners because it is a major component of rocks. Silicosis causes x-ray changes similar to CWP (**Coal Workers' Pneumoconiosis**) ; and it is especially seen in coal miners who are exposed to rock dust, such as roof bolters in underground mines and drillers in surface mines.
- 12.(D)** The complete combustion of hydrocarbon fuels using oxygen (O<sub>2</sub>) produces carbon dioxide (CO<sub>2</sub>), water and heat. The balanced chemical equation for the complete combustion of propane (C<sub>3</sub>H<sub>8</sub>) in oxygen is;
- $$\text{C}_3\text{H}_8 + 5\text{O}_2 = 3\text{CO}_2 + 4\text{H}_2\text{O} + \text{Heat}$$
- The equation above tells us that for each molecule of propane we need five molecules of oxygen.
- 13.(C)** The human skeleton is composed mainly of calcium phosphate. Phosphorus accounts for 11 to 12 g per kg body weight. 85% of this phosphorus occurs in bones and teeth. Phosphorus plays an important role in several functions: The transfer of energy;The synthetic of amino acids and proteins;The contribution to the generation of vitamins;The maintenance of bones and teeth.

**14.(D)** A **biofertilizer** is a substance which contains living microorganisms which, when applied to seed, plant surfaces, or soil, colonizes the rhizosphere or the interior of the plant and promotes growth by increasing the supply or availability of primary nutrients to the host plant. Blue green algae and N-fixing bacteria are used as components of biofertilisers.

**15.(A)** photochemical reactions is:  $\text{SO}_2 \xrightarrow{h\nu} \text{SO}_2^+$

**16.(A)** The interim replacements for CFCs are hydrochlorofluorocarbons (HCFCs), which deplete stratospheric ozone, but to a much lesser extent than CFCs. Hydrofluorocarbons are included in the Kyoto Protocol because of their very high Global Warming Potential and are facing calls to be regulated under the Montreal Protocol due to the recognition of halocarbon contributions to climate change.

**17.(B)** **1986 - The Environment (Protection) Act** authorizes the central government to protect and improve environmental quality, control and reduce pollution from all sources, and prohibit or restrict the setting and /or operation of any industrial facility on environmental grounds..

**1981 - The Air (Prevention and Control of Pollution) Act** provides for the control and abatement of air pollution. It entrusts the power of enforcing this act to the CPCB (Central Pollution Control Board).

**1974 - The Water (Prevention and Control of Pollution) Act** establishes an institutional structure for preventing and abating water pollution. It establishes standards for water quality and effluent. Polluting industries must seek permission to discharge waste into effluent bodies.

The CPCB (Central Pollution Control Board) was constituted under this act.

The Public Liability Insurance act, 1991 is an Act to provide for public liability insurance for the purpose of extending immediate relief to the persons affected by accident occurring while handling any hazardous substance in a project, industry or storage and for matters connected therewith or incidental thereto.

**18.(C)** Garnet is a metamorphic product of Mica.

**19.(C)** 1 kW-hour of energy is equivalent to 860 Kcal.

$1 \text{ kWh} = 3.6 \times 10^6 \text{ J} = 859.9 \text{ kcal} = 2.656 \times 10^6 \text{ ft lb}_f \text{ (foot pound force)} = 3.412 \times 10^3 \text{ Btu}$  (British thermal unit)

**20.(A)** Biogas typically refers to a gas produced by the breakdown of organic matter in the absence of oxygen. The gases methane, hydrogen, and carbon monoxide (CO) can be combusted or oxidized with oxygen. The dominant gas in biogas is  $\text{CH}_4$ .

**21.(A)** Oxbow lake is also a type of fluvial lakes, with its unique form drawing people's attention.

Shallow marine environments, from the shoreline to the shelf edge, are complex and result in complex deposits. These sandstones, in both outcrop and subsurface reservoirs, have been interpreted to be offshore shelf bars or ridges, shoreface bodies, and tidally influenced incised-valley fill.

