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## Part III

# Science

Time Allowed : 3 Hours

Maximum Marks: 75

**Instruction :** Check the question paper for fairness of printing. If there is any lack of fairness, inform the Hall Supervisor immediately.

**Note :** Draw diagrams and write equations wherever necessary.

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### PART - I

**Note :** i) Answer all the questions.  $12 \times 1 = 12$   
ii) Choose the most appropriate answer.

- To project the rockets which of the following principle(s) is / are required?**
  - Newton's third law of motion
  - Newton's law of gravitation
  - law of conservation of linear momentum
  - both a and c
- In a myopic eye, the image of the object is formed**
  - behind the retina
  - on the retina
  - in front of the retina
  - on the blind spot
- Linear expansion is the change in \_\_\_\_\_ when object is heated or cooled**
  - length
  - area
  - volume
  - density
- Which of the following is a triatomic molecule?**
  - Glucose
  - Helium
  - Carbondioxide
  - Hydrogen
- In the nucleus of  ${}_{20}\text{Ca}^{40}$  there are**
  - 20 protons and 40 neutrons
  - 20 protons and 20 neutrons
  - 20 protons and 40 electrons

- d) 40 protons and 20 electrons
6. The green layer found on the copper vessel is due to the formation of
- a) basic copper carbonate      b) cupric oxide  
c) cuprous oxide                d) copper chloride
7. Quick lime is dissolved in water is a \_\_\_\_\_ process
- a) exothermic                      b) endothermic  
c) reversible                        d) both a and b
8. Pick out the metal that displaces hydrogen from hydrochloric acid
- a) Zinc                      b) Silver                      c) Copper                      d) Gold
9. During transpiration there is loss of
- a) carbon dioxide                b) oxygen  
c) water                              d) none of the above
10. To increase the sugar production in sugar canes they are sprayed with \_\_\_\_\_
- a) Auxin                              b) Cytokinin  
c) Gibberellins                      d) Ethylene
11. A nemophilous flowers have \_\_\_\_\_
- a) Sessile stigma                      b) Small smooth stigma  
c) Coloured flower                      d) Large feathery stigma
12. Which method of crop improvement can be practised by a farmer if he is in experienced?
- a) clonal selection                      b) mass selection  
c) pureline selection                      d) hybridisation

## Part - II

Note : i) Answer any Seven questions.

ii) Q.no.22 is compulsory.

7 x 2 = 14

13. What is resultant force?
14. What are the advantages of telescopes?

15. What happens to the resistance, as the conductor is made thicker?
16. Define mole.
17. What is aqueous and non-aqueous solution? Give an example.
18. Define heterocyclic compounds. Give an example.
19. Why is the circulation in man referred to as double circulation?
20. List any three traits of pea plant selected by Mendel for his experiments and mention their dominant & recessive form.
21. What are the contributing factors for obesity?
22. A sphere of mass 20Kg moving with a velocity  $40 \text{ ms}^{-1}$  collides with another sphere of mass 15Kg which is at rest. After collision they move with the same velocity. Find that velocity.

### Part - III

Note : i) Answer any Seven questions.

ii) Q.no.32 is compulsory.

7 x 4 = 28

23. How can you calculate the speed of sound using echo?
24. i) State the law of volume?  
ii) What is the role of the earth wire in domestic circuits?
25. i) What is meant by reflection of sound?  
ii) Explain : reflection at the boundary of a rarer medium
26. i) State two conditions necessary for resting of iron  
ii) How will you predict the nature of chemical bonds using electro negativity values?
27. i) Define volume percentage?

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**34. a) Explain the salient features of groups in the modern periodic table.**

**(or)**

**b) i) Vinu dissolves 50g of sugar in 250ml of hot water. Sarath dissolves 50g of same sugar in 250ml of cold water. Who will get faster dissolution of sugar and why?**

**ii) What are the advantages of detergents over soaps?**

**35. a) i) Classify neurons based on its structure.**

**ii) Write a note on ABO blood grouping.**

**(or)**

**b) i) Differentiate between outbreeding and inbreeding.**

**ii) Describe mutation breeding with an example.**

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