KARNATAKA SECONDARY EDUCATION EXAMINATION BOARD

MODEL PAPER – 1 FOR THE YEAR 2019-20

PRIVATE FRESH

Subject : Science **Code : 83E**

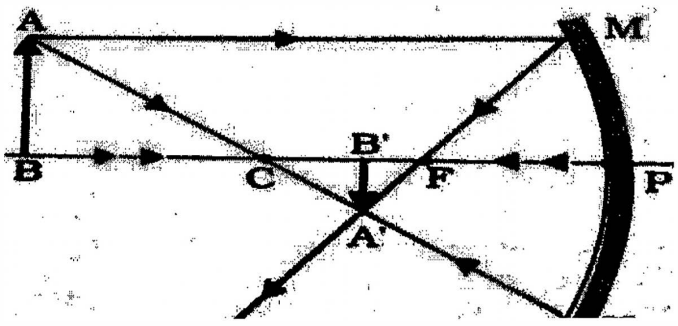
Duration : 3 hours 15 mins. **Max. Marks : 100**

I. Four alternatives are provided for each of the following questions or incomplete statements. Choose the most appropriate alternative and write with its alphabet. **8 X 1 = 8**

1. Identify the correct statement among the following with respect to plant hormones.
   A) Cytokinin promotes wilting of leaves
   B) Auxin inhibits stem elongation
   C) Abscisic acid inhibits growth of plants
   D) Gibberellin promotes falling of leaves

2. A heat producing device should be used in an electrical circuit. This device should have
   A) high resistance and low melting point
   B) low resistance and high melting point
   C) high resistance and high melting point
   D) low resistance and low melting point

3. Observe the following figure. The image formed in the figure is



   A) Real, inverted, diminished
   B) Virtual, erect, diminished
   C) Virtual, erect, enlarged
   D) Real, inverted, enlarged

4. Reactive metals are good reducing agents. The most suitable example related to this is
   A) $PbO + C \longrightarrow Pb + CO$
   B) $3MnO_2 + 4Al \longrightarrow 2Al_2O_3 + 3Mn$
   C) $ZnO + C \longrightarrow Zn + CO$
   D) $CuO + H_2 \longrightarrow Cu + H_2O$

5. The traditional method of sustainable natural resource management is
   A) Following water harvesting method
   B) Minimising the establishment of factories
   C) Using fossil fuels abundantly
   D) Preventing overgrazing of cattle in forest areas

6. The group of compounds which are in homologous series is,
   A) CH_4, C_2H_4, C_2H_2
   B) CH_4, CH_3OH, HCHO
   C) CH_4, C_2H_6, C_3H_8
   D) C_2H_2, C_3H_6, C_4H_{10}

7. Observe the following table

a) Reverses the direction of electric current	i) Galvanometer
b) Safety device	ii) Commutator
c) Detects the presence of electric current	iii) Fuse

The correct arrangement is

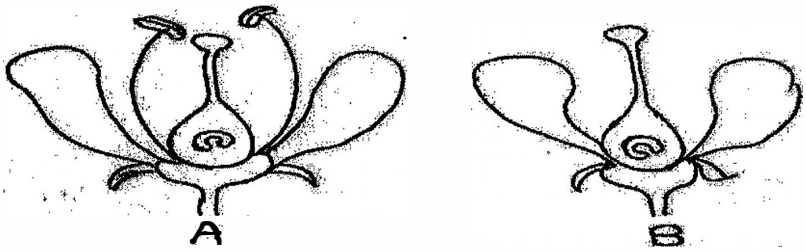
   A) a – iii, b – i, c – ii
   B) a – ii, b – i, c – iii
   C) a – ii, b – iii, c – i
   D) a – iii, b – ii, c – i

8. $CH_3 - CH_2OH \xrightarrow{\text{Conc. } H_2SO_4} CH_2 = CH_2 + H_2O$
   This chemical reaction is
   A) Neutralization reaction because water is released
   B) Oxidation reaction because oxygen is removed from the reactant
   C) Addition reaction because hydrogen is added to the reactant
   D) Dehydration reaction because water is removed from the reactant

II. Answer the following questions **8 X 1 = 8**

9. Define one volt (1V) potential difference.

10. Among the flowers A and B, which flower undergoes self pollination? Why?



11. You are given a copper coil, 6V battery and iron filings. What effects of electric current can you demonstrate using these materials?

12. Write the formula to calculate the magnification produced by a spherical mirror.

13. What is the meaning of "Repurpose" with respect to conservation of environment?

14. What is an exothermic reaction? Which of the following is an exothermic reaction?
    i) Heating calcium carbonate
    ii) Adding water to calcium oxide

15. Aqueous solutions of sodium chloride, sodium sulphate and calcium chloride are taken in three separate test tubes. Using aqueous barium chloride how do you identify sodium sulphate?

16. Copper when exposed to air for a long time acquires a green coat. Why?

III. Answer the following questions **18 X 2 = 36**

17. How does nervous system differ from the endocrine system in forming control and co-ordination in animals?

18. Draw the circuit diagram showing the combination of resistors R_1, R_2 and R_3 in parallel including ammeter and voltmeter and mark the direction of current.