Moraine is material transported by a glacier and then deposited. There are eight types of moraine, six of which form recognisable landforms, and two of which exist only whilst the glacier exists.

Loess is an aeolian sediment formed by the accumulation of wind-blown silt, typically in the 20–50 micrometer size range, twenty percent or less clay and the balance equal parts sand and silt that are loosely cemented by calcium carbonate.

- 22.(D) Alpine Zone:** This climate zone can be experienced in the high altitudes of Himalaya. In this region there are high climatic fluctuations due to steep altitude variations. Different types of climatic zones can be seen in this region. On the foothills occur subtropical climate whereas on the higher altitudes there is Alpine Tundra Zone. The vegetation is sparse and stunted as rainfall is scanty and the winters are severely cold. Most of the snowfall is in the form of snow during late winter and spring months.
- 23.(D)** Hydraulic conductivity, symbolically represented as  $K$ , is a property of vascular plants, soils and rocks, that describes the ease with which a fluid (usually water) can move through pore spaces or fractures. The hydraulic conductivity or the coefficient of permeability of Sandstone is highest among the following.
- 24.(D)** Aquatic organisms are very sensitive to Dissolved oxygen . Oxygen dissolves in water and is also generated during photosynthesis by aquatic plants. Oxygen is soluble in water but varies inversely with increasing water temperature.
- 25.(A)** The term "landslide" describes a wide variety of processes that result in the downward and outward movement of slope-forming materials including rock, soil, artificial fill, or a combination of these. Vegetation loss acts as a trigger for a landslide to occur.
- 26.(A)**

**Total Molar Composition of Seawater (Salinity = 35)<sup>[3]</sup>**

Component	Concentration (mol/kg)
H <sub>2</sub> O	53.6
Cl <sup>-</sup>	0.546
Na <sup>+</sup>	0.469
Mg <sup>2+</sup>	0.0528
SO <sub>4</sub> <sup>2-</sup>	0.0282
Ca <sup>2+</sup>	0.0103
K <sup>+</sup>	0.0102
C <sub>T</sub>	0.00206
Br <sup>-</sup>	0.000844
B <sub>T</sub>	0.000416
Sr <sup>2+</sup>	0.000091
F <sup>-</sup>	0.000068

**27.(D)** Central Pollution Control Board (CPCB) of India is a statutory organisation under the Ministry of Environment and Forests (MoEF). It was established in 1974 under Water (Prevention and Control of Pollution) Act, 1974. The directions for the regulation, prohibition or the closure of any industry are given by Central Pollution Control Board.

**28.(B)**

Code		Day time	Night time
A	Industrial area	75	70
B	Commercial area	65	55
C	Residential area	55	45
D	Silence Zone	50	40

**29.(B)** Liquid ammonia can be used in refrigeration because of its high dipole moment.

**30.(D)** Correlation and regression methods is suitable for hypothesis testing.

**31.(A)** Box model is mainly employed for analyzing the Dispersal of atmospheric pollutions.

**32.(B)** India has lowest per capita green house gas emission.

**33.(D) : List-I**

- A. Tropical forest
- B. Conifer forest
- C. Mangroves
- D. Deciduous forest

**List-II**

- (iv) Silent valley
- (ii) Himachal Pradesh
- (i) Sunderbans
- (iii) Rajasthan

**34.(A)** The **Imhoff tank** is a chamber suitable for the reception and processing of sewage. It may be used for the clarification of sewage by simple sedimentation, along with digestion of the extracted sludge. It consists of an upper chamber in which sedimentation takes place, from which collected solids slide down inclined bottom slopes to an entrance into a lower chamber in which the sludge is collected and digested. It is used for filtration and flocculation.

