

QUESTION BANK (PART I) : PAPER 1 / GROUP A/UNIT I

Each Question carries ONE mark

1. What do you mean by an open system?
2. Name the layer of atmosphere where the UV ray of solar radiation is absorbed.
3. What is protobiogenesis?
4. Write the full form of SRP.
5. Distinguish between Ribose and deoxyribose.
6. What is gene pool?
7. What is hybrid zone?
8. Define speciation.
9. What is Asthenosphere?
10. Write full forms of EPA & UNEP.
11. What do you mean by heat island?
12. Define environmental education.
13. Name the organisation that promoted construction of Johad.
14. Define life.
15. What is gene frequency?
16. Why do we write 2' DNA?
17. What is Exosphere?
18. Write full forms of IPCC & WCSD.
19. What do you mean by Johad?
20. What do you mean by nonformal environmental education?
21. Which did start Green Revolution first ?
22. Define ecofeminism.
23. What do you mean by a system?
24. What Vladimir Vernadsky is famous for?
25. Define Neodarwinism.
26. What is Parapatric Speciation?
27. Who is the founder of Green Revolution in India?
28. What do you mean by Environmental Literacy.
29. What is protobiogenesis?
30. What do you mean by 80S ribosome?
31. What do you mean by a closed system?
32. State the concept of Environmentalism.
33. Who is the father of Green revolution?
34. What do you mean by Genetic Drift?
35. What is Sympatric speciation?
36. Which cell organelle is responsible for protein synthesis?
37. Write one drawback of CNG use in public vehicle.
38. Define environmental ethics.
39. What Ralegaon Siddhi is famous for?
40. How does environmental ethics differ from environmentalism?
41. What is extra chromosomal DNA?

QUESTION BANK (PART I) : PAPER 1 / GROUP A/UNIT I

42. What is allpatric species?
43. Where silent valley movement was initiated?
44. Define Environment.
45. Define sustainable development.
46. What types of bonds are found in DNA double helix?
47. What is IPCC?
48. When and where green revolution was started?
49. What is the function of ER?
50. What is asthenosphere?
51. Name an NGO that played important role in introduction of CNG driven public fleet in Delhi.
52. What is biological species concept?
53. What are the functions of golgi body?
54. What is directional selection?
55. What is population bottle neck?

QUESTION BANK (PART I) : PAPER 1 / GROUP A/UNIT I

Each Question carries TWO marks

1. Explain the major difference between the environmental ethics and conservationist approach.
2. If a DNA contains 20% 'A' what would be the percent composition of other bases?
3. State the Hardy – Weinberg principle.
4. What do you mean by Neodarwinism?
5. What are the main principles of green politics?
6. What are the major difference between Mangrove and Beach forest ecosystem?
7. Comment on Akabori Hypothesis
8. Why are Lysosomes called 'suicidal bags' of the cell?
9. State two limitations of Green revolution.
10. Describe the effects of urbanisation on the environment.
11. In a population, the frequency of A allele is 0.7. What is the frequency of Aa?
12. Name the important constituent of plasma membrane.
13. Distinguish between Nature centric and conservationist approach.
14. Write a short note on Relegaon Siddhi.
15. What do you mean by 'Protobiogenesis'?
16. Define Proteinoides.
17. State two limitations of CNG conversion in Delhi.
18. Describe the effects of agriculture on the environment.
19. What is popular environmentalism ?
20. Which Green Party was most popular and why ?
21. Discuss the importance of environmental movement.
22. Shortly describe the structure of environment.
23. What do you mean by turbulence zone or turbosphere of the environment?
24. What do you mean by heterosphere?
25. Define Genetic Drift. What is the effect of population size on Genetic drift?
26. What are the functions of IPCC and MAB?
27. What do you mean by H.W equilibrium? What are assumptions?
28. What are the different types of species interactions can be seen in a natural community?
29. Differentiate between SER and RER. What is the function of ER?
30. What is nucleosome? Where is this found?
31. Define Sustainable development and write its basic rules.
32. What are the evolutionary forces? How these forces
33. What was IR8?
34. A population of 10 individuals with intrinsic rate of growth 1.3, grows exponentially. What will be the size of the population after 5 years?(when $e = 2.73$)
35. Why sacred grooves are considered as important tool of conservation efforts?
36. Explain the religionist approach of man-nature relationships with example.
37. State the concept of ecological footprint with example.
38. What is reproductive isolation?
39. What is hot dilute soup?

QUESTION BANK (PART I) : PAPER 1 / GROUP A/UNIT I

40. What are the principles of green politics?
41. In a 100bp long DNA if there are 30 A residues then how many C residues can be found?
42. Why effect genetic drift is stronger in smaller populations?
43. Explain Kantians theory of environmental ethics.
44. Write a brief note on Johad.
45. Differentiate between nucleotide and nucleoside.
46. State the biological species concept.
47. Explain the bottle neck population.
48. What are the different types of endemism?
49. Differentiate between allopatric and sympatric population.
50. What was stated in Watson and Crick DNA model?
51. What are different types of Environmental Ethics.
52. Write short note on impact of agriculture on the environment.
53. What are the isolation mechanisms for speciation?
54. What were the principles of green parties?
55. What is nucleiod?
56. What is the structure of a deoxy ribonucleic acid?

QUESTION BANK (PART I) : PAPER 1 / GROUP A/UNIT I

Each Question carries FIVE marks

1. What is NGO? State its role in environmental education. 1 + 4 = 5
2. State the flow of energy through an ecosystem with the help of a suitable model.
3. State two important functions of RER. Why is mitochondria called the powerhouse of cell? $1\frac{1}{2} + 1\frac{1}{2} + 2 = 5$
4. Describe the Watson- Crick model of DNA. Which of the following population is in the Hardy-Weinberg equilibrium? $2\frac{1}{2} + 2\frac{1}{2} = 5$

	AA	Aa	Aa	Aa
Population I	0.4	0.4		0.2
Population II	0.36	0.48		0.16

5. Describe the steps involved in the molecular evolution during origin of life. 5
6. Describe the fluid mosaic model of Plasma membrane with diagram. 3 + 2 = 5
7. Do you think that Green revolution got outstanding success in India? Justify your answer.
8. Two populations have the following genotypic frequency: 5

	AA	Aa	aa
a. Pop I :	0.4	0.4	0.2
b. Pop II:	0.5	0.3	0.2

If random mating occurs between them, what will be the genotypic frequencies in the next generation?

9. Describe the steps involved in the molecular evolution during origin of life. 5
10. Define sustainable development. Discuss the basic tenets of sustainable development
What were the limitations of Green Revolution in India ? 5
11. Define sustainable development and discuss how does Johad movement can promote sustainable development? 5
12. What are the postulations of Darwin's theory of Natural Selection? Mention the limitations of this theory? $3+2 = 5$
13. What are the different mechanisms of reproductive isolation? 5
14. What do you mean by Environmental Movement? Give one example of Environmental Movement in India with brief description. 1 + 4
15. What are the different groups of environmentalism? How they differ in their thoughts? Which group was most popular and why? $1+2+2 = 5$
16. Why North-South concept was started? What was the outcome of this conflict? 5
17. Discuss the North-South politics with special reference to mitigation of green house gas emission.
18. What are the different modes of reproductive isolation? How reproductive isolation leads to speciation? $3+2 = 5$
19. Discuss the characteristics of a sustainable village landscape with special reference of Ralegaon Siddhi. 5
20. Write a short note on environmental movements in India.
21. What are different types of species interactions can be found in a community. Describe them with example.

QUESTION BANK (PART I) : PAPER 1 / GROUP A/UNIT I

22. Differentiate between Darwin's theory and Lamarck's theory of evolution.
23. Elaborate the concept of Ecological footprint. Explain its relationship with carrying capacity of the Earth.
24. Write a short essay on vertical structure of the Atmosphere with suitable diagram.
25. What was the main issue of N-S conflict? State different ideologies of different colours of environmentalism. 1+4
26. Explain vertical structure of Atmosphere with diagram. In which layer the climatological phenomena occurs? $4+1=5$
27. State the concept of environmentalism in light of modern lifestyle. Why green politics is important to adopt? $2\frac{1}{2}+2\frac{1}{2}$
28. State Darwinian theory of natural selection and what were the drawbacks of Lamarck's theory? $3+2$
29. State the functions of plasmamembrane with structural details and drawing. 5

QUESTION BANK (PART I) : PAPER 1 / GROUP A/UNIT II

Each Question carries ONE mark

1. Define bionomics.
2. State the basic concept of Bionomics.
3. What do you mean by taxonomy?
4. What do you mean by Identification keys?
5. Define Zoogeography.
6. What do you mean by biome?
7. In which realm do you find Platypus?
8. What is commensalism?
9. Define Littoral zone.
10. In which type of plants aerenchyma tissues are available?
11. What is Taiga?
12. What is the dominant vegetation found in boreal forest biome?
13. What is intertidal zone?
14. Define taxon.
15. What do you mean by ephemeral plants?
16. Define Phylogeny.
17. Who coined the term ecosystem?
18. What is permafrost and where is it found?
19. What is endemism?
20. What do you mean by phylogenetic classification?
21. Define ecology
22. What do you mean by physiological drought?
23. What type of population growth is seen in density independent population?
24. Define Niche Overlapping.
25. What do you mean by diffused competition?
26. A particular specie of star fish was found at different areas of south Indian coasts but now found only at one particular place. What is the conservational status of this star fish?
27. How the concept of biome is distinct from the concept of zoogeographic realm.
28. What do you mean by nomenclature?
29. Write a distinct feature of Hydrophytes.
30. What is carrying capacity? In which growth curve this is seen?
31. What do you mean by profundal zone? In what type of ecosystem this is seen?
32. What are the density dependent factors of population regulation?
33. What do you mean by Edge effect?
34. Name one endemic species of India.
35. What do you mean by Eltonian concept of niche?
36. What is succulent plant?
37. Define acclimatisation.
38. What do you mean by Lotic ecosystem?
39. What is Succession?
40. What do you mean by zoogeographic realms?

QUESTION BANK (PART I) : PAPER 1 / GROUP A/UNIT II

41. What is ecotone?
42. What is predation?
43. What do you mean by nomenclature?
44. Write a distinct feature of Psammophytes.
45. What do you mean by ingroup & outgroup in taxonomy?
46. What is species richness?
47. What do you mean by demography?
48. What is competition?
49. Where Lamas are found?
50. What is niche overlap?
51. What is realised niche?
52. What is ecotype?
53. What is life table?
54. What is competitive exclusion principle?
55. What do you mean by cosmopolitan species?

Each Question carries TWO marks

1. State the differences between systematics and classification.
2. What do you mean by Stress physiology?
3. Define ecological classification with example.
4. State the relationship between biodiversity and edge effect.
5. What do you mean by Niche shift?
6. State the effects of Herbivory.
7. Write differences between Eltonian and Hutchinson's concept of Niche.
8. How is camel especially adapted to desert life?
9. Distinguish between classification and nomenclature.
10. Write two main adaptations found in tundra biome with example.
11. Why tropical rain forest is so named?
12. Distinguish between *lake and pond*.
13. What do you mean by identification key?
14. Write importance of identification key over salient features.
15. Write the difference between bionomics and classical taxonomy.
16. Write a note on binomial nomenclature.
17. Why do xerophytes and halophytes share some similar adaptations?
18. State the relationship between term 'ecology' and habitat condition.
19. Distinguish between littoral and profundal zone.
20. Briefly discuss the concept of Stress response.
21. How do you differentiate taxonomy and bionomics?
22. How Stress physiology is related with ecological classification?
23. Define the concept of competition. What are different types of it?
24. A plant growth is observed to be inhibited even in presence of all necessary nutrients and other factors. Research work reveals addition of a minute amount of boron is rejuvenating its growth. Justify the result with a proper theory.
25. What are the ecological adaptations of an epiphyte?
26. What is Ecotone? In which type of community concept ecotone can be found?
27. How Autogenic and Allogenic succession can be distinguished with proper example?
28. State some unique climatic features of Desert biome.
29. Discuss the use and importance of Identification keys.
30. Why the leaves of CAM plants taste sour in evening?
31. What do you mean by physiological draught?
32. Distinguish between fundamental and realised niche.
33. What are the main parameters that regulate a population size?
34. What are the main biogeographic realms according to Wallace?
35. What is intertidal zone? Why this zone is very productive?
36. What is resilience? What characters make an ecosystem resilient?
37. Differentiate between ecological classification and systematic classification with example.
38. State the importance of identification key.
39. Name two zoographical realm adjacent to oriental realm.