19. What are ionic compounds? Mention any two properties of ionic compounds.

OR

Name any two metals that react with cold water very quickly. Write the products formed when these metals react with cold water.

20. Draw the diagram of the apparatus used in electrolytic refining of copper and label the electrode where pure copper is deposited.

21. What are the methods used by plants to get rid of excretory products?

OR

Mention the importance of transpiration in plants.

22. Draw the ray diagram showing the position of the object and image, to get the real inverted image whose size is same as the object using a convex lens.

23. Draw the diagram of the arrangement of apparatus showing the reaction of zinc granules with dilute sulphuric acid and testing hydrogen gas by burning and label the soap bubbles filled with hydrogen.

24. Imagine that in an area containing green bushes, almost equal number of brown grasshoppers and green grasshoppers are living. Which grasshoppers would be eaten by the birds easily? Why? Population of which grasshoppers increases gradually? Name the phenomenon which directs evolution here.

25. Write four uses of concave mirror.

26. Draw the diagram showing the magnetic field lines around a straight current carrying conductor and mark the direction of current.

27. Two resistors of resistance 5Ω and 7Ω are connected in series and are connected to a 12V battery. Calculate the current flowing through the circuit.

28. Draw the diagram of a neuron and label the following parts.
i) Axon ii) Dendrite

29. Carbon atom neither loses 4 electrons in its outermost orbit nor gains 4 electrons to attain octet structure. Why?

30. Explain the preparation of baking soda with the help of a balanced chemical equation.

31. Explain the methods of extraction of a metal from its carbonate ore.

32. What is double circulation? Why is it necessary?

33. "We should use coal and petroleum resources judiciously" Why?

34. Give an example each for homologous and analogous organs.

IV. Answer the following questions. **9 X 3 = 27**

35. Define the rule used to identify the direction of induced current in an electric generator. How can we increase the amount of electric current produced in the electric generator? Mention the property of the current produced by AC generator. Mention an important advantage of this type of current.

OR

On what principle an electric motor works? Define the rule used to identify the direction of force on the conductor in an electric motor. Explain the parts used in a commercial motor.

36. Explain the flow of energy and harmful chemicals in an ecosystem.

37. What is nuclear energy? What are the hazards of nuclear power generation?

OR

List the four characteristics of a good source of energy. Name any two sources of energy which are dependent on solar energy.

38. When sulphuric acid is added to 1g solid sodium chloride taken in a test tube, which gas is released? What changes do you observe when you test the gas with dry and wet litmus paper? What conclusion do you draw by this experiment?

OR

The pH values of four solutions A, B, C and D are 5, 12, 8 and 9 respectively. Arrange them in the increasing order of their hydroxyl ion concentration. Which solution among them has strong acidic property? Explain what happens if our mouth contains the pH of solution 'A'.

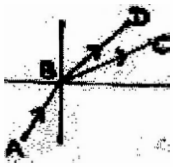
39. Write the functions of Forebrain, Medulla and Cerebellum in human brain.

40. The molecular formula of three fatty acids A, B and C present in oil or fat is $C_{12}H_{29}COOH$, $C_{15}H_{29}COOH$ and $C_{16}H_{29}COOH$. Which of these is

derived from i) Alkane ii) Alkene and iii) Alkyne? Which of them becomes rancid earlier? How can we increase its shelf life?

41. A tall plant with red flowers (TtRr) is self pollinated. Represent the plants obtained in F_2 generation with the help of a checker board (Punnet square). The traits which are not found in the parental plants are expressed in the offspring. Why?

42. Observe the following figure. AB is light ray travelling from liquid to air. BC and BD are refracted rays.



i) Which is the refracted ray if the liquid taken is benzene?
ii) Which is the refracted ray if the liquid taken is water?

Justify your answer. (The absolute refractive index of water and benzene are 1.33 and 1.5 respectively)

OR

An object 2cm tall is kept on the principal axis of a converging lens, of Focal length 8 cm. Find the position, nature and size of the image formed if the object is 12cm from the lens. Also find the magnification produced by the lens.

43. Explain the three types of decomposition reaction with the help of balanced chemical equation for each.

V. Answer the following questions. **4 X 4 = 16**

44. Draw the diagram showing the structure of human alimentary canal and label the following
i) The part which stores bile juice
ii) The longest part of the alimentary canal

45. How did Mendeleev arrange the elements? He left empty places in his periodic table. Why? Explain the limitations of Mendeleev classification.

46. There are two metallic wires of the same thickness made from iron and silver. If the length of iron wire is 12cm what should be the length of silver wire which is equal to the resistance of iron wire?
Data :- Resistivity of iron = 10×10^{-8} Ωm

Resistivity of silver = 16 X 10 $^{-8}$ Ωm

47. a) Explain why variations are observed in the offspring formed by sexual reproduction?
b) What are the advantages of vegetative propagation?

OR

a) Write the structure and functions of placenta.
b) What are the changes that occur in a flower after fertilization?

VI. Answer the following questions. **1 X 5 = 5**

48. Stars appear to be twinkling but planets do not twinkle. Why? Explain why the colour of the clear sky during day appears blue and during sunset appears red.