

Total No. of Printed Pages—12

X/19/S & T (N)

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SCIENCE AND TECHNOLOGY

(New Course)

**(FOR REGULAR CANDIDATES WITH PRACTICAL/
INTERNAL ASSESSMENT)**

Full Marks : 80

Pass Marks : 24

Time : 3 hours

The figures in the margin indicate full marks for the questions

General Instructions :

- (i) This question paper comprises of three Sections—A, B and C.
- (ii) The candidates are advised to attempt all the questions of Sections A, B and C separately.
- (iii) Allocated marks are indicated against each question.

(2)

SECTION—A

(PHYSICS)

(Marks : 26)

Choose and write the correct answers from the following : 1×4=4

1. What would be the colour of the sky if earth had no atmosphere?

(a) Blue

(b) Yellow-orange

(c) Dark

(d) White

1

2. A full-length image of a distant tall building can definitely be seen by using

(a) a concave mirror

(b) a convex mirror

(c) a plane mirror

(d) both concave as well as plane mirror

1

3. According to new convention, the colour of insulation for live wire is

(a) brown

(b) red

(c) black

(d) yellow

1

(3)

4. The strength of magnetic field

(a) increases near the poles

(b) decreases near the poles

(c) remains the same

(d) None of the above

1

Answer the following short-answer type questions :

2×4=8

5. A student sitting on the last bench of a regular classroom is able to see the written work on blackboard but unable to read from his textbook. Identify the type of defect of vision he is suffering from. What kind of lens should he wear to correct the defect?

1+1=2

6. What is an electromagnet? State its one practical use.

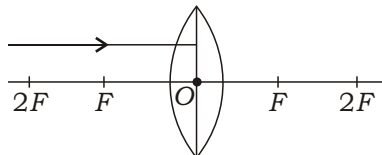
1+1=2

7. What will be the total resistance of the circuit if four resistances of 2 each are connected in a series circuit?

1+1=2

8. Draw the given diagram in your answer-book and complete it for the path of light beyond the lens :

2



(4)

[For Visually Handicapped (Blind) Students only
in lieu of the above Question]

8. Distinguish between real image and virtual image.
(Mention any two points.) 1+1=2

Answer the following short-answer type questions : 3×3=9

9. *Either*

- (a) State any three characteristics of image formed by a plane mirror. 1×3=3

Or

- (b) What is a solenoid? Can you determine the North and South poles of a current-carrying solenoid with the help of a bar magnet? Explain. 1+2=3

10. In a household, five tube lights of 40 W each are used for 5 hours and an electric press of 500 W for 4 hours everyday. Calculate the total electrical energy consumed by the tube lights and press in a month of 30 days. 3

11. If a single coil of large number of turns is used in a motor, it is found that the motion of the coil is not smooth but jerky. Why is it so? How can this jerky motion be converted into a smooth circular motion? 1+2=3

(5)

Answer the following long-answer type questions : 5

12.

Either

- (a) What is dispersion of light? 1
- (b) What causes dispersion of white light? 2
- (c) What do you understand by monochromatic light and polychromatic light? 1+1=2

Or

- (d) Give three characteristics of material for heating element. 3
- (e) Three resistors of resistances 12 , 6 and 4 are connected in parallel. Calculate the total resistance of the circuit. 2

SECTION—B

(CHEMISTRY)

(Marks : 26)

Choose and write the correct answers from the following : 1×3=3

13. Zinc or aluminium do not corrode because

- (a) they do not react with moist air
- (b) they react with moist air to form a very thin layer of oxides which is very sticky and hard
- (c) they are inactive metals
- (d) they are metalloids 1

(6)

14. The gas with which snacks packed in aluminium bags are flushed before packing is

(a) nitrogen

(b) oxygen

(c) hydrogen

(d) air

1

15. An element X has an electronic configuration of 2, 8, 8, 2 belongs to period

(a) 1

(b) 2

(c) 3

(d) 4

1

Answer the following short-answer type questions :

2×3=6

16. Balance the following chemical reactions :

1+1=2

(i) $\text{Mg} + \text{N}_2 \rightarrow \text{Mg}_3\text{N}_2$

(ii) $\text{C}_2\text{H}_6 + \text{O}_2 \rightarrow \text{CO}_2 + \text{H}_2\text{O}$

17. Define functional group. Name the class of organic compound associated with the functional group —COOH.

1+1=2

18. Atomic number of a few elements are 10, 20, 7, 14. Identify the elements.

$\frac{1}{2} \times 4 = 2$

(7)

Answer the following short-answer type questions :

3×4=12

- 19.** (a) What is observed when a solution of potassium iodide is added to a solution of lead nitrate in a test tube? 1
- (b) What type of reaction is this? 1
- (c) Write a balanced chemical equation to represent the above reaction. 1
- 20.** Draw a geometric diagram for the formation of $MgCl_2$ from magnesium and chlorine by transfer of electrons. 3
- 21.** *Either*
- (a) A compound that is prepared from gypsum has a property of hardening when mixed with proper quantity of water.
- (i) Identify the compound. 1
- (ii) Write the chemical name of the compound. 1
- (iii) For what purpose it is used in hospitals? 1
- Or*
- (b) (i) What is meant by the term 'pH' of a solution? 1
- (ii) The pH of gastric juices extracted from the stomach of two persons A and B were found to be 1 and 3 respectively. The stomach juice of which person is more acidic? 1
- (iii) Name the natural sources of (1) acetic acid and (2) uric acid. $\frac{1}{2}+\frac{1}{2}=1$
- 22.** (a) What is esterification? Give an example. 1+1=2
- (b) What are esters used for? $\frac{1}{2}+\frac{1}{2}=1$

(8)

Answer the following long-answer type questions : 5

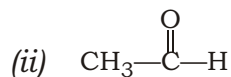
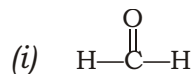
23.