QUESTION BANK (PART I) : PAPER 1 / GROUP A/UNIT II

40. What do you mean by competitive exclusion principle?
41. Niche is an n-dimensional hypervolume, explain?
42. What is resource partitioning?
43. Differentiate between exponential and logistic growth curve.
44. What is hadal zone?
45. Describe the phylogenetic classification scheme.
46. Differentiate between r-selected and k-selected species.
47. Differentiate between food chain and foodweb.
48. Explain life table.
49. Why tropical rain forests are so named?
50. Differentiate between population and community.
51. What is keystone species, explain with example.
52. Distinguish between Ecological classification and systematic.
53. What are different strategies adopted by plants under stress physiology?
54. What is ecological resilience?
55. Differentiate between predation and herbivory?
56. What is detrital food chain ? Explain with example.
57. What is assimilatory nitrate reduction? Explain with suitable reactions.
58. Define pneumatophores and vivipary.

QUESTION BANK (PART I) : PAPER 1 / GROUP A/UNIT II

Each Question carries FIVE marks

1. Why halophytes share a few xerophytic characteristics? Discuss some ecological adaptations of heat stress. 2+3 = 5
2. Distinguish between exponential and logistic growth curves with equations. 5
3. State the competitive exclusion theory of Gause – establish it with an example. 5
4. Write a short note on Ethiopian Realms – mentioning its position, climate, sub-regions and faunal distribution. 5
5. Why Cladistics is more acceptable than classical taxonomy? What is sytematics? 4+1 = 5
6. Name important abiotic factors influencing lotic ecosystem and explain how they influence. 5
7. Write short note on Savannah biome. 5
8. What is energy environment? Distinguish between food chain and food web. 2+3 = 5
9. Which biome is most rich in biodiversity and why ? 1+4 = 5
10. What do you mean by CAM? How does it help in combating the water stress? 5
11. Where will you find Platypus? Give brief description of faunal distribution of that realm. 1+4 = 5
12. What do you mean by CAM plants? How does the mechanism help fighting heat or water stress? 1+4 = 5
13. What do you mean by vertical stratification of forest? What type of forest is seen in Western Ghat region of India? State some characters of this particular forest type. 2+1+2 = 5
14. State the Lokta- Voltera Prey- Predator model with proper model assumptions 5
15. Describe Lokta- Volterra model of predation mathematically.
16. How habitat fragmentation results in Edge Effect? What is the concept of Ecotype? State the Hutcinson’s concept of Niche.
17. Define stress. Write a short note on different strategies of combating heat and water stress. 1+4
18. State the competitive exclusion principle with a proper example. How does competition influence the niche of a population? 3+2 = 5
19. State the concept of limiting factors? How can you relate Liebig’s and Shelford’s law with this concept. 1+4 = 5
20. Name two zoogeographical realms fall on the equator and briefly describe each of them. 1+2+2
21. Define stress. Write a short note on CAM mechanism with special mention of its role in combating water stress. (1+4)
22. “Complete competitors cannot co-exist” – describe a classical experiment testing this hypothesis.
23. What is the effect of competition on niche segregation?
24. What do you mean by ecological pyramid? Can pyramid of energy be inverted? Justify your answer. 2+3 = 5
25. What is biogeochemical cycle? Write a short note on nitrogen cycle with proper diagram. 1 + 4
26. What do you mean by C3 and C4 plants? Explain the CAM and its significance. 1+4 = 5
27. State box and pipe model of energy flow.
28. How the concept of niche came and state the Gause's experiment of competition.
29. Describe biocycle or carbon cycle. Describe how oxygen cycle is related to it? 2+3 = 5

QUESTION BANK (PART I) : PAPER I / GROUP B/UNIT III

Each Question carries ONE mark

1. What do you mean by molarity?
2. Define equivalent weight.
3. Give example of a metalloid.
4. Define soil.
5. What is the typical ratio of organic and inorganic matters in the soil?
6. As per the agricultural standard which soil is called saline soil?
7. Write full form of VOC.
8. What is foam?
9. What do you mean by indicator range?
10. What will be the equivalent weight of $\text{Na}_2\text{S}_2\text{O}_3$ for following reaction:
$$2\text{Na}_2\text{S}_2\text{O}_3 + \text{I}_2 = 2\text{NaI} + \text{Na}_2\text{S}_4\text{O}_6$$
11. What do you mean by isoelectric point of amino acids?
12. Define peat.
13. What are the basic properties those determine the stickiness of soil?
14. What is the principle of titrimetry?
15. Define metalloids.
16. What do you mean by normality?
17. What should be the proportion of organic matter in a fertile soil?
18. What do you mean by sodic soil?
19. Define soil aggregates.
20. What is the Equivalent weight of $\text{K}_2\text{Cr}_2\text{O}_7$ in strongly acid medium? (Given formula wt of $\text{K}_2\text{Cr}_2\text{O}_7 = 294$)
21. In case of sulphuric acid, establish the relation between normality and molarity.
22. What are the diameters of colloid particles?
23. What are metalloids? Explain with example.
24. What is the role of $\text{K}_2\text{Cr}_2\text{O}_7$ in estimation of COD?
25. Whether Peroxy Benzile Nitrate (PBzN) is an example of PAH?
26. What do you mean by secondary standard?
27. State any two properties of primary standards.
28. What is the most important prerequisite of podzolisation process?
29. KMnO_4 is a secondary standard substance, where as, $\text{K}_2\text{Cr}_2\text{O}_7$ is a primary standard – Explain.
30. Whether the pH of Boiling water is less than 7 or greater than 7?
31. Write general formula of PAN.
32. Why podzolisation leads to low fertility condition?
33. State Beer-Lamberts law.
34. What do you mean by Redox-reaction?
35. What is the oxidation state of Na in $\text{Cr}(\text{NO}_3)_3$?
36. Calculate the number of NaOH molecules in one litre of 2M NaOH solution.
37. Define Solubility Product.
38. Define PBS.
39. What do you mean by covalent bond?

QUESTION BANK (PART I) : PAPER 1 / GROUP B/UNIT III

40. What is colloid?
41. Define molar concentration.
42. What is the oxidation state of iron in FeS_2 ?
43. Calculate the number of moles of hydrochloric acid available in a 1N solution of HCl.
44. What are transition metals?
45. What do you mean by coordinate covalent bond?
46. Define indicator.
47. Write the general formula of CFC.
48. Define acid as per Brønsted Lawry theory.

QUESTION BANK (PART I) : PAPER I / GROUP B/UNIT III

Each Question carries TWO marks

1. Write down Nitrogen fixation reaction with explanation.
2. Explain, which one is more stable FeI_3 or FeCl_3 .
3. What is the oxidation state of iron in $\text{K}_4[\text{Fe}(\text{CN})_6]$.
4. How much water needs to be added in a sample of 100ml 1 ppt NaCl to make a 100 ppm NaCl solution?
5. Which solution is having more salt, 100 ml 50 ppm salt solution or 50 ml 1gm/lit salt solution?
6. Write the effect of podzolisation on soil quality.
7. Explain the term EC_e and its significance.
8. What do you mean by lyophobic and lyophobic colloids?
9. pH of both 0.01(N) HCl and 0.01 (N) acetic acid will be same or different ? Justify your answer.
10. What is nitrogen fixation and Nitrification process?
11. What do you mean by electrolysis?
12. Discuss the Schulze – Hardy rule with respect to colloids.
13. Only high CEC value does not confirm soil fertility, explain why.
14. Why RPM are considered to be the more dangerous compared to SPM.
15. Describe the process of spodosol formation.
16. What is the equivalent weight of $\text{Na}_2\text{S}_2\text{O}_3$ on the basis of $\text{Na}_2\text{S}_2\text{O}_3$ and iodine reaction?
17. What is the valency of chlorine in HClO_4 ?
18. Why Fe_3O_4 is called mixed oxide?
19. Explain the term CEC and its significance.
20. What is the relation between K_p and K_c of a chemical reaction which is in chemical equilibrium?
21. What will be the pH of 0.01N acetic acid solution? (given K_a of acetic acid = 1.72×10^{-5})
22. Explain the reactions which are involved in 'Nitrogen fixation' and Nitrification steps.
23. Why Winklers method of dissolved oxygen estimation is called Iodometric estimation?
24. Explain the role of buffer in chemical reactions.
25. Differentiate CEC with PBS.
26. Write the formula of CFC - 112.
27. Write the formula of CFC - 115.
28. Soil structure has huge bearings on soil fertility: justify the statement.
29. Equivalent weight of $\text{CH}_2(\text{COOH})_2$ is 52. How many number of molecules are present in 1 gm of $\text{CH}_2(\text{COOH})_2$?
30. What will be the pH of 10^{-8} (M) HCl solution?
31. Explain the buffer capacity. When will it be maximum?
32. In between Molal and Molar solution, which one is stronger?
33. State the relationship between CEC and soil pH?
34. Explain one environmental importance of coagulation.
35. Explain the process of complexometric titration with an example.
36. Balance the equation with Oxidation number: $\text{Cu} + \text{HNO}_3 \rightarrow \text{Cu}(\text{NO}_3) + \text{NO}_2 + \text{H}_2\text{O}$
37. 'All reactions are reversible' – justify the statement.
38. How does a buffer solution resist change in pH?

QUESTION BANK (PART I) : PAPER I / GROUP B/UNIT III

39. Estimate the pH of 2N H_3PO_4 .
40. How much NaOH would be needed to make 100 ml 0.1% solution from 100 solution of pH 12
41. State the relationship between CEC and soil EC_e ?
42. How does atmospheric pollution affect Ozone layer?
43. What do you mean by potentiometric titration?
44. Differentiate between primary and secondary standard.
45. Explain why the pH of a pure water is 7.
46. What will be the pH of 10^{-8} (M) HCl solution?
47. Explain the concept of conjugate acid and base concept as per Brøsted- Lawry theory.
48. How much moles of Oxygen will be needed to for 2 moles of Al_2O_3 in reaction with Al.
49. Write a short note on the causes of Ozone depletion with chemical equation.
50. What volume of CO_2 will be available at NTP after treating 1gm of Marble (CaCO_3) with dilute HCl?
51. In between Normal and Molar solution of a diprotic acid, which one is stronger?

