

**Q.1 (A) Answer the following Questions in detail (3 marks each)**

1. Draw a diagram and explain the working of a steam engine.
2. Draw a diagram and explain the working of an internal combustion heat engine.
3. Write a note on methods of public health care.
4. Explain the law of conservation of energy with the help of a diagram and write the procedure of the experiment.
5. Explain the refining of petroleum with the help of a diagram and name the components separated from it.
6. Draw the figure of external combustion engine and explain its principle and working.
7. State any three symptoms of Kwashiorkor and Marasmus disorders.
8. Describe Joules experiment and give the conclusion arrived at the end of the experiment.
9. Describe with the help of a diagram, the experiment of destructive distillation of coal.
10. Describe the factors that should be taken into account while planning for increased crop production.
11. Describe the Solar Electro-Magnetic spectrum.
12. What is Bomb calorimeter? How does it work?
13. What is addiction? Describe the ill effects of tobacco, alcohol and opium.
14. Describe the biological significance of minerals.
15. Write the causes, symptoms and treatment of beriberi disease and malaria disease.
16. Draw diagram of fractional distillation of petroleum. Write two properties and two uses of Naptha and Diesel.
17. " Biogas Plant is blessing to the framers" Explain.
18. What is a propellant? Give three examples of it.
19. What are Carcinogens? Give examples.
20. Explain food web with a figure.
21. Explain Bayer's process.
22. Give the process of preparing ethane in the laboratory. How is the gas collected ? Give the properties of ethane.
23. Explain the cracking process with illustrations.
24. How are Silicon crystals formed ? What are the chemical properties of Silicon ? What are the uses of Silicon ?
25. Describe the electrolytic process of purification of copper.
26. Describe the main use of metals.
27. What are the chemical properties of copper?
28. Describe the pollution caused by Radio-Active Radiations.
29. Explain the ecological cycle with the help of a diagram.
30. What are the advantages of balanced ecosystem ?

**Q.1 (B) Answer the following : ( 2 Marks each)**

1. What is the general formula of alkaline series ?
2. Give the chemical formula of Epsom salt.
3. Explain-Drip irrigation.
4. What is cholesterol?
5. What is Dehydration?
6. Give examples of two neutral oxides.
7. Petroleum is considered as "Black Liquid Gold"? Give scientific reason.
8. Give a brief note on Diabetes.
9. Give a brief note on Cancer.
10. What are decomposers?
11. Define – Noise.
12. Explain the role of Rhizobium bacteria.
13. Which radicals of the salt are present in sea water?
14. What are saturated and unsaturated hydrocarbons?
15. State the uses of PVC.
16. What are Esters?

17. Give the formula of Soap.
18. State two points of differences between thermoplastic and thermosetting plastic.
19. Write a note on Vulcanization process.
20. Write short note on Detergents.
21. On which factors does the efficiency of wind mill depend?
22. State the non-conventional sources of energy.
23. How is electric energy obtained from tidal waves?
24. Distinguish between ultraviolet waves and infrared rays.
25. Natural gas is considered as the best fuel. Explain.
26. Give reasons for the low efficiency of a steam engine.
27. Give reasons for energy crisis.
28. Describe the factors responsible for the occurrence of deficiency disorders.
29. Distinguish between lignite and Anthracite coal.
30. Give brief account of the system of irrigation.
31. Name two characteristics of simple machines.
32. How does the fuel of candle reach the flame?
33. How is the light produced in a Kerosene Lamp?
34. Write a note on Solar cells.
35. Suggest four methods to presence non-renewable energy sources.
36. Write four characteristics of ideal fuel.
37. Define power and name its units.
38. Write about the disease of food crops and their control.
39. Give four reasons for crisis of energy.
40. State the difference between complete and incomplete combustion.
41. What is the relation between heat and mechanical energy? What are their units?
42. What are the uses of a water wheel?
43. Describe the uses of wind energy and water energy.
44. What is vernalization?
45. Give scientific explanation coal gas is used as a domestic fuel.

