SCIENCE AND TECHNOLOGY
CLASS X

MM:75   **Max. Marks 75**

SECTION A

.
General instructions:
- Attempt all Questions
- Q No. 1-7   carry one marks each.
- Q No. 8-13   carry two marks each.
- Q No. 14-21 carry three marks each.
- Q No. 22-28 carry five marks each.
Question number must be written clearly on the answer sheet.

1. The equilibrium constant K of some of the reactions are as under. Give reasons in which reaction would you get the products and which is the most stable reaction?
   $A+B \rightleftharpoons C+D$ (K=1.01×10^{-31}) $B+C \rightleftharpoons D+E$ (K=1.01×10^{-35}); $D+E \rightleftharpoons$ F+G (K=1.01 ×10^{10})

2. Find pH of a solution 250 mL. Containing 0.01g of a strong alkali (molecular weight=40).

3. What are amphoteric oxides? Give examples to prove your point.

4. What is meant by the term osmoregulation?

5. Two round wires, A&B drawn out of the same metal and of same cross section have their lengths in the ratios 1:3 If a potential difference of 12 volts exist between the ends of wires, find the ratio of the current flowing through them.

6. What is a constellation? Name a few of them also explain as to why the pole star appear to be stationary.

7. Compare the nuclear energy and thermo electric energy with relation to their eco friendliness.

8. How would you dilute the king of acids? Why is oleum made during the manufacturing of sulfuric acid?

9. Two resistors of the resistances 2 Ω each are connected in series to a set of resistances of resistances 2 Ω each connected in parallel such that total resistance of the system is 4.5 Ω. Find the total number of resistances connected in parallel.

10. Xylem is a dead tissue, yet it transport effectively how?

11. Differentiate between the prokaryotic and eukaryotic cells.
12. Draw the diagram of nervous system of grasshopper.

13. Draw the lines of magnetic field around a wire loop

14. How is ethanol prepared commercially? Why is it that a number of sugar mills also produce spirit?

15. How is petroleum refined? Draw a suitable diagram.

16. A person's far point is 3 meters and his near point is 50 c.m. Find the nature, power of the lens he must use to (a) read a book kept at the least distance of distinct vision and,(b) to see birds flying at a large distance.
                              OR
    A ray of light passes through a glass slab of thickness 2 c.m.The refractive index of glass is 7/5.   What would be the angle between incident ray and the emergent ray?

17. Explain the phenomenon, necessary conditions and applications of the process of total internal reflection.

18. Give various processes by which we can harness energy from the sea.

19. Explain the principal behind the cleaning of clothes using soaps. What should be done to minimize the eco damage caused due to use of detergents?

20. A student kept ethanol and ethanoic acid in two different test tubes, but forgot which test tube contained what. How would you help him to solve his problem?

21. Explain the route taken by blood inside the body while circulating from and to the left hand, draw a diagramme of human heart

22. Draw the diagrams of nephron, nephredia and a nerve cell

23. What are the functions of blood? What are blood groups, antigens and antibodies? What would happen if the RH factor of the mother and the unborn baby do not match?

24. Give salient features of the theories of evolution given by Lamarck and Darwin

25. Draw and explain the working of an electric generator.

26. How is mild steel (carbon 0.15%) manufactured from its alloy? Explain the term quenching and tempering.

27. Draw the diagram of nuclear reactor; stating the materials used for various parts also state the functions of such parts. India produces a very small % of its energy by nuclear reactors why?

Explain the process of extraction of Aluminium from its ore. Why do we use carbon both at the anode as well as at cathode?