QUESTION BANK (PART I) : PAPER I / GROUP B/UNIT III

Each Question carries **FIVE** marks

1. The equivalent weight of an element changes with the change of its oxidation number – explain the statement with suitable examples. 5
2. Explain the strength of the given solution in terms of normality and molarity: $2\frac{1}{2} \times 2 = 5$
- a. i] 5% NaOH ; and ii] 0.049gm of H_2SO_4 in 500 ml.
3. Explain CEC as an important soil parameter. How soil pH affect the soil fertility? $3+2 = 5$
4. What is electro osmosis? Discuss the principle of sedimentation of process of colloids. $2\frac{1}{2} + 2\frac{1}{2}$
5. Discuss the properties of colloids. 5
6. What is secondary pollutant? Discuss the role of organic compounds in formation of Photochemical smog. $1+4 = 5$
7. Write a short note on the process of catalytic ozone depletion. Why O_3 depletion is a cyclic reaction? $3 + 2 = 5$
8. How does CEC differ from PBS? How soil pH affect the soil fertility? $3 + 2 = 5$
9. Write and explain the principle of dissolved oxygen estimation through Winklers method. What should be minimum DO concentration of water for survival of life? $4 + 1 = 5$
10. Explain buffer action and Buffer capacity of a buffer solution. 5
11. Explain the principles involved in ‘Sedimentation process’. 5
12. Why CFC is considered as a potent threat to the Ozone layer, discuss with necessary reactions. 5
13. Write a short essay on the chemical composition of particulate matters suspended in the air. 5
14. The density of a concentrated solution of H_2SO_4 IS 1.84g/ml, and it contains 98% by weight of the acid. Find the Normality and Molarity of the acid. 5
15. The equivalent weight of a metal is 9. What volume of H_2 will be liberated by treating 2.7g of the metal with HCl at $27^\circ C$ and 760mm-Hg pressure? 5
16. Discuss the formation of photochemical smog with special reference to its distribution through out the day. 5
17. What do you mean by Soil? Write a short note on influence of electrical conductivity on soil fertility. $1 + 4 = 5$
18. How much Zn will be needed to liberate 1lit. H_2 by reacting it with H_2SO_4 at STP? 5
19. State Le Chatelier’s principle. Discuss the effect of change of concentration of a component on equilibrium. (1+ 4)
20. What do you mean by chemical equilibrium? Stating Le Chatelier’s principle explain the dynamic equilibrium condition of an irreversible reaction. $2+3 = 5$
21. Describe the formation of PAN in atmosphere. 5
22. What do you mean by Soil? Write a short note on influence of PBS on soil fertility. $1+4 = 5$
23. Write a short note on spectrophotometric estimation with special reference of its limitations.
24. State Le Chatelier’s principle. What happens on heating the reactants of an exothermic reaction at equilibrium? $1+4$

QUESTION BANK (PART I): PAPER 1 / GROUP B/UNIT IV

Each Question carries ONE mark

1. Define insolation.
2. What do you mean by enthalpy?
3. What do you mean by radiative equilibrium of the Earth?
4. State the first law of thermodynamics.
5. Write basic differences between Radiation and Convection process.
6. Which radioactive ray/particles are having maximum penetration capacity and why?
7. Write full form of LASER.
8. What do you mean by standard deviation?
9. Why 'wet bulb temperature' is measured?
10. What is DALR?
11. State 2nd law of thermodynamics.
12. Define Gibb's free energy.
13. What do you mean by non-steady state of material balance reaction?
14. Give definition of median.
15. What is frequency of variable?
16. Define standard deviation.
17. What is radiation?
18. What is a radioisotope?
19. How many neutrons are in a nucleus of Carbon-14 if the atomic number is 6?
20. How many electrons orbit a neutral atom of Manganese-55 (atomic number 25)?
21. Classify data into different classes.
22. Define central tendency.
23. Define solar constant.
24. What do you mean by an ideal black body.
25. Calculate the mean life of ${}_{92}\text{U}^{238}$, considering its Half life to be 4.5×10^9 years.
26. What do you mean by background radiation?
27. Write full form of MASER.
28. State the difference between supersonic and ultrasonic wave.
29. What do you mean conditional probability?
30. What do you mean by median?
31. Define Albedo.
32. What do you mean by Boltzmann's constant?
33. Write down the range of microwave radiation.
34. What do you mean by background radiation?
35. Write down the mathematical formula of dispersion in case of grouped data of continuous type.
36. Write the role of transducer.
37. Define the range of correlation coefficient
38. Name a biome based climate classification system.
39. Define solar constant.
40. What do you mean by free energy?
41. Define radioactivity.

QUESTION BANK (PART I): PAPER 1 / GROUP B/UNIT IV

42. What do you mean by emission spectrum?
43. What do you mean by Goodness of Fit?
44. Write the role of transducer.
45. Define the range of correlation coefficient.
46. Define dose.
47. Define Solar constant.
48. What do you mean by radiative equilibrium?
49. What is spontaneous reaction?
50. Why atomic number is not important to indicate radioisotope?
51. What is α -radiation?
52. Define central tendency.
53. Mention the utility of correlation.
54. When t-test is applied for statistical data?
55. Define Solar constant.
56. What do you mean by Boltzmann's constant?
57. What is ultrasound?
58. What is Roentgen?
59. Write the role of transducer.
60. What is heat engine?
61. Name a biome based climate classification system.
62. What is steady state of a material balance?

QUESTION BANK (PART I): PAPER 1 / GROUP B/UNIT IV

Each Question carries TWO marks

1. Explain the 'Stability principle' of thermodynamics.
2. State the relationship between Gibb's free energy and Enthalpy.
3. Write the relationship between Thermal conductivity with the process of heat conduction.
4. Explain the 'steady state' of material balance equation.
5. Describe the relation between half life and mean life of any radioactive element.
6. 'What are the factors that may impact the functioning of Radar' – discuss with the help of Radar equation.
7. How does atmospheric condition influence Radar efficiency? Explain with equation.
8. What are the unique advantages of Biosensor devices over the traditional or chemical sensors?
9. Calculate the mode and median of the following data series: 2, 5, 6, 4, 7, 4, 8, 2, 5, 5, 9, 3.
10. What is the relationship between atmospheric temperature and dew point?
11. Write different categories of dry climates according to their properties.
12. Among a glass of water and a glassful of ice cubes, where higher entropy is found and why?
13. Define enthalpy. What happens to the Enthalpy of endothermic reaction?
14. Consider the following frequency distribution and derive its arithmetic mean.
 - a. Variable (x): 2 4 6 8
 - b. Frequency (f): 5 7 8 4
15. Explain the neutral condition of atmosphere and its significance in environmental science.
16. Find the median of the following values: 2, 7, 12, 6, 8, 15, 22, 10, 11, 4.
17. How will you draw a pie-diagram?
18. Why are some isotopes radioactive and others not?
19. Write short note on radioactive decay.
20. What are the differences between protons, neutrons and electrons?
21. Discuss the importance of statistics in Environmental Science.
22. Write down the different measures of central tendency.
23. Define dispersion. Write down different measures of dispersion.
24. Explain the term 'Atmospheric Stability'.
25. How does the material balance help in environmental management?
26. State the Zeroth law of thermodynamics and explain its importance in heat transfer.
27. What unique properties of LASER make an difference over a beam of light?
28. Calculate the standard deviation of the following series:
 - a. Frequency: 2 2 4 5
 - b. Number: 5 5.5 6 5.2
29. Which radioactive particle is most harmful and why?
30. Why the entropy of a system is always increasing?
31. Differentiate between Gibbs free energy and Helmholtz free energy
32. Explain the working principle of a psychrometer.
33. Is it possible to maintain a steady state of material balance practical field?
34. Find out the variance of the following values: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10.
35. If an industrial exhaust is released below inversion line in a neutral atmosphere, what will be the fate of it?

QUESTION BANK (PART I): PAPER 1 / GROUP B/UNIT IV

36. Why the entropy of a system is practically never zero?
37. State the process of radiation inversion.
38. How dew point is dependant over the moisture content of air.
39. Why environmental lapse is always lower than dry adiabatic laps rate?
40. State the Wein's displacement rule.
41. Find out the standard deviation of the following series: 5.0, 6.0, 5.6, 5.8, 6.3,6.0
42. Calculate the probability of having a count of 9 when two dices are thrown simultaneously.
43. If an industrial exhaust is released below inversion line in an unstable atmosphere, what will be the fate of it?
44. Name different types of humidity and state the significance of the most common one.
45. Discuss the importance of material balance of conservative materials in environmental science.
46. 'A chemical sensor does need a transducer, while a biosensor do': explain why.
47. What do you mean by probability? Explain with example.
48. If 255 gm of radioactive isotope remains after 1½ years(haflife). What was the initial amount of the material?
49. What do you mean by Radiation inversion and state its importance in environment.
50. Write a short note on heat transfer process through any medium.
51. Explain the working principle of a psychrometer.
52. State the principle of Laser production.
53. Describe nuclear fission with example
54. What is neutron activation?

QUESTION BANK (PART I): PAPER 1 / GROUP B/UNIT IV

Each Question carries **FIVE** marks

1. The environmental system follows laws of thermodynamics: Justify the statement. Define solar constant. 4 + 1 = 5
2. Define heat engine. Explain the functioning of Carnot cycle. 1 + 4 = 5
3. What are the different schemes of climate classification? Name and describe a classification scheme that is based on the precipitation. 1 + 4 = 5
4. What do you mean by DALR? Explain how atmospheric stability affects the pollution dispersal. 2 + 3 = 5
5. Classify material balance as per the type of materials. Calculate the final concentration of Cyanide in a stream where two flows having 10ppm and 20 ppm cyanide concentration are mixing at flow rate of 100lit/hr and 200 lit/hr respectively (consider that the system is running at a steady state). 2+3 = 5
6. How will you draw a line diagram for a frequency distribution? 5
7. Find out the arithmetic mean and mode of the following distribution:

Variable (x)	10.5	20.5	30.5	40.5
Frequency (f)	26	32	37	25

8. Name three common forms of radioactive decay. And explain the differences. 2+3 = 5
9. Half-life of radium is 1590 years-explain. If from the parent atom i) one alpha, ii) one beta and iii) one gamma decayed then what will happen in each case-explain. 2+3 = 5
10. Represent the following production cost of sugar in a certain week under different heads in a sugar factory by Pie chart. Make a comment on your findings. 3 + 2=5

Source	Production cost ('000 Rs)
Raw Material	192.0
Labour	153.6
Direct Production	57.6
Others	76.8

11. If a piston having 'A' cross section is moved a distance 'd' in a closed system, then estimate the change of Enthalpy. What happens to the Enthalpy in case of endothermic reaction and why? 3+2
12. Discuss the heat budget of the Earth atmosphere system maintaining radiative equilibrium. Show where Greenhouse gases play role in disruption of the equilibrium. 4+1= 5
13. Discuss working principle of a biosensor with suitable diagram. Give an example of environmental application of biosensor. 4+1= 5
14. State total Probability Theorem. What is the probability of getting at least a sum of nine when two dice are thrown together? 2+3 = 5
15. Explain Carnot's cycle with proper diagram. Why is it considered as an hypothetical concept? 4+1
16. If the Earth's atmosphere maintain a heat balance , i.e. input heat equals the outgoing heat, how the temperature of heat activity of atmosphere does take place? Explain with diagram. 5
17. Let X be a variable that takes two values 2 and 4 with frequencies 10 each. Find standard deviation and mean deviation about mean of the given data. Establish their relationship empirically 4+1 = 5

QUESTION BANK (PART I): PAPER 1 / GROUP B/UNIT IV

18. Define material balance. A lagoon is to be designed to accommodate an input flow of $0.10\text{m}^3/\text{s}$ of non-conservative pollutant with concentration 30mg/l . If 20% of the material get oxidised a day, what should be the capacity of the lagoon to maintain a concentration of 10mg/L ? 1+4 = 5
19. Write the principle of laser technology with diagram. Write a short note on the application of biosensor in environmental studies. 3+2 = 5
20. The ratio of N:P:K of a soil is expected to be 9:4:2. A soil sample is showing concentration of 110mg/kg , 35mg/kg and 15mg/kg for NPK respectively. Analyse whether the soil is having an ideal quality or not? 5
21. State the role of latent heat in maintenance of radiation balance of the Earth with suitable diagram. 5
22. Define mutually exclusive event . A uniform die is thrown at random. Find the probability that the number on it is : (i) 5 (ii) greater than 4. 2+3=5
23. Describe in short the working principle of a simple radar. What is LIDER? 4+1 = 5
24. Describe the Major applications of ultrasound. 5
25. What is central tendency of a statistical data series? Calculate the Mode, Median and Standard Deviation of the following data series: 8, 7, 8, 8.5, 9, 7, 9.5, 11, 7, 10, 7. 1+4

QUESTION BANK (PART I) : PAPER 3 / GROUP A/UNIT I

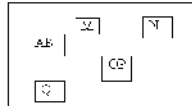
Each Question carries ONE mark

1. Explain the word 'Biodiversity'.
2. In which conference the status of biodiversity was elevated and got a global concern?
3. What do you mean by Flagship species?
4. What is species evenness?
5. Explain Alpha diversity.
6. What is Similarity Index?
7. Name a nonhuman ape of India.
8. Name two Megadiversity countries.
9. What is CBD?
10. What is species diversity?
11. What is dominance in a community?
12. What are the information statistics indices?
13. Mention the objectives of PBR.
14. Mention one shortfall of Protected Area Network.
15. Define the term captive breeding.
16. Define 'Biodiversity'.
17. What is Barger-Parker index?
18. What do you mean by Bioindicator?
19. What is species richness?
20. Explain Gamma diversity?
21. Write down the full form of FRLHT and CES.
22. Who initiated the concept of Peoples Biodiversity Register ?
23. Mention one shortfall of Protected Area Network.
24. Defined Wetland.
25. What do you mean by pepleescape?
26. What is Bog?
27. Define the term captive breeding.
28. What is Exotic species?
29. What do you mean by ecosystem diversity?
30. Name a Biosphere of West Bengal.
31. What do you mean by Biodiversity indices?
32. What is scheduled species?
33. What do you mean by keystone species?
34. What is ex-situ conservation?
35. What do you mean by Genepool?
36. What is endangered species?