**Q.1 (C) Answer the following questions in one sentence (One Mark each)**

1. How many cycle tubes can be prepared from 100 liters petroleum?
2. State the law of conservation of energy.
3. State the method by which ammonia is manufactured on a large scale.
4. What is water gas?
5. What is the use of nickel – cadmium cell?
6. Name the fossil fuels.
7. What is biomass?
8. Find the work done in joules in lift a body of mass 10 kg to a height of 10 metres.
9. 20000 A<sup>0</sup> is equal to how many metres?
10. How much mechanical energy is equivalent to 1 Calorie of heat?
11. Write the chemical formula of methyl hydrazine.
12. What can be obtained from bio mass using modern techniques?
13. State the natural use of solar energy made by plants.
14. Which is the main hydrocarbon constituent of natural gas?
15. What is the approximate quantity of uranium present in the earth's crust?
16. What is celebrated globally on 3<sup>rd</sup> May ?
17. Which oxidant is present in Rocket Fuel?
18. Where is lower grade found in Gujarat?
19. Which of these has least calorific value – butane, methane, hydrogen?
20. What is the unit of Joule's constant?
21. Who invented internal combustion engine?
22. What is the cause of emission of light in the middle portion of the Candle flame?
23. Which gas is the main constituent of bio-gas?
24. What is tidal energy?
25. Which fuel has the minimum calorific value? How much?
26. Which are the two main types of galaxy?
27. Of which gases are the stars formed?
28. Give the names of two planets near the earth.
29. Why is yellow phosphorous kept in water?
30. State the characteristics of potable water.

31. **Mention the main sources of Noise.**
32. What is Natural balance?
33. Explain the role of decomposers.
34. What steps are taken to protect and preserve the atmosphere?
35. Name some non-communicable diseases.
36. Which are the different methods of food preservation?
37. What is anemia?
38. What is obesity?
39. Why is milk called complete food?
40. Why should leafy vegetables be included in our daily diet?
41. Give the main use of metals.
42. Define solution.
43. Define uniform mixture.
44. What steps should be taken to reserve fruits and vegetables?

**Q.2 (A) Answer the following Questions in detail (Each question carries 3 Marks)**

1. Write your views about the care to be exercised in live stock farming.
2. Describe the diseases caused by different types of pathogenic organism.
3. Explain the abiotic factors responsible for spoilage of food grains.
4. What is addiction? Describe the ill-effects of tobacco?
5. Describe the biological importance of proteins.
6. What are fossils? State its importance.
7. What are connecting links?
8. Explain timber producing plants.
9. What is "Green House Effect"? What would happen if the amount CO<sub>2</sub> would increase in the atmosphere?
10. Explain the method of artificial in semination.
11. Explain the different methods of food preservation.
12. What is the importance of water in the body?
13. Describe the circumstances when women need extra dietary with biological reasons.
14. Explain the modes of entry of pathogenic microorganisms into human body.
15. Describe the various stages of modern agriculture.
16. "Prevention is better than Cure" Comment on the statement.
17. What is a black hole? Explain how it is formed.
18. Explain in detail the supernova explosions.
19. What steps should be taken to conserve natural wealth?
20. Explain recycling of waste products and its advantages.
21. What kind of difficulties would arise if forests are destroyed?
22. Where should we locate our godowns and warehouses for reservation of food?
23. Explain the meaning of "Deficiency disorders" and list them.
24. Name the major nutrients and describe the importance of each one of them.
25. Describe the biological importance of proteins.
26. What are the specific characteristics of rocket fuel?

**Q.2 (B) Answer any one in short (2 Marks each)**

1. Define AIDS.
2. What is induced reproduction?
3. Write four methods of preservation of food.
4. What are the symptoms of night blindness?
5. What is the daily feed requirement of a cow?
6. Distinguish between Diabetes mellitus and diabetes insipidus.
7. Milk is wholesome diet-explain.
8. State the causes and symptoms of anemia.
9. What type of shelter should be there for animal husbandry?
10. Give information about Mars.
11. Life is not possible on the planets very far away from the sun. Give scientific explanation.
12. How is damage done to food grains due to rats and birds?
13. When does pollution due to radio-active rays occur? State its effects on human health.

14. Explain briefly the method of use of fertilizer.
15. Write four causes for the shortage of fruits and vegetables.
16. Write the names of four diseases caused by bacteria.
17. Explain the causes for disorders of bones.
18. The consumption of jaggery is beneficial to the persons engaged in heavy physical work explain.
19. Write general instructions regarding sowing.
20. What is the general formula of alkaline series?
21. What is the other name of the compound calcium sulphate hemi hydrate?
22. State the names of diseases spread by contaminated water.
23. Which are the non-communicable diseases?
24. Explain the procedure for the preparation of compost fertilizer.
25. Explain the significance of balanced diet.
26. Goitre is quite common in people living in the region around the foot of Himalayas – Explain scientifically.

