SECTION - C
BIOLOGY (Marks - 28)

Answer question nos. 25 to 28 in a word or a sentence each.

25. What is the function of thyroxin? (1)
26. How is food transported in plants? (1)
27. Why do aquatic animals have faster breathing rate than terrestrial animals? (1)
28. Which synthetic chemical is responsible for the thinning of ozone shield? (1)

Answer question nos. 29 to 33 in about 30 words each.

29. Explain the functions of two growth inhibitors in plants? (2)
30. What is speciation? How is it generated? (2)
31. Mention any two methods for rainwater harvesting? (2)
32. Draw the L.S of a dicot seed and label embryo and seed coat. (2)
33. How does the growth of human population affect our environment? (2)

Answer question nos. 34 to 36 in about 50 words each.

34. Explain any three types of asexual reproduction in plants. (3)
35. "Transpirational pull is a major driving force in the movement of water in xylem" Explain the statement. (3)
36. What is dihybrid cross? Define the law of inheritance derived from this cross. Write the phenotypic ratio of F_2 generation in dihybrid cross. (3)

Answer question no. 37 in about 100 words.

37. Which natural resource is known as a prime source of industrial energy? Explain why should we conserve it? (5)

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Total number of printed pages - 4

2018
27thMX
SCIENCE

Full Marks - 80

Time : Three hours

Attempt all questions.

The figures in the right hand margin indicate full marks for the questions.

SECTION - A
CHEMISTRY (Marks - 26)

Answer question nos. 1 o 4 in a word or a sentence each.

1. What is dative bond? (1)
2. Why do HCl show acidic character in aqueous solutions and the solutions of compound $C_6H_{12}O_6$ do not show acidic character ? (1)
3. What is the role of a catalyst in a chemical reaction? (1)
4. Test tubes A and B initially have brown colour solution known as bromine water. On passing methane gas in test tubes A, there is no change whereas on passing ethene in test tube B decolourisation of bromine water takes place. Account for the decolourisation of bromine water in test tube B. (1)

Answer question nos. 5 to 8 in about 30 words each.

5. Give reason for the following: (2)
   i. Cations are smaller in size than corresponding atom.
   ii. The noble gases were discovered very late.
6. Write the two conditions for polar covalent bond formation. (2)
7. Write the formula and draw electron dot structure of carbon tetrachloride. (2)
8. A,B and C are three elements which undergo reactions according to the following equations. (2)

$$A_2O + 2B \rightarrow B_2O_3 + 2A$$

$$3CSO_4 + 2B \rightarrow B_2(SO_4)_3 + 3C$$

$$3CO + 2A \rightarrow A_2O_3 + 3C$$

a) Which element is the most reactive?

b) Which element is the least reactive?

Answer question nos. 9 to 11 in about 50 words each.

9. Name the acid-base indicator extracted from lichen. What will happen when CO_2 gas is passed into water? Write the chemical reaction involved. (3)
10. An organic compound 'A' is a constituent of wine and beer and is also used as fuel spirit lamp. Compound 'A' on heating with alkaline potassium permanganate gives another compound 'B' which turns blue litmus to red. Compound 'A' & 'B' combine in the presence of conc. H_2SO_4 to give a sweet smelling compound 'C'. Identify compound 'A', 'B' and 'C' by using chemical reactions involved. (3)
11. How is soap prepared in the Laboratory. Write the chemical equation of the reaction involved. Also give one limitation of detergent. (3)

Answer question no. 12 in about 100 words.

12. Give any two carbonate ores with their chemical names. The reaction of a metal 'X' with Fe_2O_3 is highly exothermic and is used to join broken railway tracks. Identity metal 'X'. Write the balanced chemical equation of its reaction with Fe_2O_3. State the special name given to this reaction. (5)

SECTION - B

PHYSICS (Marks - 26)

Answer question nos. 13 o 16 in a word or a sentence each.

13. Define the unit of electric current. (1)
14. "Two magnetic field lines of force never intersect each other".Why? (1)
15. A person suffering from an eye defect uses lens of power - 1D. Name the defect he is suffering from and the nature of lens used. (1)
16. The slurry left in the biogas plant is good quality manure. Give reason.(1)

Answer question nos. 17 o 20 in about 30 words each.

17. How does the strength of the magnetic field at the centre of a circular coil of a wire depend on: (2)
    a) radius of the coil b) number of turns of the coil.
18. What is eletromagnet? Why is the core of an electromagnet must be of soft iron in place of steel? (2)
19. Draw a lebelled diagram of a nuclear power plant. (2)
20. How would the sky appear, if the earth had no atmosphere? Name the phenomenon responsible for the blue colour of our sky. (2)

Answer question nos. 21 o 23 in about 50 words each.

21. How will the magnetic field produced at a point *P* by a current carrying circular coil change, if we increase the (3)
    i) value of current flowing through the coil
    ii) distance of the point p from the coil, and
    iii) number of turns in the coil?
22. A *2cm* high candle flame is placed at a distance of *80cm* from a white screen. On placing a convex lens exactly at a the mid-point of the candle and the screen, a distant image of the flame is seen on the screen. What is the focal length of the lens and the size of the candle flame image formed? (3)
23. What are the factors that should be taken into consideration for selecting a source of energy? List any three. (3)

Answer question no. 24 in about 100 words.

24. An electric heater is rated 1500W : 250V. It is connected to 250V mains. Calculate i) the current drawn and ii) the energy consumed in 50 hours. An electric bulb become dim when an elctric heater in parallel circuit is switched on while dimness decrease after sometime. Give reasons. (5)