QUESTION BANK (PART I) : PAPER 3 / GROUP A/UNIT I

Each Question carries **TWO** marks

1. What are the different components of species diversity?
2. Name the factors affecting genetic diversity.
3. Mention the zoological names of the Indian national animal and nation bird.
4. State the conservation status of Black-buck. Where it is found?
5. What do you mean by Keystone species? State its importance with suitable example.
6. In the following diagram small boxes are representing local habitats and alphabets are representing different species. Now calculate the Alpha , Beta and Gamma diversities.



7. Why genetic diversity is essential for a healthy breeding population?
8. What is Red data book?
9. Differentiate between simple dominance index and Simpson index.
10. What are different dominance indices? Describe them.
11. What are the different biogeographical regions in India?
12. What do you mean by the term Biodiversity Hotspots ?
13. State two attributes of Biosphere Reserve.
14. What do you mean by Megabiodiversity Nations ?
15. Define genepool.
16. Define the term Ecosystem Diversity.
17. State two attributes of Biosphere Reserve.
18. What do you mean by flagship species? State its importance with suitable example.
19. Differentiate between consumptive and productive values of Biodiversity.
20. What do you mean by cultivars?
21. Discuss the relationships between species evenness and species richness of an area.
22. Discuss the significance of biodiversity Hotspot.
23. Differentiate between the status of National Park and Wildlife Sanctuary.
24. State two attributes of Biosphere Reserve.
25. Mention any one biodiversity index with equation and significance.
26. Mention the two principle objectives of CBD.
27. State two attributes of Biosphere Reserve.
28. Mention two Biodiversity Hotspots of India.
29. What is productive value of Biodiversity? Explain with examples.
30. Distinguish α and β diversity.
31. Explain the importance of species richness in maintenance of biodiversity health.
32. Why relative density of a species plays important role in biodiversity assessment.
33. What do you mean by PBR?
34. Differentiate between ex-situ and in-situ conservation.
35. State the significance of evenness index citing its formula.
36. Which mode of conservation is practised at Zoogardens with open enclosure? Justify.
37. Write any four values of Biodiversity.

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QUESTION BANK (PART I) : PAPER 3 / GROUP A/UNIT I

Each Question carries FIVE marks

1. What criteria of designating an area as Biodiversity Hotspot? 5
2. Why tropical areas are moat rich in biodiversity? 5
3. State difference between National Park, Biosphere Reserve and Wildlife Sanctuary. 5
4. Calculate the Shannon Wiener biodiversity index by using the following data. 5

Name of species	Sp A	Sp B	Sp C	Sp D	Sp E	Sp F
No. of individuals	10	12	14	04	02	00

5. How do you measure α , β and γ diversity? 5
6. How human beings are dependent on biodiversity? 5
7. What do you mean by Wetland Restoration? Add a note on Ramsar Convention. 2 + 3
8. Give a comparative account of National Park, Biosphere Reserve and Sanctuary. What is Protected Area Network? 5
9. Write a short note on Indian context of Biodiversity. 5
10. Elaborate the unevenness of Biowealth distribution on the Planet Earth according to your own understanding. 5
11. Mention two important characteristics of wetland. Give an account of different types of manmade wetlands. 2+3=5
12. What is Biodiversity Management Committee? Give a brief account of the process of PBR preparation. 1+4=5
13. Write a short note on Indian context of Biodiversity. 5
14. Define biodiversity index. Why it is necessary in biodiversity assessment? 1+4 = 5
15. Mention the ecological roles of Wetland. 5
16. Define the term bioindicator. Add a note on National Wetland strategy towards conservation of wetland. 1+4=5
17. What are different levels of Biodiversity? Mention the different methods under insitu conservation strategies. 1+4=5
18. Discuss the differences between and significance of using Shannon Weiner index and Simpson's index. 5
19. Comment on the ecosystem health from the data provided in the following table: 5

<i>Species</i>	<i>Sp. 1</i>	<i>Sp. 2</i>	<i>Sp. 3</i>	<i>Sp. 4</i>	<i>Sp. 5</i>
<i>No.</i>	17	86	27	20	40

20. Write an essay on Mass Extinction.
21. Discuss the merits and demerits of Exsitu and In-situ conservation strategies.

Each Question carries ONE mark

1. What do you mean by Extremophiles?
2. Why is DNA Polymerase I called Kornberg's enzyme?
3. What is priming?
4. Write name of the causative agent of Typhoid fever.
5. What is TATA Box?
6. Why Taq polymerase is needed for PCR reaction?
7. What is the source of energy in Ligase activity in bacteria?
8. What is RAPD?
9. What is Primer?
10. What is the role of 16s rRNA in prokaryotic translation?
11. Name one water borne virus and disease caused by it?
12. What is the direction of DNA replication and why?
13. Which is the adaptor molecule in *E.coli* translation?
14. State the role of helicase in DNA replication.
15. Name the causative agent of Diphtheria.
16. Which enzyme helps in DNA proofreading and how?
17. Who proposed the right handed helical model of DNA?
18. What do you mean by Cyanpcean and Floridian Starch?
19. Name one unicellular fungi and state its beneficial function.
20. What is fermentation?
21. What is Anisogamy?
22. What cell organelle is essential for translation?
23. What do you mean by template strand?
24. Who proposed the right handed helical model of DNA?
25. What do you mean by Cyanpcean and Floridian Starch?
26. Name one unicellular fungi and state its beneficial function.
27. Why plasmid is also called biological vector?
28. What is OriC?
29. Name one disease causing protozoa.
30. Why Taq polymerase is used in PCR?
31. How a RE recognised its specific site?
32. What is SSB?
33. What cell organelle is essential for translation?
34. What is Plasmid?
35. Name one Restriction Enzyme.
36. What is communicable disease?.
37. What is *fmet* t-RNA?
38. Name one fungi involved in biodegradation of pesticide.
39. Name one bacteria specified for Biomining.

QUESTION BANK (PART I) : PAPER 3 / GROUP A/UNIT II

Each Question carries TWO marks

1. Briefly state the mechanisms of Ligase activity with reactions.
2. How Restriction Enzymes recognize specific sequences? Name one Restriction Enzyme.
3. State role of Helicase during DNA replication.
4. Write the difference between RNA polymerase core enzyme and holoenzyme.
5. Classify microorganisms on the basis of their oxygen requirements.
6. What type growth curve is seen in bacteria? What are different phases of such growth curve?
7. State some applications of PCR.
8. Draw and label a t-RNA molecule.
9. What is PCR? What is the use of this technology?
10. State the effect of pH on bacterial growth with examples.
11. What do you mean by lagging strand and why this is so called?
12. What is Rho? How this helps in termination of *E.coli* transcription?
13. What do you mean by aeromicrobes and give examples?
14. What kind of microbe causes cholera and how cholera can be treated?
15. Differentiate between Psychrophiles and Mesophiles.
16. How initiation complex of *E.coli* translation is formed?
17. What do you mean by promoter sequence? In prokaryotes what are the two promoter sequences? What is the significance of their presence?
18. Why RNA primer is required to start replication? What do you mean by Okazaki fragments and where are they found?
19. What do you mean by restriction digestion? How RE digest target sequence? Give example.
20. How RNA synthesis in prokaryotes is terminated?
21. What is t-RNA? And state its role in prokaryotic translation.
22. What is transcription bubble? What do you mean by nascent RNA?
23. How the disease Typhoid can be transmitted? Which bacterial is responsible for this disease?
24. What is AIDS? Which microbe causes this disease?
25. What is transcription bubble? What do you mean by nascent RNA?
26. What is Okazaki fragment? Where are they found?
27. State functional difference between DNA Pol I & DNA Pol III.
28. How energy is used in ligase action?
29. How plasmid can be distinguished from bacterial chromosomal DNA?
30. What is reverse transcription? Where it can be seen?
31. What do you mean by promoter sequence? What is the significance of their presence?
32. Write a short note on Central dogma.
33. What is transcription bubble?
34. How the disease Chicken pox is transmitted?
35. What is palindromic sequence? Where is it found?
36. What is capsomere?
37. Write the steps of any one pesticide biodegradation mentioning the microbes involved.
38. What do you mean by activated sludge process? Give example.
39. What are the difficulties or hazards associated with GEMS.
40. Differentiate between continuous and discontinuous strand.

QUESTION BANK (PART I) : PAPER 3 / GROUP A/UNIT II

Each Question carries FIVE marks

1. State the formation of initiation complex during translation in *E. coli*. 5
2. What is RFLP? State the principle of this process. What are the advantages of RFLP? 1+2+2
3. State some important applications of biotechnology in medical science. 5
4. Write diagrammatically how the disease Polio occurs by mentioning the complete disease cycle. 5
5. What is Bioremediation and Biomineralization? State briefly how hazardous waste and oil spill can be degraded biologically? 2+3 = 5
6. What is plasmid DNA? How this can be extracted? 2+3 = 5
7. What do you mean by transcription bubble? How transcription in *E.coli* can be initiated and elongated? 2 + 3 = 5
8. What is Codon? How tRNA recognizes specific codons and how polypeptide chain is synthesized? 1 + 4 = 5
9. What is Plasmid? Where it is found? How plasmid can be isolated from cell suspension? 1+1+3
10. Give a brief description of PCR with proper with diagram. Write the names of the essential ingredients used for PCR. 3+2 = 5
11. What do you mean by aeromicrobe and hydromicrobe? Give example two human diseases caused by aeromicrobe and hydromicrobe mentioning the symptom and treatment. 2+3 = 5
12. State some important applications of Biotech in medical science.
13. Where plasmid is found? How plasmid can be isolated from cell suspension? 1+4 = 5
14. State complete description of ρ (rho) -dependent and ρ (rho)- independent termination? 5
15. Give a brief description of PCR with proper with diagram.
16. How environmental parameters affect bacterial growth? 5
17. Explain the concept of biomining with suitable reactions and examples. 5
18. Describe the role of microbes as bio-controlling agent to control pathogens. 5
19. How environmental parameters affect bacterial growth? 5

QUESTION BANK (PART I) : PAPER I / GROUP B/UNIT III

Each Question carries ONE mark

1. What do you mean by aquifer?
2. Write full form of LISS data?
3. What do you mean by the term *Archaean*?
4. What do you mean by psychrometer?
5. Define GPS.
6. Write fundamental equation of groundwater flow.
7. Name a fluvial landform that is made by river meanders.
8. Define relative humidity.
9. What do you mean by zone of saturation?
10. Write full form of DGPS data?
11. What do you mean by the term *Snow ball Earth*?
12. What do you mean by cretons?
13. Define Remote Sensing.
14. Write the importance of epicentre.
15. Name last super continent.
16. Define relative humidity.
17. What do you mean by aquifclude?
18. Write full form of FCC?
19. What do you mean by slope stability?
20. What is geostationary satellite.
21. Write Darcy's equation of groundwater flow.
22. What is Fjord?
23. Define streak.
24. What do you mean by confined aquifer?
25. What is Caldera?
26. Define snowball earth.
27. What do you mean by Natural levee?
28. What do you mean by secondary porosity?
29. What is economic threshold of a resource?
30. What is front?
31. What is Katabatic wind?
32. What do you mean by aquitard?
33. What is epicentre of Earthquake?
34. What do you mean by LUCA.
35. Define delta.
36. Define resolution.
37. What is atmospheric instability?
38. What is eye of a tropical cyclone?