**Q.2 (C) Answer the following in one sentence (One Mark each)**

1. Which planets in the solar system have no satellites?
2. For how many years will the sun light up?
3. On which Newton's law of motion is the working principle of rocket based?
4. Write the full form of PPM.
5. What is meant by one Ronigen?
6. What is Siliculture?
7. Which pathogenic organisms cause digestive disorders in small children?
8. Which synthetic fertilizer increases the alkalinity of the soil?
9. What is fluorosis?
10. Which mineral element is important for the composition of ATP?
11. Which vitamin do we get through exposure to sunlight?
12. What is meant by fumigation?
13. What are vitamins?
14. Which are the different deficiency diseases?
15. Write the other name of vitamin "A"
16. What is "Micro combustion"?
17. What is oxidation?
18. In which type of coal, there is minimum amount of volatile substances?
19. Which mixture is used for welding?
20. In which country and in which year was the last conference for preservation of environment held?
21. What is the primary source of energy?
22. What is the unit of power?
23. Which rays are used for preservation of potatoes and onions?
24. What is used in detergent to keep dirt suspended in water?
25. Which disorder is caused by the deficiency of vitamin B<sub>4</sub> in our body?
26. Name vegetable proteins.
27. State the electronic configuration of phosphorus.
28. Through what does the solar energy enter the eco system?
29. Which are the two main types of galaxy?
30. Mention the number of moons orbiting Jupiter and Saturn.
31. State the metals which can be reduced by carbon.
32. State the proportion of different gases in the atmosphere.
33. Mention the main sources of Noise.
34. What is ecosystem?
35. What is biosphere?
36. How is coal formed?
37. State three hybrid varieties of wheat?
38. What are two symptoms of rickets?
39. What is responsible for thermoregulation?
40. Increase of which mineral element in blood causes high blood pressure?

**Q.3 (A) Answer the following questions in detail (Three Marks for each)**

1. Write the physical and chemical properties of Silicon.

- neat or neat diagram.
3. Describe the properties of rayon and its uses.
  4. Write the characteristics of drinking water.
  5. Describe the Solway ammonia – soda process.
  6. Describe the nitrogen cycle with a neat diagram.
  7. Write about occurrence, structure, properties and uses of phosphorus.
  8. What are neutron stars? How are they formed?
  9. There is an atmosphere on the moon. Explain with scientific reasons.
  10. Explain the Big Bang Theory in relation to the origin of Universe.
  11. What are constellations? Explain in detail.
  12. Explain with the help of a diagram the working of a rocket engine with solid fuel.
  13. Explain with the help of a diagram the working of a rocket engine with solid fuel.
  14. What are Artificial Fibres? Explain them in detail.
  15. Explain with the help of a diagram the experiment of preparation of Methane.
  16. Give physical and chemical properties of Non-Metals.
  17. Give in detail the chemical properties of Silicon.
  18. What is Bleaching Power? Give in detail its preparation by "Hessan Klevar Method"
  19. What is Calcium Oxide? How is it prepared? Give in detail the chemical process of its preparation and name its uses.
  20. Give in detail the chemical properties of copper.
  21. With the help of diagrams, describe the different methods of purification of metals.

**Q.3 (B) Answer the following questions (Two Marks each)**

1. State the proportion of different gases in the atmosphere.
2. What is biotic degradation?
3. Explain: Power Cycle.
4. Explain the roles of animals and plants in the balanced eco system.
5. Write about the changes that occur in atmosphere due to industrialisation.
6. Define – Solute, Solvent and Solution.
7. Explain biochemical cycles.
8. How does the quantity of CO<sub>2</sub> increases in the atmosphere.
9. Explain how plants get free Nitrogen from atmosphere.
10. Write a note on: Oxidation of Sulphur.
11. What is recycling? Explain the recycling of waste products.
12. Mention four points to state the importance of a sanctuary.
13. State the limitations of steam engine.
14. What is a propellant? Give three examples of it.
15. What is cholesterol? Why is it necessary to maintain its proportion in the body?
16. Define colloidal solution, give three examples.
17. Give two differences between yellow phosphorus and red phosphorus.
18. Write a note on Vulcanization process.
19. Give two examples of two neutral oxides.
20. Describe the present methods of disposing off radio active waste.
21. What steps are being taken to protect and preserve the atmosphere?
22. What are the methods of Destruction of ineffective organisms?
23. What are pollutants? Name some chemical pollutants which are harmful to health.
24. What are the protective measures against chemical pollutants?
25. What are the factors responsible for Heart diseases?