**35.(A)** Solar cells (as the name implies) are designed to convert (at least a portion of) available light into electrical energy. solar cells are based on semiconductor physics -- they are basically just P-N junction photodiodes with a very large light-sensitive area. The photovoltaic effect, which causes the cell to convert light directly into electrical energy, occurs in the three energy-conversion layers

**36.(B)** GPS systems are increasingly used to create and use waypoints in navigation of all kinds. A typical GPS receiver can locate a waypoint with an accuracy of three meters or better when used with land-based assisting technologies such as the Wide Area Augmentation System (WAAS). Waypoints can also be marked on a computer

mapping program and uploaded to the GPS receiver, marked on the receiver's own internal map, or entered manually on the device as a pair of coordinates.

- 37.(C)** The most commonly used type of average. To find the arithmetic mean of a set of  $n$  numbers, add the numbers in the set and divide the sum by  $n$ .

**Formula :** Arithmetic mean =  $\bar{a} = \frac{a_1 + a_2 + a_3 + \dots + a_n}{n}$

**Example :** For the numbers 4 and 9,

$$\text{Arithmetic mean} = \frac{4 + 9}{2} = 6.5$$

- 38.(B)** Stoke's Law of Settling Velocity is represented by  $V \propto \frac{1}{n}$ .
- 39.(B)** The temperature required to fuse Deuterium and Tritium nuclei is of the order of  $\sim 10^8$  °k.
- 40.(C)** A **landfill site** (also known as a **tip**, **dump**, **rubbish dump** or **dumping ground** and historically as a **midden**) is a site for the disposal of waste materials by burial and is the oldest form of waste treatment. Landfill sites can be permitted in Habitats of endangered species and recharge zones for local drinking water supplies.
- 41.(C)** **Resourcesat-2** is a follow on mission to Resourcesat-1 and the eighteenth Remote Sensing satellite built by ISRO. The new satellite provides the same services as the original RESOURCESAT-1, but we also designed to "provide data with enhanced multispectral and spatial coverage".
- 42.(B)** **High-altitude nuclear explosions (HANE)** have historically been nuclear explosions which take place above altitudes of 30 km, still inside the Earth's atmosphere.

- 43.(C) At Climax stage of an ecological succession, an ecosystem exhibits total photosynthesis equal to respiration.
- 44.(B) Formation of marble can be represented by  $\text{CaO} + \text{CO}_2 \rightarrow \text{CaCO}_3$ .
- 45.(B) Methemoglobinemia is a blood disorder caused when nitrite interacts with the hemoglobin in red blood cells. Unlike hemoglobin, the methemoglobin formed in this interaction cannot carry sufficient oxygen to the body's cells and tissues. A
- 46.(A) Fluorine is one of the most common elements in the Earth's crust. Fluoride is recognized to be the most effective caries-preventive agent. The main sources of fluoride for people are generally food and drinking water. In the determination of fluoride and of Na and K, an ion-meter with a combination-fluoride electrode and a flame photometer were used, respectively. The levels of Cr, Cu, Fe, Mn, Ni and Pb in the drinking waters were determined by flame atomic absorption spectrometry (FAAS) utilizing the method optimized previously, except for the Ca, Mg and Zn contents, which were measured directly by FAAS
- 47.(A) **Green Revolution** refers to a series of research, development, and technology transfer initiatives, occurring between the 1940s and the late 1960s, that increased agriculture production worldwide, particularly in the developing world, beginning most markedly in the late 1960s.
- 48.(B) Decrease in India's forest cover is attributed mainly to Agriculture and Dairying.
- 49.(B) About 90% of tropical forest area containing 505 varieties of world's plant species in the next twenty years.
- 50.(B) Although each of the estuaries in the National Estuary Program (NEP) is unique, they all face the following nine environmental challenges: (1) alteration of natural hydrologic flows, (2) aquatic nuisance species, (3) climate change, (4) declines in fish and wildlife populations, (5) habitat loss and degradation, (6) nutrient loads, (7)



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pathogens, (8) stormwater, and (9) toxics. The challenges were identified by EPA staff and the Association of National Estuary Programs (ANEP) with input from NEP Directors and staff, scientists, outreach coordinators, citizens, business representatives, and local government officials.

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