QUESTION BANK (PART I) : PAPER I / GROUP B/UNIT III

Each Question carries TWO marks

1. Explain Darcy's law in the perspective of ground water flow.
2. Write role of fossil records as evidence of continental drift.
3. What do you mean by 'Subsidence bowl'.
4. Explain origin of Himalaya as a result of plate tectonics?
5. Comment on the weather, if you record a barometric pressure of 775mmHg with average humidity 96%.
6. To produce land use map of India, which type of spatial resolution of satellite data will you prefer and why?
7. Explain the role of plate tectonics as a cause of Earthquake.
8. State the relationship between relative humidity and dew point.
9. Explain Darcy's law in the perspective of ground water flow.
10. Write role of paleoclimatic evidences of continental drift.
11. What is subduction and discuss its significance.
12. Differentiate active and passive remote sensing with example.
13. Describe and differentiate between Stock, Resource and Reserve.
14. Discuss the significance of pacific ring of fire in the context of plate tectonics.
15. Write short note on Big impact hypothesis.
16. Write the importance Cambrian explosion?
17. Show that the ground water flow is independent of the slope gradient and depend on head loss.
18. Write a short note on the process of sea floor spreading.
19. Distinguish between indicated and proven resources.
20. Discuss the principle of psychrometer.
21. When should one go for aerial photography for environmental study?
22. Write a short note on propagation of Earthquake energy.
23. Give a brief account of Bryan's classification of springs.
24. Write a short note on nebular hypothesis.
25. What do you mean by transform plate boundary? State its resultant natural hazards.
26. Why tsunami wave dissipate the energy near shore and drawback happens?
27. Differentiate between *P-wave* & *S-wave* of earthquake.
28. Discuss the principle of GPS technology.
29. What is conditional instability?
30. Write a short note on Big Impact theory.
31. What do you mean by Cambrian explosion and why is it so named?
32. State and discuss any two environmental impact of underground mining.
33. Why tsunami wave dissipate the energy near shore and drawback happens?
34. What do you mean by isostasy?
35. How is a shield volcano formed?
36. Describe occluded front with diagram.
37. Explain geostrophic wind with suitable diagram.

QUESTION BANK (PART I) : PAPER 1 / GROUP B/UNIT III

Each Question carries FIVE marks

1. Write a short essay on origin of Earth. 5
2. Differentiate active and Passive remote sensing. Write short note on kinds of resolution used in Remote Sensing. 2 + 3= 5
3. Write a short note on landforms created by flowing water at its transport phase. Define horn. 4 +1
4. Discuss how does over exploitation of groundwater resource promote fresh water shortage, in spite of the fact that there is continuous hydrological cycle. Define Head loss. 4+1 = 5
5. What is Resolution? Explain different types of resolution with examples. 5
6. Classify resources according to their exploitation/ availability potentials. What is economic threshold? 4 + 1= 5
7. How does slop stability promote landslids? Describe the anthropogenic causes of landslides. 2 +3
8. Write an essay on effects of mineral beneficiation processes on environment. 5
9. Elucidate ‘the Big Impact Hypothesis’ as a cause of origin of Moon. 5
10. Write an essay on different components of Satellite Remote Sensing technology. Which spectral band would you prefer to study water resource and why? 3 + 2 = 5
11. Write an essay on Plate Tectonics and its impacts. 5
12. Give a detailed account of vertical zonation of groundwater. What do you mean by primary and secondary porosity? 4+1 = 5
13. State and explain the Collision – Coalescence theory of rain formation. 5
14. Discuss the environmental consequences of mining operation. What is subsidence bawl?
15. What do you mean by signature in remote sensing study. Define spectral resolution and state its significance in environmental monitoring. 2 + 3 = 5
16. Write a short essay on vertical zonation of Ground water with diagram. What is specific retention? 4 + 1 =5
17. Explain the GPS technology. Discuss the application of remote sensing in biodiversity conservation. 2 + 3 = 5
18. What are different types of plate boundaries? Give an account of formation of Himalaya range as a result of plate tectonics with diagram. 2 + 3 =5
19. Explain the Bergeron’s concept of rain formation. 5

QUESTION BANK (PART I) : PAPER 3 / GROUP B/UNIT IV

Each Question carries ONE mark

1. Define rill erosion.
2. Define soil order.
3. What do you mean by green manure?
4. What is the major source of inorganic phosphate fertilizers?
5. What is pedon?
6. What do you mean by mulching?
7. Define foliar feeding.
8. Name a group of bacteria having capacity of both nitrogen fixing and photosynthesis.
9. Define gully erosion.
10. Define soil order.
11. What do you mean by vermicompost?
12. Define pedoturbation.
13. What is a map unit?
14. What do you mean by conservation tillage?
15. Define soil.
16. Name a biofertilizer.
17. What is Vermicast?.
18. Define soil horizon.
19. What do you mean by regolith?
20. Name an aquatic fern that is used as bio-fertilizer.
21. What is outcrop?
22. What do you mean by sheet wash?
23. Define foliar feeding.
24. What do you mean by sodic soil?
25. What do you mean by humus?.
26. What are the major soil horizons?
27. What should be your biofertilizer of choice to supply nitrogen in paddy field?
28. What is primary mineral?
29. What is Caliche?
30. State Stock's law for particle analysis in soil.
31. What is the initial phosphate reaction product?
32. What is map unit?
33. State any one role of soil organic matter.
34. Define macronutrients.
35. What are the attribute of soil colour?
36. What do you mean by residual soil or residuum?

QUESTION BANK (PART I) : PAPER 3 / GROUP B/UNIT IV

Each Question carries TWO marks

1. Distinguish CEC and PBS.
2. Write short note on the factors affecting soil pH.
3. Define macronutrients and write the role of any one macronutrient in plant growth.
4. Distinguish between proisotropic and proanisotropic pedoturbation.
5. Discuss the properties of different soil horizons.
6. Define and classify Mycorrhizae.
7. Write a short note on vermicomposting.
8. Discuss why chemical fertilizers are considered harmful for environment?
9. What are the major soil textural classes?
10. Does more humus mean more productivity? Comment on your answer.
11. Define and cryoturbation and write its significance.
12. Differentiate between biofertilizer and green manure.
13. What are the components of soil colour?
14. Why vermicomposting is getting importance day by day?
15. Why CEC is considered to be an important parameter for soil fertility?
16. Discuss the process of humification.
17. Define macronutrients and write the role of any one macronutrient in plant growth.
18. Differentiate between pedoturbation and pedogenesis .
19. Discuss the properties of mollisol and ultisol.
20. Discuss the importance of PGPR.
21. Write difference between vermicast and vermiwash.
22. Distinguish organic fertilizer from biofertilizer.
23. Differentiate between illuviation and eluviations.
24. Whether Epipedon and Polypedon is related to each other? Justify your answer.
25. Why histosol is less fertile than ultisol?
26. What change will occur if $\text{Ca}(\text{OH})_2$ is added to acid soil?
27. What are different attributes of soil colour? Explain any one of them.
28. Classify the biofertilizer according to their occurrence with examples.
29. How do you differentiate symbiotic association from Associative symbiosis?
30. Differentiate between illuviation and eluviations.
31. What do you mean by congruent and incongruent dissolution?
32. What is soil order classification? Explain with example.
33. What is diffusion and mass flow?
34. Explain the universal soil loss equation.

QUESTION BANK (PART I) : PAPER 3 / GROUP B/UNIT IV

Each Question carries FIVE marks

1. Write a detailed account on the controls of Weathering process in soil formation. 5
2. Write the roles of soil organic matters on the soil properties. 5
3. Write the factors affecting soil erosion. Discuss the modes of conservation tillage. 2 + 3
4. Distinguish between organic and biofertilizer. Discuss the advantages of using organic fertilizers.
5. Discuss the roles of soil structures and texture on productivity. 5
6. What are the properties of soil, those are influenced by soil organic matter and discuss how? 5
7. Write a details account of soil conservation practices with reference to universal erosion equation.
8. Discuss the process of soil horizon formation and roles of pedoturbation on it. 5
9. What is bioavailability? Discuss the role of Nitrogen in plant growth and living. 5
10. Write and describe the universal soil erosion equation, explain the role of each factors. 5
11. Write the disadvantages of organic fertilizer use. Why mixed or combined fertilizer use is recommended? 3 +2 = 5
12. What are the advantages of using biofertilizer over chemical of organic fertilizers? 5
13. Classify soil on the basis of its texture. 5
14. How the soil organic matter maintains the soil nitrogen balance? State the importance of C/N ratio of soil. 3+2 = 5
15. What do you mean by pedoturbation? Discuss the role of climate factors and biota in pedoturbation. 5
16. Describe how the NPK economy in soil is regulated by soil pH . 3+2 = 5

QUESTION BANK (PART III) : PAPER V / GROUP A

Each Question carries ONE mark

1. What is range land?
2. What is Oil shale? What type of resource is this?
3. What is Coral Reef?
4. What do you mean by conventional energy?
5. Name a conventional renewable energy resource.
6. What do you mean by eco-development?
7. What do you mean by geothermal energy?
8. Why coal is considered as non-renewable resource though it is of biotic origin?
9. Name two precious metallic minerals.
10. Why fossil fuels are not considered as biomass?
11. Name one vulnerable tropical ecosystem.
12. What do you mean by livestock resources?
13. In which environmental condition reef building corals are found?
14. Name two fossil fuels and mention their sources.
15. What do you mean by stock resources?
16. What do you mean by photovoltaic cell?
17. Define energy crop.
18. What type of germination is seen in mangrove forest?
19. Why wildlife is considered as resource?
20. What do you mean by biomass resource?
21. What do you mean by solar pond?
22. Why plantation is regarded as renewable resource?
23. What is fossil fuel?
24. Name a plant that is useful for biodiesel formation.
25. What is plenamis?
26. Which year the integrated energy policy was formed?
27. What do you mean by active solar heating?
28. Name the energy resource(s) that use natural heat.
29. Name two fossil fuels and mention their sources.
30. What is salter duck?
31. What is Flyash?
32. What is mineral ore?
33. What do you mean by Watershed?
34. What is the meaning of the term 'Mangrove'?
35. Name two endemic species of India.
36. What do you mean by Passive Solar energy extraction?
37. Define non-conventional energy resource.
 1. What is range land?
 2. Name one vulnerable tropical ecosystem?
 3. What is the composition of petroleum?
 4. Why live stock resources are important
 5. What do you mean by OTEC?

QUESTION BANK (PART III) : PAPER V / GROUP A

6. Name a renewable biological energy resource.
7. What do you mean by planamism?
8. What do you mean by Dry Rock energy harvest system?

A. Answer any Five questions:

2 x 5 = 10

B. Answer any Two questions:

Each Question carries TWO marks

1. Name resources which can be extracted from ocean.
2. What are the main causes of ground water depletion in recent days?
3. What is natural resource? What are the types?
4. What do you mean by live stock? And why this considered as renewable resource?
5. Describe the principle of electricity generation through photovoltaic cells.
6. Why Cost-benefit analysis is an important issue in sustainable development model?
7. How would you differentiate the Biogas from Bioenergy resources?
8. 'Concept of resource is the satisfaction of human needs and not human wants' – Explain.
9. What is the difference between proven and probable resource?
10. What are the factors affecting resources?
11. Mention some unwise use of water resource.
12. Name two techniques of watershed management.
13. What do you mean by reef building corals? What is the speciality of feeding behaviour seen in them?
14. State some typical features of range land.
15. Why forests are getting lost in recent days? State the major reasons.
16. Why agriculture is considered as an important resource?
17. Explain the working principle of solar power generation through Photovoltaic cell.
18. What are different types of geothermal energy production?
19. Write the pre-requisites and environmental consequences of Tidal energy generation.
20. How ground water is depleting?
21. Why Ocean is considered as resource?
22. Livestock or Fishery which one is most significant in India? Give reasons.
23. What do you mean by reef building corals?
24. Why Ocean is considered as resource?
25. What type of forests are seen in India?
26. State some values of forest resource.
27. Write importance of afforestation.
28. Write the environmental consequences of hydropower generation.
29. Name two bioenergy resources which are types of energy from wealth conversion.
30. Why natural resource accounting is important for a country like India?
31. Write two types of photovoltaic cells with one limitations of each.
32. Differentiate active and passive solar heating. Discuss the working principle of solar water heater using a hyperbolic solar collector.