**Q.3 (C) Answer the following questions in one sentence each. (One Mark Each)**

1. Why does Silicon has high boiling and melting point?
2. Why do metals form (+ve) positive ions?
3. What is soda lime?
4. What is the composition of a commercial detergent?
5. What is the main object of W.W.F.
6. What is meant by biological cycle?
7. What should be the content of fluoride in potable water?
8. Which is the longest natural ecosystem on the earth?

9. What is found as major elements in several parasites?
10. Which gaseous pollutants can destroy ozone layer?
11. Name the rescue forest in Gujarat.
12. What are hereditary disorders?
13. What are psychological disorders?
14. What are metabolic disorders?
15. What are Endocrine disorders?
16. What are Allergic disorders?
17. Name some Addictions which are harmful to health.
18. Name some diseases caused by Radiation.
19. What are metabolic disorders?
20. What are endocrine disorders?
21. What are hybrids?
22. What are fungicides?
23. What are sperm banks?
24. Name some points for improvements of harvesting.
25. Give an account of disorders caused by the improper dietary habits.

**Q.4 (A) Answer the following questions in detail (3 Marks for each)**

1. Describe the method of liquification to purify metal with the help of heat diagram.
2. How are esters obtained and write its uses?
3. List the different methods of concentration of Ore. Explain with a neat diagram, the method concentration of sulphide ore.
4. Explain Addition reaction with illustrations.
5. Write a note on natural polymers.
6. Describe the method for concentration of sulphide ores with figure.
7. Write a short note on polyester with chemical reactions.
8. Describe the method by which pure alumina is obtained.
9. What are the different processes of purification of metals describe any one in detail.
10. Write the properties and uses of phosphorus and how it reacts with chlorine and oxygen.
11. What are saturated and unsaturated Hydrocarbons? How is Ethane prepared from kerosene?
12. Mention the disorders resulting from the deficiencies of vitamins and Minerals.
13. Name the major nutrients and describe the importance of each of them.
14. Define a calorie and explain variation in the calorie requirements of human beings on the basis of age and occupation.
15. What are the major sources of dietary carbohydrates?
16. What are the main ores of irons and give their chemical formulae?
17. Name the main ores of iron and give their chemical formulae.
18. Describe in detail the efforts of noise pollution.
19. Explain the Nitrogen Cycle with the help of a diagram.
20. Explain the carbon cycle with the help of diagram.

**Q.4 (B) Answer in brief (2 Marks each)**

1. Write a short note on Ethenol.
2. How does Sulphur react with carbon and Hydrogen?
3. How des Sulphur react with Iron and Sulphuric acid?
4. Write the different uses of metals.
5. Give the chemical equation and observations for the reaction, when aluminium is treated with boiling water.
6. Give chemical equations when copper is heated with concentrated nitric acid.
7. Write any four uses of Sulphur.
8. Name five functional groups. Also give examples one each of the compounds containing each group.
9. Distinguish between Vulcanised rubber and natural rubber.
10. State main ores of copper and give their chemical formula.
11. What is heated to get plaster of Paris, and write its uses?
12. How is vegetable ghee prepared?
13. Mention four properties of metals on the basis of electronic configuration.
14. What is cracking? How many types of cracking are there? Name them.

15. Why is yellow phosphorous kept in water?
16. Describe the reaction of Non-metals with oxygen.
17. Describe the reaction of Non-metals with Acids.
18. Describe the reaction non-metals with chlorine.
19. What are the chemical properties of iron?
20. Why is water considered as important medicine for liking things?
21. What are the advantages of balanced eco system?
22. What are the components of eco system?

**Q.4 (C) Answer the following in one sentence each (One Mark each)**

1. Write the formula of alcohol containing 10 carbon atoms.
2. What type of reaction is used in filling the slots between two rails?
3. Name the acid obtained when  $\text{SO}_2$  is dissolved in water.
4. What is the valency of carbon?
5. What is added in the preparation of soap to reduce its solubility?
6. How is plastic prepared?
7. What happens when alcohols react with Na metal?
8. What is used as a catalyst in the preparation of vegetable ghee?
9. Name two hygroscopic compounds.
10. Which metals can be purified by liquifaction?
11. What is the molecular formula of sulphur?
12. How are esters obtained?
13. What are the purposes of pure uranium and silicon?
14. Classify the following oxides as acidic or neutral  $\text{CO}_2$ ,  $\text{SO}_2$ ,  $\text{C O}$ ,  $\text{N}_2\text{O}$ ,  $\text{H}_2\text{O}$ ,  $\text{NO}_2$
15. Why is carbon called chemically unique?
16. How are coal gas and coal Tar obtained?
17. What are Asteroids?
18. What are comets?
19. What are galaxies?
20. What are carbon fibres? How are they made?
21. What is noise?
22. Which are the main ecosystems of the world?
23. What are airborne diseases? Name some of them.
24. Which are the diseases spread by food and water contamination?