Either

- (a) What is concentration of ore? 1
- (b) Explain the froth floatation process with neat labelled diagram. $2\frac{1}{2}+1\frac{1}{2}=4$

Or

- (c) What are hydrocarbons? 1
- (d) What do you understand by saturated and unsaturated hydrocarbons? $1+1=2$
- (e) Write down the common names of the following : $1+1=2$



SECTION—C

(**BIOLOGY**)

(Marks : 28)

Choose and write the correct answers from the following : $1\times 3=3$

24. What is the correct sequence of different parts present in alimentary canal?

- (a) Stomach, oesophagus, small intestine, large intestine
- (b) Stomach, oesophagus, large intestine, small intestine
- (c) Oesophagus, stomach, small intestine, large intestine
- (d) Oesophagus, stomach, large intestine, small intestine 1

(9)

25. Select the mis-matched pair.

(a) Adrenaline : Pituitary gland

(b) Testosterone : Testes

(c) Estrogen : Ovary

(d) Thyroxine : Thyroid gland

1

26. During germination, a seedling develops from a/an

(a) seed

(b) embryo

(c) seed coat

(d) ovule

1

Answer the following short-answer type questions :

2×4=8

27. Describe the transport of the following materials in plants :

1+1=2

(a) Water and minerals

(b) Food

28. Illustrate, with the help of suitable diagram, 'spore formation in Rhizopus'.

$\frac{1}{2} \times 4 = 2$

**[For Visually Handicapped (Blind) Students only
in lieu of the above Question]**

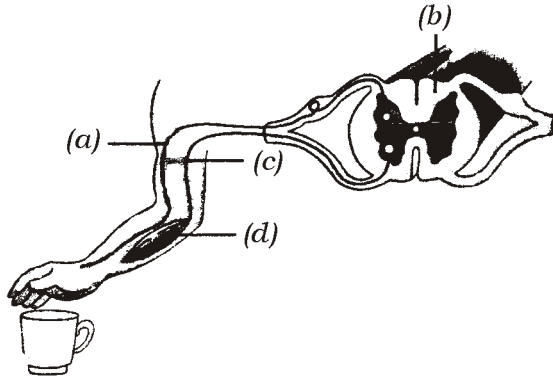
28. What is pollination? Name the two types of pollination. $1 + \frac{1}{2} + \frac{1}{2} = 2$

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(10)

29. Name the parts (a), (b), (c) and (d) in the given figure : $\frac{1}{2} \times 4 = 2$



[For Visually Handicapped (Blind) Students only
in lieu of the above Question]

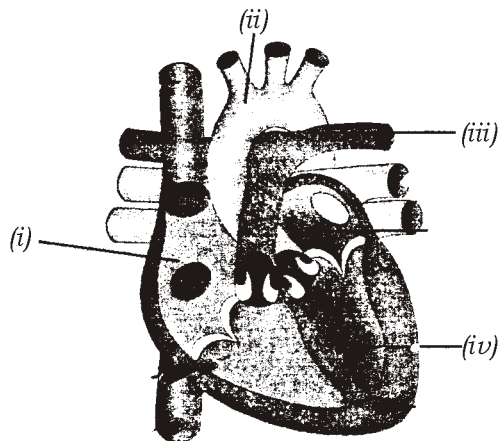
29. What is reflex action? Give two examples. $1 + \frac{1}{2} + \frac{1}{2} = 2$

30. How are acquired traits different from inherited traits?
(Give any two points.) $1 + 1 = 2$

Answer the following short-answer type questions : $3 \times 4 = 12$

31. (a) In the given diagram, name the following parts (i), (ii), (iii)
and (iv). $\frac{1}{2} \times 4 = 2$

(b) Name the blood vessel and the chamber that brings
oxygenated blood to human heart. $\frac{1}{2} + \frac{1}{2} = 1$



(11)

[For Visually Handicapped (Blind) Students only
in lieu of the 31 (a) Question]

31. What are sexually transmitted diseases? Name two such diseases. 1+½+½=2
32. Name the plant hormones responsible for—
- (a) promoting growth and ripening of fruits;
 - (b) promoting growth in stem, leaves and flowering;
 - (c) promoting cell division in plants. 1+1+1
33. *Either*
- (a) Name the process by which autotrophs prepare their own food. 1
 - (b) List two events which occur during the above process. 1
 - (c) What are the two basic raw materials for photosynthesis other than light? ½+½=1
- Or*
- (d) State any three differences between nastic and tropic movements. 3
34. Why can the wings of a bird and the wings of a bat not be considered homologous? 3

Answer the following long-answer type questions : 5

35. *Either*
- (a) Elimination of storage and waste products are completely different in case of plants. Justify the statement. 5

(12)

Or

- (b) (i) Name the main organs of human digestive system in the order to digestion of food. $2\frac{1}{2}$
- (ii) What is the role of (1) teeth and (2) tongue in digestion? $\frac{1}{2}+\frac{1}{2}=1$
- (iii) Name the nutrients which are completely digested in small intestine. $\frac{1}{2}+\frac{1}{2}+\frac{1}{2}=1\frac{1}{2}$