QUESTION BANK (PART III) : PAPER V / GROUP A

33. Which region of India is having maximum potential of wind energy generation and why?
34. Differentiate non-conventional energy resources from renewable energy resource?
35. State different types of geothermal energy exploration technology available.
36. Differentiate between renewable and non-renewable resource with example.
37. What types of resources can be extracted from Ocean?
38. Why corals are considered as very precious resource?
39. What are the drawbacks of using wind energy?
40. Explain the working principle of parabolic solar collector.
41. Write pre-requisites and environmental consequences of Geothermal energy generation.
42. Why environmental accounting should be incorporated in SNA.
43. How Cost Benefit Analysis is important in environmental management?
44. Differentiate between afforestation and reforestation?
45. Why range land is considered as resource?
46. What do you mean by reef building corals? In which type of conditions they are found?
47. Though agriculture is a manmade practice then why is this considered as natural resource?
48. How cropping system leads to sustainable agriculture?
49. Distinguish between active and passive solar harvest
50. State the principle of solar pond?
51. What are the basic requirements for tidal energy generation?

Each Question carries FIVE marks

1. Why should we conserve Mangrove ecosystem? 5
2. Write a short note on – Conservation of Agricultural Ecosystem . 5
3. Describe the process of energy generation in a solar pond with suitable diagram. Which other energy is generated using the same principle? 4 + 1 = 5
4. What do you mean by NRA? Write a brief essay on NRA. 1 + 4 = 5
5. Why ocean is regarded as a very precious resource of Earth? How this resource is getting degraded in recent time? 2 + 3 = 5
6. Why coral reef is also called rainforest under sea? Why should we conserve coral reefs?5
7. What do you mean by self sustaining agricultural practice? State some values of agriculture and how agroecosystems can be managed? 2+3= 5
8. Differentiate between reforestation and afforestation? State some non consumable values of forest resource. 2+ 3=5
9. Discuss the process involved in OTEC with suitable diagram. 5
10. What do you mean by NRA? Discuss importance and classification of NRA. 1+4= 5
11. How to conserve agricultural ecosystem in a sustainable way?
12. Write a short note on energy resource in India.
13. What are the main threats of mangrove loss?
14. Discuss the process involved in Geothermal energy generation with suitable diagram.
15. Comment on the Integrated Energy policy of India.
16. Discuss different aspects of NRA with examples.
17. What are the threats to coral reefs? What do you mean by coral bleaching? 3+2 = 5
18. Write short note on values of mangrove. How Sundarban mangrove can be conserved?

QUESTION BANK (PART III) : PAPER V / GROUP A

19. Explain the working principle of solar power generation through Photovoltaic cell. Write a short note on different types of PVCs available and their suitability of usage. $2 + 3 = 5$
20. What is energy cropping? What are the different modes of biomass usages as energy resource? $2+3$
21. Why coral reefs are the called rain forest under the sea? What are the different types of reefs? State the importance of coral reefs?
 5
22. Write a short essay on biological energy resources. What do you mean by pyrolysis?
 $4 + 1 = 5$
23. Describe the principle of energy generation through solar photovoltaic cells with suitable diagram. What is HIT solar cell.
 $3 + 2 = 5$
24. What do you mean by NRA? Discuss the basic differences between Cost-Benefit analysis and environmental accounting.
 $1 + 4 = 5$

QUESTION BANK (PART III) : PAPER V / GROUP B

Each Question carries ONE mark

1. What do you mean by Environmental Management?
2. Write full form of PDCA.
3. What do you mean by EMS?
4. What is SAGE?
5. Which ISO particular standard takes care of Environmental Auditing?
6. What is the first step of any EMS?
7. Define detection limit.
8. What is systematic sampling?
9. What is management?
10. What do you mean by a Representative Sample?
11. Write full forms of EMS and ISO.
12. Define accuracy.
13. What do you mean by vermicast?
14. Define Compost.
15. Define solid waste.
16. What is management?
17. What do you mean by a Sample?
18. What is feedback loop?
19. Define Risk.
20. What do you mean residual management?
21. Define wasteland.
22. What do you mean by PVC?
23. What do you mean by a representative sample?
24. What is forecasting?
25. Define Risk.
26. What do you mean by Drillosphere?
27. Define BMW.
28. What do you mean by e-waste?
29. Write full form of SAGE.
30. What do you mean by DRE?
31. Name the authority that introduced Business Charter for sustainable development.
32. Which year the first phase of GAP was introduced?
33. What do you mean by green belt?
34. What is bathing class of water?
35. What do you mean by data?
36. Define feedback.
37. Define electronic waste.
38. Define Sample.
39. What is TC-207?
40. Write full form of GAP.
41. Name the conference where Rio declaration was formulated.

QUESTION BANK (PART III) : PAPER V / GROUP B

1. What is EMS?
2. What do you mean by a Surrogate Sample?
3. Write full forms of SAGE.
4. Define is data?
5. What is Deming cycle?
6. What is continual improvement?
7. Define MSW.
8. Define waste.

B. Answer any Five questions:

$$2 \times 5 = 10$$

C. Answer any Two questions:

42.

Each Question carries TWO marks

1. What are the basic characteristics of a representative sample?
2. What do you mean by the terms precision and accuracy?
3. How can one decide whether a data is accurate or not?
4. Shortly describe the major steps of an EMS.
5. What do you mean by the tag ISO 14001:1994 & ISO 14001:2004?
6. How do GATT and Rio declaration relate to ISO14000?
7. Briefly discuss the importance of International standards.
8. What are the basic steps of Environmental monitoring?
9. What are the basic qualities of a good representative sample?
10. Write short note on the ISO 14000 series.
11. Write a short note on GAP.
12. Distinguish between Garbage and rubbish.
13. Define hazardous waste and discuss its characteristics.
14. What do you mean by e-waste, write with example.
15. Differentiate between data and information with example.
16. 'ISO certification does not confirm any absolute standard' – explain the statement.
17. Briefly explain phases of disaster management.
18. Why JFM is considered effective way of forest management and administrative control?
19. Discuss the role of organisation, staffing and directing in an effective management system.
20. How business charter help in promotion of business?
21. What do you mean by bio-safety protocol?
22. Differentiate between hazardous event and disaster.
23. Briefly explain phases of management cycle.
24. Differentiate between precision and accuracy.
25. How does data become information? Explain with example.
26. In which phase or phases of PDCA cycle staffing and directing is needed?
27. What do you mean by colour coding?
28. What are different types of waste for which incineration is an effective option?
29. Distinguish between precautionary measures and pre-assessment of impact.

QUESTION BANK (PART III) : PAPER V / GROUP B

30. Name four ideal species of plants for development of an industrial green belt.
31. A composite sample is better than a grab sample: justify the statement.
32. Differentiate between epigeic and anecic earthworms.
33. What are the difference between recycle and reuse?
34. What is Green belt? Name two tree species ideal for greenbelt development.
35. 'Business Chartered is a precursor of Stated Policy of ISO certification' – explain the statement.
36. Discuss the role of Deming cycle in an effective management system.
37. Explain the term continual development in reference of Deming cycle.
38. 'Two different ISO – 14001:2004 certified organisation may maintain different standards for their effluent quality' – justify the statement.
39. How rainwater harvesting procedure can be practiced in an urban landscape with limited space?
40. 'Business Chartered is a precursor of Stated Policy of ISO certification' – explain the statement.
41. Discuss any two functions of Management.
42. How does ISO certification contribute in system efficiency enhancement?
43. Write a short note on the role of ICC in sustainable development.
44. Differentiate between recycling and recovery of waste.
45. Discuss the importance of Colour Coding in BMW.
 46. What are the basic steps of Environmental monitoring?
 47. What are the qualities of a good representative sample?
 48. What are the basic steps of ISO 14001 certification.
 49. Write a short note on vermicomposting.
 50. Describe PDCA cycle with example.
 51. Define hazardous waste and discuss its characteristics.
 52. How do you differentiate an event and a disaster? Explain with examples
 53. What are 5R of waste management?

Each Question carries FIVE marks

1. Discuss the basic strategies of environmental management with examples. 5
2. Describe PDCA cycle in the context of an ideal EMS. 5
3. Write the basic requirements of ISO 14001:2004. 5
4. According to Reo Declaration, how capacity building and people's participation can promote sustainable development? 5
5. 'Rio declaration has considered people as the central point of Sustainable development': Justify the statement. 5
6. Discuss the key element of an EMS with suitable diagram. 5
7. How do you manage the environment of a working construction project? 5
8. What is AMD? Write down the reactions of bacteria and other chemicals causing AMD.
2 + 3
9. 'Poverty alleviation and education play key roles in Sustainable development': Justify the statement. 5
10. Comment on importance and success of GAP. 5
11. What are the different treatment strategies of hazardous waste?
12. What do you mean by Disaster preparedness? Discuss the components of disaster preparedness.
13. 'Poverty alleviation and education play key roles in Sustainable development': Justify the statement. 5
14. Discuss the role of disaster preparedness in disaster management cycle 5
15. State and briefly explain the stages of ISO 14001 certification? 5
16. Explain how the business charter can promote sustainable development. 5
17. Explain the role and contribution of 5R of waste management. 2 + 3 = 5
18. Critically analyse the contribution of GAP in Ganga pollution prevention. 5
19. Explain the working principle of solar power generation through Photovoltaic cell. Which type of PVC is most acceptable for use and why?
3 + 2 = 5
20. Discuss the process involved in OTEC with suitable diagram. 5
21. What do you mean by NRA? Discuss importance and classification of NRA.
1 + 4 = 5
22. What is sustainable development? What are the ways of ensuring intra-generational equity as per the Rio declaration? 2 + 3 = 5
23. Give a brief description of the Disaster cycle. Discuss the components of disaster preparedness.
24. Write a brief account of source based classification of Biomedical waste and their management.
25. Write short note on: a) Functions of Management b) Pyrolysis 2½ + 2½ = 5
26. What are the components of Disaster Management cycle. Discuss activities involved in any two of those. 1 + 4 = 5

QUESTION BANK (PART III) : PAPER V / GROUP B

27. What is Joint Forest Management? How does it promote both ecological and economic balance? $2 + 3 = 5$
28. Discuss the key elements of Environmental Management System with diagram.
5
29. Discuss the key element of Disaster Management Plan emphasising on DM Cycle.
5
30. What are the functions of management, discuss in details.
5
31. Write a short essay on integrated waste management.
5
- 32.

QUESTION BANK (PART III) : PAPER VI / GROUP A

Each Question carries ONE mark

1. Name the first Environmental Act of India, formulated in post-independent period.
2. Name the legislative tool that takes care of Noise pollution in India.
3. Which year did the National Environment Policy come into existence?
4. Under which Act, the Pollution control board got empowerment to inspect industrial emission?
5. Name the act that is used for control of vehicular pollution.
6. Define Risk.
7. What do you mean by eco-labelling?
8. Name an Environmental Act of India, formulated in pre-independent period.
9. Name the legislative tool that takes care of MSW in India.
10. Name an Act that involves 'cess' issue.
11. Write full form of NCEPC.
12. What do you mean by Public consultation procedure in EIA?
13. What do you mean by SEIAA?
14. What do you mean by eco-labelling?
15. Name an Environmental Act of India, which keeps an account of a specific natural resource.
16. What do you mean by a joint board?
17. Which constitutional article made environmental protection a fundamental duty of the citizens of India ?
18. What do you mean by REIA?
19. What do you mean by LCA?
20. Who is authorised to provide permission of undergoing any research within a National Park?
21. Name the authority which is assigned the responsibility of taking care of the in-situ conservation of fauna in India as per the Wildlife (Protection) Act, 1972.
22. What is water cess?
23. Name a legal instrument of pre-independent India meant to protect the forest resources.
24. What is absolute liability?
25. Which year MoEF was formed?
26. Name a notification that is applicable for tourism development of Gopalpur-on-Sea.
27. Name the 1st ever Environmental Act of India, that was formulated as follow up of the Stockholm conference.
28. Name the legislative tool that takes care of Hazardous waste in India.
29. Name an Act that involves pricing of water issue.
30. Define Hazop analysis.
31. REIA study can be done in which time of a year?
32. Which year Environment Policy was introduced in India?
33. Define water pollution as per Water (P&CP) Act, 1974.
34. What is 'Uncured trophy'?