**Q.5 (A) Answer the following questions in detail (3 Marks each)**

1. Write a note on Venus.
2. Write a note on Allotropes of phosphorus.
3. Write the names of chemicals used in detergent and write their purpose.
4. Describe the uses of artificial satellite.
5. What is artificial satellite? Write the uses of artificial satellite.
6. Describe elaborately the Doppler effect.
7. Explain with a neat diagram, the Froath Flootation method.
8. Explain how the age of earth is estimated.
9. How is the age of the Solar system decided?
10. What steps should be taken to conserve natural wealth?
11. How is rubber obtained? What is its other name and what are its uses?
12. Write in detail the chemical properties of sulphur.
13. How many types of metals are useful to many mankinds? What are their uses?
14. What are the physical properties of metals?
15. How many types of solutions are there? Explain them in detail.
16. What is the position of man in the natural ecosystem and in terms of organic evolution?
17. What is energy flow? Explain it with a diagram.
18. Describe in detail the components of ecosystems.
19. Explain in detail the treatment and care of a patient.
20. What are the pollutants and how do they affect the human beings.

**Q.5 (B) Answer the following questions (2 Marks for each question)**

1. Write short note on comet.
2. How many super nova explosions have been recorded so far? When?
3. Write a short note on asteroids.

4. Give scientific explanations there is no life on the moon.
5. Write the properties of artificial rubber?
6. How did the biosphere come into existence?
7. How were the planets formed in the solar system?
8. What is a talk - back channel?
9. Define Rocket and Space.
10. What are the uses of space shuttle?
11. Explain the uses of satellites in the field of education.
12. What are Isomers? Write the structural formulae of Butane isomers.
13. Give information about the planet Mars.
14. Explain light year.
15. What are constellations? Write the names of two constellations outside the zodiac path.
16. What is a proto star? How is it formed?
17. Explain – Meteors and meteorites.
18. Give the important ores of copper with the chemical formula.
19. Explain the working of a space shuttle in space. How is the space shuttle brought back to the earth?
20. Give the most popular model using kinetic energy and in which places it is mostly used.
21. Mention different sources of energy.
22. Distinguish between conventional and non conventional sources of energy.
23. What are simple machines?
24. What are solar cells?
25. What is Bitumin coal?
26. What is coke?
27. What is coal tar?
28. What is Natural Gas?

**Q.5 (C) Answer the following questions in one line (One Mark each)**

1. What is the approximate diameter of Milky Way in kilometers?
2. On what basis are classified?
3. Liquid Hydrogen is the main constituent of which planet?
4. What is the age of the oldest rock found on the earth?
5. Name the scientist who observed the last supernova explosion.
6. What is the density of Neutron star?
7. Name the first man made satellite.
8. Show  $100^{\circ}\text{C}$  temperatures in Kelvin scale.
9. What is the age of rocks found on moon?
10. What is the approximate age of the earth?
11. Which comet will be seen in the 21<sup>st</sup> century? In which year?
12. What is the drawback of a solid fuel rocket?
13. What is a Light year?
14. Name the stage of development in which the sun is?
15. When do we see a streak of light in the sky?
16. What is Pulsar?
17. Which fuel is used in booster rocket?
18. Which is the largest planet in the solar system?
19. What is saponification?
20. What is the formula of Pentane?
21. What is the formula of Hexane?
22. What is catenation?
23. What are homologous series?
24. What is isomerism?
25. What are Alcohols?
26. What is electrolysis?
27. How is Alumina obtained?
28. How do we control the amount of  $\text{CO}_2$  in the atmosphere?
29. Explain the role of decomposers.
30. Name some radio active elements.

**Model Answer**

**Q.1 (A) Draw a diagram and explain the working of a steam engine. (3)**

1 Mark for Diagram

1 Mark for the marking of different parts.

1 Mark for the explanation.

3 Methods of public Health care.

What is public Health - 1 Mark

Different methods. - 1 Mark.

Need for Public health care - 1 Mark