

SCIENCE AND TECHNOLOGY

CLASS X

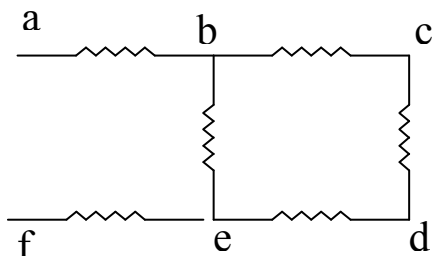
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SECTION A

- Q.1. Write the name and chemical formula of the organic substance used to preserve biological specimen. (1M)
- Q.2. Define delayed fission? (1M)
- Q.3. In a particular reaction, the concentration of Cl_2 produced changes from .0006 mol/l to .003 mol/L in 200 sec. Calculate the average rate of the reaction. (1M)
- Q.4. What is geothermal energy? (1M)
- Q.5. Give two examples of compounds of N_2 , which are used as explosives. (1M)
- Q.6.a) What is the function of "Split rings" in a DC generator?
b) A man goes to a shop and purchases two pairs of spectacles. One pair for his wife with power -1.5D and the other for himself with power $+2.5\text{D}$. Identify the defects they are suffering from? (2M)
- Q.7 (i) Give reason why a black color residue is left when conc. H_2SO_4 is poured on sugar crystals.
(ii) Why is the bleaching action of SO_2 not permanent?
- OR**
- Give the labeled diagram for the electrolytic reduction of alumina. Why is it necessary to replace the anode, during the electrolytic reduction, from time to time? (2M)
- Q.8.a) what is a geostationary satellite?
b) What is meant by 'Payload'? (2M)
- Q.9.(i) Give reason why a black colour residue is left when conc. H_2SO_4 is poured on sugar crystals.
(ii) Why is the bleaching action of SO_2 not permanent?
- OR**
- Give the labeled diagram for the electrolytic reduction of alumina. Why is it necessary to replace the anode during the electrolytic reduction from time to time . (2M)
- Q.10. Light enters from air into diamond which has refractive index of 2.42. calculate the speed of light in diamond? ($c=3 \times 10^8$ m/s) (2M)

- Q.11.(i) Draw the complete flow chart for the manufacture of NH_3 by Haber's process.
 (ii) What happens when Sulphur reacts with H_2SO_4 . (3M)

- Q.12.a) Find out the effective resistance between 'b' and 'e' in the following circuit diagram. Take the value of each resistor as $2\ \Omega$.



- b) How are ammeter and voltmeter connected in a circuit? (3M)

OR

- a) The Far- point of a person is 40cm. What is the power of the lens required to enable him to see very distant objects clearly?
 b) Differentiate between spherical and mirror type solar cooker? (3M)

- Q.13. (i) What is decarboxylation? Explain with an example.
 (ii) How is synthetic ethanol prepared?
 (iii) What happens when methanal is heated with Fehling's reagent? Explain giving equation. (3M)

- Q.14.a) Give any two properties of a rocket fuel?
 b) Why is the corona not visible on normal days but is only visible during total solar eclipse?
 c) What is the "Big Bang theory"? (3M)

- Q.15.(i) What happens when bleaching powder is exposed to air.
 (ii) Why is tartaric acid added to baking powder?
 (iii) What are clinkers and cullets? (3M)

OR

- (i) Why should washing soda be stored in air tight containers?
 (ii) What is slaking of lime?
 (iii) Name the constituent in hard glass which is different from soft glass. What additional quality is achieved by making this change? (3M)
 Q.16.a) Draw a well labeled diagram of fixed dome type biogas plant?
 b) Write any two uses of biogas plant? (3M)

- Q.17. An element belongs to group 6 of the periodic table and having atomic number 16 and valence 2, 4, 6 has to be extracted. Identify the element and explain the process of extraction of this element with the help of a neat labeled diagram. (3M)

- Q.18.a) Draw a well labeled diagram of a nuclear reactor?
 b) Explain how control rods and moderators help in controlling chain reaction in a nuclear reactor?
 c) Complete the following---
- $${}^{24}_{12}\text{Mg} + {}^0_0\text{r} \longrightarrow \text{-----} + {}^1_1\text{H} \quad (5\text{M})$$

OR

- a) Define nuclear fission? Give an example and explain nuclear chain reaction with the help of a diagram .
 b) What are the conditions under which nuclear fusion takes place? Why is energy obtained from fusion preferred to the energy obtained from fission? Give two reasons.
 c) Complete the following:
- $${}^9_4\text{Be} + {}^4_2\text{He} \longrightarrow \text{-----} + {}^1_0\text{n} \quad (5\text{M})$$

- Q.19. (i) Explain how propanone is obtained from cumene.
 (ii) A test tube contains an ester called ethyl ethanoate. If it is undergoing hydrolysis in alkaline medium, what are the products formed. Support with equation.
 (iii) Give the name and formula of one addition polymer.

OR

- (i) If there are two test tubes which are not labeled, one containing an alcohol and another carboxylic acid, how will you differentiate them by chemical tests?
 (ii) What are micelles? How does it bring about the cleansing action in clothes?
 (iii) What happens if ethanol undergoes combustion? (5M)

- Q.20.a) Explain how and why is earth wire connected in house hold wiring.
 b) Define one faraday?
 c) Write down the equation to show the function of manganese dioxide in a dry cell?
 d) State Fleming's left hand rule. (5M)

SECTION B

Q.21. How does Bryophyllum reproduce vegetatively? (1M)

Q.22. The karyotype of a female organism showed 20 pairs of chromosomes. How many chromosomes will you find in the egg and why? (1M)

Q.23. If the parasympathetic nervous system causes constriction of the pupil, what effect will be brought by the sympathetic nervous system on this organ? (1M)

Q.24. (i) What is bio-accumulation? Give an example of the chemical substance that can cause this condition.
 (ii) What are the symptoms of Bysinosis. (2M)

Q.25. Draw a neat labeled diagram of a neuron. (2M)

Q.26.(i) What is the difference between a unisexual organism and a bisexual organism.

- (ii) Where do you find the ovarian follicles and what is its function.
- (iii) Mention two advantages of sexual reproduction over asexual reproduction.(3M)

Q.27. (i) Suggest any three modes of solid waste disposal.
(ii) Mention the harmful effects caused due to release of metallic particulates like lead in the atmosphere. (3M)

Q.28. (i) What do you mean by complimentary pairing.
(ii) State the biogenetic law and what does it explain.
(iii) A chimpanzee can hold objects by its hand and an elephant by its trunk. Are the two organs analogous or homologous? Give reason. (3M)

Q.29. (i) Which part of the spectrum does chlorophyll absorb for photosynthesis.
(ii) Give reason why cuscuta does not possess leaves.
(iii) If a chlorophyllous plant is placed in an atmosphere lacking O₂, would it live longer in light or darkness? Give reason.

OR

- (i) What is epiglottis and what is its function.
- (ii) Name the respiratory organ in mussel and lizard.
- (iii) A sprint runner gets exhausted and falls down after he reaches the finishing line. His muscles develop a lot of pain. Explain the bio-chemical changes occurring in his muscles during this period. (3M)

Q.30. (i) Draw a neat labeled diagram of the human excretory system. Explain the process that takes place in the Bowman's capsule.
(ii) Make a schematic representation of the major events that take place during the coagulation of blood. (5M)