QUESTION BANK (PART III) : PAPER VI / GROUP A

35. What happens with the validity of Environmental Clearance, when there is a change in ownership?
36. Define 'emission' as per Air (P&CP) Act, 1980.
37. For which types of project activities Form 1A needs to be submitted for Environmental Clearance?
38. What is amendment of an Act?
39. State any one role of Central Zoo Authority.
40. Name the act, that is used for collection of levy for industrial water consumption.
41. Define Environment as per EPA, 1986.
42. Which category project does not need an EIA?

QUESTION BANK (PART III) : PAPER VI / GROUP A

Each Question carries TWO marks

1. How does PIL helps in environmental conservation?
2. Write down two most important differences between EIA Notification 1994 & 2006.
3. Elaborate merits of EIA Notification 2006 over EIA Notification 1994.
4. What do you mean by Scoping?
5. Write the constitutional provisions of Environmental concerns in India.
6. How does a LCA can benefit the industry and environment as well?
7. Write the objectives of Water (Prevention and Control of Pollution) Act, 1974.
8. What is IEE and rapid EIA?
9. What are the areas of legal conflicts where a PIL may be formed?
10. What do you mean by BEES assessment system?
11. Write the constitutional provisions of Environmental concerns in India.
12. Why Forest (Conservation) Act, 1980 was needed in spite of the presence of Wildlife (Protection) Act, 1972?
13. Write the objectives of Air (Prevention and Control of Pollution) Act, 1974.
14. What do you mean by amendments and why these are necessary?
15. Explain the precautionary principle for Environmental protection.
16. What do you mean by community reserve?
17. Elaborate the basic objective of Biodiversity Act, 2003.
18. Why amendments of law are necessary?
19. Write three most important characteristics of environmental impact.
20. State significance of PIL.
21. 'Environmental Audit or LCA acts as USP of product and not liability of company' – Justify the statement.
22. Staffing and Training is very important aspect of Certification procedure: Justify the statement.
23. Which constitutional provision put support to Public Trust doctrine principle of environmental law?
24. Why formation of Pitamber Pant Committee is considered significant in India's environmental management?
25. State two limitations of Network process of impact assessment.
26. Why public consultation has been gaining importance in EIA?
27. Why Forest (Conservation) Act, 1980 is not an ideal environmental legislation?
28. State the process of taking environmental clearance for industrial establishment.
29. Discuss the merits of matrix assessment methodology over other types of assessment.
30. Write the constitutional provisions of Environmental concerns in India.
31. How does a joint board is formed and function?
32. Distinguish between LCA and Environmental Audit.
33. What are different types of client driven environmental audit?
34. Why public involvement is necessary for an effective EIA study?
35. Write the constitutional provisions of Environmental concerns in India.
36. Explain the absolute liability principle of legislative system in brief.

QUESTION BANK (PART III) : PAPER VI / GROUP A

37. What is NCEPC and why it was formed?
38. State the steps for obtaining Environmental Clearance for any developmental activity in India.
39. Explain scoping as per EIA Notification, 2006.
40. How does public consultation confirm better implementation of EMP?
41. What do you mean by Screening?
42. Write the constitutional provisions of Environmental concerns in India.
43. Write down the basic goals of Biodiversity Act, 2003.
44. Write the objectives of Water (Prevention and Control of Pollution) Act, 1974.
45. Name the legal tools available in India for waste management.
46. Explain the 'Network Analysis' for impact assessment.

Each Question carries FIVE marks

1. Discuss how the National Environment Policy is lying on the provision of Rio declaration. 5
2. Discuss the steps of a LCA. Why it is considered more effective tool compared to environmental audit? 3 + 2 = 5
3. Write down the salient features of EPA, 1986. 5
4. Write a short not on the process of EIA in respect of EIA notification 2006. 5
5. Discuss the Principles of National Environment Policy 2006. 5
6. Discuss the How Principles of National Environment Policy 2006 promote sustainable development. 5
7. Explain how LCA can promote sustainable development? 5
8. Discuss the roles and responsibilities of CPCB and SPCB. 5
9. Which environmental Act is known as umbrella Act? Explain details why it is called so? 5
10. Write down the objectives of National Wildlife Action Plan. 5
11. Discuss the necessity of EPA, 1986. Write four important powers of SPCB. 3 + 2 = 5
12. Write a short essay on EIA procedure as per the latest EIA notification. 5
13. Write a short essay on the development of environmental management in India. 5
14. Elaborate the steps of an Ideal Environmental Audit. 5
15. Discuss the roles and powers of CPCB. 5
16. Why LCA is better known as product standard? How does it promote profit maximisation.
17. Give a detailed account of Public Involvement in EIA as per EIA Notification, 2006, and its importance. 5
18. Which Act is most important for ecosystem conservation in India and why? Write the steps and criteria of obtaining environmental clearance for any industrial unit operation (other than EIA). 2 + 3 = 5
19. Write down the powers and responsibility of PCBs as per Air (P&CP) Act, 1981. 5

QUESTION BANK (PART III) : PAPER VI / GROUP B

Each Question carries ONE mark

1. Name two food borne diseases.
2. Name the causative agent of visceral Filariasis.
3. What is Acute Diarrhoeal Disease?
4. Name two viruses causing Acute diarrhoeal disease.
5. What is Immunoglobulin?
6. What is dysentery?
7. Which one is the infective stage of malarial parasite?
8. Name one insect borne disease which is caused by a protozoa.
9. What is epitope?
10. Name two water borne viral diseases?
11. What is hypersensitivity?
12. Which type of antibody is responsible for hypersensitivity reaction?
13. What is Nutrition?
14. What is the causative agent of Lymphatic filariasis?
15. Which type of malaria is more sever and why?
16. What do you mean by disease?
17. What type of malaria is severe in forests?
18. What do you mean by communicable disease?
19. What is nutrition?
20. What do you mean by essential amino acids?
21. What is pollen?
22. Name one soil borne bacterial disease?
23. What is ORS?
24. What do you mean by Rotavirus?
25. Differentiate between mechanical and biological vector?
26. Define stated principle.
27. What is compliance audit?
28. Write full form of SWAT.
29. What is allergen?
30. What do you mean by anaphylactic shock?
31. Which one is secretory Ig?
32. What is case fatality rate?
33. What is paratope?
34. Typhoid is what type of disease?
35. Can virus be allergen? Why?
36. Define 'Health'?
37. What do you mean by Disease Screening?
38. How the disease Small pox can be transmitted?
39. What is allergen?
40. What are the sources of Vitamin A?
41. State the functions of IgG?

QUESTION BANK (PART III) : PAPER VI / GROUP B

42. What is prophylaxis?
43. What do you mean by Environmental Audit?
44. Name one insect borne viral disease?
45. Name one soil borne disease causing nematode?
46. What do you mean by communicable diseases?
47. What is the causative agent of Japanese Encephalitis?
48. How Hepatitis B is transmitted?

QUESTION BANK (PART III) : PAPER VI / GROUP B

Each Question carries TWO marks

1. Why vector borne diseases are difficult to prevent?
2. 'All antigens are not immunogens' – explain.
3. Differentiate between Mortality and Morbidity.
4. What is hypersensitivity? Which Immunoglobulin is responsible for developing allergic reactions?
5. Name two soil borne diseases and their causative agents.
6. Define the concept of Health and Disease.
7. Write two symptoms of Leishmaniasis.
8. Differentiate between micro and macro nutrients?
9. What is Allergen? And how Type-I hypersensitivity occurs?
10. How the disease Tetanus occurs?
11. Name two mosquito borne diseases and their causative agents.
12. What do you mean by Natural and Man-made capital?
13. State some symptoms to diagnose small pox.
14. What are the objectives of Environmental Audit?
15. What type of food is containing most calorie? Name one trace element?
16. Differentiate between macro and micro nutrient?
17. Differentiate between mechanical and biological vector.
18. How type III hypersensitivity occurs?
19. Name two water borne pathogens?
20. What do you mean by demography cycle?
21. What are the different measures of family planning in India?
22. State functions of IgE.
23. Write a short note on Pulse Polio.
24. What are different types of management audit?
25. Write down the importance of internal audit.
26. Differentiate between LCA and Environmental audit.
27. What do you mean by Environmental accounting?
28. Mention any one procedure of environmental valuation.
29. How the death of person is registered?
30. What is Edema and Erythrema?
31. What type of disease Ecjema is?
32. Differentiate between antibody and TCR.
33. What is infant mortality rate and dependency ratio?
34. What is demographic dividend?
35. State objectives of Environmental Accounting.
36. Describe the Type one hypersensitivity. What is T_{DTH} ?
37. Name two mental disorders.
38. How Hepatitis B occurs and transmitted?
39. Write some properties of vector.
40. What do you mean by communicable disease? Give example.

QUESTION BANK (PART III) : PAPER VI / GROUP B

41. What is provitamin and Antivitamin?
42. What do you mean by Liability Audit?
43. Name the vector and causative agent of Dengue fever?
44. Differentiate between Bancroftian and Brugian filariasis?
45. What do you mean by Kala azar? What are the symptoms?
46. What is the causative agent of cholera? What type of pathogen is it? What do you mean by cholera toxin?
47. How small pox can be transmitted? What do you mean by viremia?
48. Write the criteria of a target setting.
49. What are the types of client driven environmental audit?
50. How does an environmental audit help in profit optimisation?

Each Question carries FIVE marks

1. Define Epidemiology? What are the aims of Epidemiology? 1 + 4 = 5
2. What are the different types of Acute diarrhoeal disease and what are preventive measures? 5
3. What is environmental audit? How does it help in environmental management of any process? 2 + 3 = 5
4. Define environmental accounting and discuss its objectives.
5. How disease can be screened? 5
6. What do you mean by occupational and mental health? How do they affect each other? 3+2 = 5
7. Write a short note health programmes in India? 5
8. What is epidemiology? What are the principles? Differentiate between mortality and morbidity. 1+2+2 = 5
9. Discuss major phases and the activities under those phases of Environmental Audit. 5
10. State the objectives of environmental audit. How does it lead to profit maximisation?
11. What do you mean by Fc and F(ab) regions? Explain the importance of these regions with diagram. 1 + 4 = 5
12. Differentiate between Tcells and Bcells in details. 5
13. What is demography? How Family planning plays a vital role in population control and what are the family planning methods? 1 + 4 = 5
14. State the principles of epidemiology. Whether occupational and mental health is connected? - Explain. 2 + 3 = 5
15. Give a detailed account of a typical environmental audit programme in India. 5
16. Write Short notes on: a) Stated Policy; b) Pulse Polio Programme 2½ + 2½
17. What do you mean by Acute Diarrhoeal Disease? State different types of Acute Diarrhoeal diseases? 2 + 3 = 5
18. Write steps of environmental audit procedure.
19. Define environmental accounting. Discuss the importance of environmental accounting and debates relating to the accounting procedure. 1 + 4 = 5

QUESTION BANK (PART III) : PAPER VII / GROUP A

Each Question carries ONE mark

1. What do you mean by the term Acoustics ?
2. Write down the full form of PBTs and TOMPs.
3. Mention the names of two pathogenic microorganisms for drinking water quality.
4. Define oil spill.
5. What is infrasound ?
6. What is radioactivity?
7. Name any one specific indoor air pollutants each for developed & developing countries
8. What is Sone ?
9. Define the term biopesticide.
10. What is PAH and POPs?
11. What do you mean by the term environmental estrogens?
12. Explain natural oil seep.
13. What do you mean by primary water pollution, give an example.
14. What is Chemolithotropic bacteria?
15. What do you mean by the term MPN?
16. What do you mean by the term endocrine disrupters?
17. Mention the acceptable limits of Arsenic and Cadmium in drinking water.(WHO standards).
18. Write down the mathematical expression for measurement of sound intensity level.
19. What do you mean by the term Luxury consumption?
20. What do you mean by ventilation coefficient?
21. Define leaching.
22. Name an indicator microorganism of drinking water quality.
23. Define reverse osmosis.
24. What is Z-grade shielding?
25. Expand the acronym ALARA.
26. What is VOC?
27. Explain natural oil seep.
28. What do you mean by the term MPN?
29. What is the permissible limit of MPN for drinking water supply?
30. Define adulteration.
31. What do you mean by the term Luxury consumption ?
32. What is electrostatic sample?
33. Define the term biopesticide.
34. What do you mean by the term environmental estrogens?
35. Distinguish between homeotherms and poikilotherms?
36. Mention the acceptable limits of Arsenic and Cadmium in drinking water.
37. What is TEL & TAL?
38. Define the term pesticide.
39. What do you mean by non-point source of pollution?
40. Name one radioactive pollution detection method.

QUESTION BANK (PART III) : PAPER VII / GROUP A

41. What do you mean by PM 2.5?
42. Define POP and give example.
43. Differentiate sound and noise.
44. What do you mean by Decibel?
45. Mention names of two pathogenic microorganism indicating drinking water quality.
46. Mention names of two methods combating thermal pollution.
47. Name two major contaminants of soil.
48. Define IAQ
49. What is asbestosis?
50. What is oil spill?
51. What is MARPOL?
52. What is Thermal pollution?
53. What is average natural annual background dose?
54. What is the difference between alpha particle and gamma rays?
55. What do you mean by L_{eq} ?

QUESTION BANK (PART III) : PAPER VII / GROUP A

Each Question carries TWO marks

1. Differentiate between pollution and contamination.
2. Mention to properties of POPs having significant effect on human health.
3. What do you mean by loudness of sound ?
4. What do you mean by Leq ?
5. Explain the following terms – L_{10} , L_{50} and L_{90} .
6. “Pesticide sorbtion tends to be greater in dry soils than in wet soils”- Explain.
7. Distinguish between oil spill and seepage.
8. What do you mean by loudness of sound ?
9. Mention the difference between dB(A) and dB.
10. What is Ldn ?
11. Distinguish between preferential flow and matrix flow.
12. Why less volatilization of pesticides takes place in drier soils?
13. Explain the term pesticide resurgence?
14. Differentiate between rock drainage and mine drainage.
15. What are the different components of rainwater harvesting?
16. State the relationship between radiation and radioactive dose.
17. Write a short note on cosmic radiation.
18. Differentiate between pollution and contamination.
19. Mention to properties of POPs having significant effect on human health.
20. Differentiate between primary and secondary drinking water standard.
21. What is ADI ?
22. Why COD value seems to be higher than BOD in a waste water sample?
23. Explain the importance of thermal stratification.
24. What are the environmental impacts of nuclear winter?
25. Distinguish between preferential flow and matrix flow.
26. What are the sources of thermal pollution?
27. What are the health impacts of mobile towers?
28. State relationships between Hearing Threshold and Acceptable Noise Level.
29. What is sulphurous smog?
30. “Pesticide sorbtion tends to be greater in dry soils than in wet soils”- Explain.
31. Briefly describe the Geiger Muller counter.
32. What is the fate of leaded gasoline combustion in atmosphere?
33. Can we consider UV-radiation as ionising radiation? Justify your answer.
34. What do you mean by Biomethylation? Explain its importance.
35. What do you mean by bioavailability of heavy metals in soil?
36. What are the maximum permissible limit of fluoride and arsenic in water?
37. Write a brief note on composition of Fly-ash .
38. Discuss how AAS is used as an effective tool for pollution monitoring.
39. Give a brief account of environmental conditions those affect the noise level.
40. Define and explain the term Biopesticide.
41. What is index organism?

QUESTION BANK (PART III) : PAPER VII / GROUP A

42. What do you mean by heat stroke?
43. Mention different ways how does outdoor air enter a house?
44. State difference between exhaust ventilation and plenum ventilation.
45. Name two radioactive elements that are naturally present in the human body.
46. You are an EHS specialist working with Kolkata Port Trust. An oil carrying vessel was caught up in a storm near Diamond Harbour. The vessel sank spilling oil. What actions will you take to control the oil spill?
47. What are the natural methods of cleaning oil spills?
48. What is cogeneration?
49. What is thermal enrichment?

QUESTION BANK (PART III) : PAPER VII / GROUP A

Each Question carries FIVE marks

1. Define pesticide. Explain the pesticide dynamics (fate of pesticide) among the different segments. 1+4 = 5
2. What do you mean by Biomagnification? Mention the different sources of pesticide contamination of drinking water. Suggest some remedial measures for pesticide contamination of drinking water. 1+2+2
3. What is PIPs? Explain the advantages of biopesticides over chemical pesticides. 1+ 4
4. Give an account of different microbial indicators water quality. Mention some attributes of coliforms. 5
5. Define thermal pollution. Mention the physicochemical and biological effects of thermal pollution.
6. Give an account of different microbial indicators water quality. Mention some attributes of coliforms.
7. What is photochemical smog? Describe the effect of PAN on it.
8. Mention the major sources of soil pollution. Suggest some suitable steps towards reducing soil pollution.
9. Mention the biological effects of oil spill. Suggest some suitable steps towards combating oilspill in shoreline environment.
10. What do you mean by potable water? Mention the different steps of purification of drinking water.
11. Explain the mechanism of biopesticidal action of *B. subtilis*. What is BT Toxin? 4+1
12. Discuss two thermal pollution minimisation methodologies. 5
13. What is a contingency plan? Discuss the contingency plan for oil spill. 5
14. How would you assess the risk of nuclear exposure?
15. Mention the major sources of soil pollution. Suggest some suitable steps towards reducing soil pollution. 2+3
16. Briefly narrate the free radical mechanism with suitable example. What is Dobson Unit? 4+1
17. Define insecticides. Classify insecticides with suitable examples. 1+4 = 5
18. Describe the fate of leaded gasoline combustion in atmosphere with suitable reactions. 5
19. What are the major indoor pollutants? Describe sources and effects of any two of those. 1+(2 x 2) = 5
20. What are the effects of noise pollution on human health?
21. Define soil pollution. Briefly state the different sources of soil pollution. 2+3 = 5
22. Give an account of different microbial indicators of water quality. Mention some attributes of coliform. 3+ 2 = 5
23. Mention a single most effective strategy for improvement of your indoor air quality and give explanation why do you think so. 5
24. Mention indoor sources and health effects and steps to reduce their exposure of following the pollutants radon and lead. $2\frac{1}{2} \times 2 = 5$

QUESTION BANK (PART III) : PAPER VII / GROUP B

Each Question carries ONE mark

1. Mention the names of any two health hazards specifically associated with radon exposure in an indoor environment.
2. What is Rule of 1000?
3. State two environmental effects of noise pollution.
4. Define toxin.
5. What is synergism?
6. What do you mean by stress?
7. Define bioremediation.
8. Define biomagnification.
9. Define toxicity.
10. What do you mean by xenobiotics?
11. State two psychological effects of noise pollution.
12. What is NOEL?
13. Define mycotoxin.
14. What do you mean by teratogen?
15. What is teratogenic effect?
16. What is COPD?
17. What is HVAC?
18. Define Probit analysis.
19. What is MATC?
20. Define biotransformation.
21. What do you mean toxicity assay?
22. What was the main causative agent of Minamata disease?
23. Define toxin.
24. What is cumulative effect of toxicity?
25. What do you mean by stress?
26. What do you mean by therapeutic index?
27. Define toxicological threshold.
28. Define toxicology.
29. What is dose?
30. What is median dose?
31. What do you mean by antagonism?
32. What is neurotoxin?
33. What do you mean by thermal pollution?
34. Define Rad.
35. Define Potentiation.

QUESTION BANK (PART III) : PAPER VII / GROUP B

Each Question carries TWO marks

1. Why POPs are considered as important factor in environmental toxicology?
2. Write down the basic equation for indoor air quality
3. What do you understand by the term thermal comfort ?
4. Differentiate between indoor air quality & indoor air pollution.
5. Differentiate between IC_{50} and LC_{50} .
6. What do you mean by toxicity assay?
7. Discuss the biochemical reactions involved in Minamata disaster.
8. Define Bioconcentration Factor.
9. What do you mean by biotransformation of a xenobiotic?
10. What do you mean by chronic exposure?
11. What do you mean by dose-response relationship?
12. Differentiate between chronic and acute toxicity.
13. State relationships between dose and exposure.
14. How does HVAC system help in control of indoor air pollution?
15. What is thermal enrichment?
16. Differentiate between LD_{50} and LC_{50} .
17. Write impact of VOCs on human health.
18. Do what do you mean by synergistic effect of toxicant? Explain with examples.
19. Describe the different sources of natural background radiation?
20. What is the order of cellular sensitivity to ionizing radiation?
21. What are the effects of ionizing radiations at the molecular level?
22. What are the different types of Radioactive waste?
23. Mention different physiological impacts of noise pollution.
24. Write a short not radiation absorbed dose.
25. What is cogeneration?
26. Why lethality is considered as the standard indicator of toxicity?
27. Differentiate potentiation and synergism.
28. How do you define susceptible and tolerant organism using a DR curve?
29. Distinguish between bioaccumulation and biomagnifications.
30. State any three health effects of radioactive pollution.
31. Why lethality is considered as the standard indicator of toxicity?
32. State any four importance of Dose-Response curve.
33. Establish the relationship between exposure and dose.
34. Differentiate between toxicological threshold and effective dose.
35. 'Bioaccumulation is pre-requisite for bio-magnification' – justify the statement.
36. How X-ray is useful in medical detection?

QUESTION BANK (PART III) : PAPER VII / GROUP B

Each Question carries FIVE marks

1. What is dose-response curve? Discuss its application in environmental science. 2+3 = 5
2. Briefly state the major causes of indoor air pollution in India. Explain ACH (Air Changes per Hour) 3 + 2 = 5
3. Write an essay on effect of thermal pollution on biota. 5
4. Briefly explain how does exchange of indoor & outdoor air take place ? How does Radon from outdoor environment gets into indoor environment ? 3 + 2 = 5
5. Describe the concepts of LD₅₀ and LC₅₀ using a dose-response curve.
6. Write a short essay on effects of radioactivity on human health with special mention of chronic and acute exposure.
7. What is homeostasis? Explain how it is related to dose-response of any toxin.
8. What is the potential health impact of PM_{2.5}, CO, NO_x, SO_x, Benzo alpha pyrene? 3+2
9. What do you mean by Bio-Concentration Factor (BCF)? How it can be measured? 5
10. What is Biotransformation? Write a brief note on Phase I and Phase II reactions of biotransformation. 1 + 4 = 5
11. What is SYNROCK? Why is it more advantageous compared to other method of disposal of Radioactive waste? 1+4 = 5
12. What are the ecological impacts of thermal pollution? 5
13. Write a brief note on different exposure routes of environmental toxicants and their effectiveness. 5
14. Explain the relationships between ED and Margin of safety with mention of their significance. 5
15. What is dose-response curve? Discuss the importance of Probit analysis. 2 + 3 = 5
16. Explain the relationships between Therapeutic Dose and Margin of safety with mention of their significance. 5
17. Describe the effects of radioactive pollution on Human health. 5
18. Write short note on: a) Impact of Thermal Pollution b) Non-ionising radiation. 2½ + 2½ = 5
19. Define thermal pollution. Mention the physicochemical and biological effects of thermal pollution. 1 + 4 = 5
20. What is biotransformation? Describe the process of Biotransformation with example. 1+4