X/25/S & T (OC)

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SCIENCE AND TECHNOLOGY

(Old Course)

(FOR NON-REGULAR, PRIVATE AND COMPARTMENTAL CANDIDATES)

Full Marks : 80

Pass Marks : 24

Time : 3 hours

The figures in the margin indicate full marks for the questions

General Instructions :

(i) Please check that this Question Paper contains **58** questions.

(ii) For candidates without Internal Assessment their marks will be multiplied by 1.25 to adjust their total to a maximum of 100 marks.

(iii) 15 minutes time is given for the candidates to read the Question Paper. The Question Paper will be distributed 15 minutes before the scheduled time of the examination. In these 15 minutes, the candidates should only read the instructions and questions carefully and should not write answers on the Answer Sheet.

(iv) The Question Paper contains 4 Sections, **Section—A**, **B**, **C** and **D**.

(v) **Section—A** contains Multiple Choice Questions (MCQ). Choose the most appropriate answer from the given options. The answers to this Section must be given in the boxes provided in the Answer Sheet.

(vi) **Section—B** contains Very Short Answer-type Questions.

(vii) **Section—C** contains Short Answer-type Questions.

(viii) **Section—D** contains Long Answer-type Questions.

(2)

SECTION—A

(Multiple Choice Questions)

Attempt *all* questions :   1×30=30

1. The image of an object in a spherical mirror appears magnified, erect and behind it. The spherical mirror is

   (A) convex

   (B) concave

   (C) plane

   (D) concavo-convex

2. A material medium having the lowest optical density is

   (A) water

   (B) glass

   (C) air

   (D) diamond

3. The sky generally appears blue, because the colour which scatters closest to the eye is

   (A) violet

   (B) indigo

   (C) blue

   (D) violet or indigo

(3)

4. The blind spot on retina has

(A) few nerve endings

(B) no nerve endings

(C) high concentration of nerve endings

(D) low concentration of nerve endings

5. When a newspaper is seen through a lens, its print appears smaller. The nature of the lens is

(A) convex

(B) concave

(C) double convex

(D) concavo-convex

6. The rate of flow of an electric charge is called

(A) electric current

(B) electric energy

(C) electric potential

(D) resistance

(4)

7. The resistance of a wire is given by

(A) $R = \dfrac{V}{I}$

(B) $R = \dfrac{I}{V}$

(C) $R = IV$

(D) $R = I^2 V$

8. An electric device which converts electric energy into mechanical energy is called

(A) dynamo

(B) electric generator

(C) electric motor

(D) transformer

9. One watt hour is equal to

(A) 36 J

(B) 360 J

(C) 3600 J

(D) 36000 J

(5)

10. The most suitable material for making the core of an electromagnet is

(A) steel

(B) cobalt

(C) soft iron

(D) nickel

11. Which one of the following is used as acid-base indicator by a visually impaired student?

(A) Litmus

(B) Turmeric

(C) Vanilla essence

(D) Methyl orange

12. Which one of the following is a strong acid?

(A) Carbonic acid

(B) Sulphurous acid

(C) Nitrous acid

(D) Hydrochloric acid

(6)

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

14. Three elements B, Si and Ge are

(A) metals

(B) non-metals

(C) metalloids

(D) metal, non-metal and metalloid respectively

15. The acid present in sour milk or curd is

(A) acetic acid

(B) lactic acid

(C) formic acid

(D) uric acid

[Contd.

16. Silver articles become black on prolonged exposure to air. This is due to the formation of

(A) Ag_3N

(B) Ag_2O

(C) Ag_2S

(D) Ag_2S and Ag_3N

17. Long form of periodic table was reconstructed by

(A) Moseley

(B) Niels Bohr

(C) J. J. Thomson

(D) Rutherford

18. What is the other name for Group 18 elements?

(A) Noble gases

(B) Alkali metals

(C) Alkaline-earth metals

(D) Halogens

(8)

19. Hydrolysis of an ester by sodium hydroxide solution is known as

(A) neutralization

(B) saponification

(C) hydrogenation

(D) dehydration

20. The common name of CH_3COOH is

(A) formic acid

(B) acetic acid

(C) propanoic acid

(D) butyric acid

21. Plants store carbohydrates in the form of

(A) glycogen

(B) protein

(C) glucose

(D) starch

[Contd.

(**9**)

22. The inner lining of the stomach is protected by one of the following from hydrochloric acid.

(A) Pepsin

(B) Bile

(C) Mucus

(D) Salivary amylase

23. Platelets help in

(A) transport of oxygen

(B) transport of carbon dioxide

(C) pumping of blood

(D) clotting of blood

24. Which excretory organ stores urine?

(A) Urinary bladder

(B) Kidney

(C) Ureter

(D) Urethra

(**10**)

25. A human body has

(A) 32 pairs of spinal nerves

(B) 31 pairs of spinal nerves

(C) 12 pairs of spinal nerves

(D) 8 pairs of spinal nerves

26. Which plant hormone promotes ripening of fruits?

(A) Gibberellin

(B) Cytokinin

(C) Ethylene

(D) Abscisic acid

27. The male reproductive part of a flower is

(A) stamen

(B) anther

(C) filament

(D) carpel

[Contd.

28. Which among the following diseases is not sexually transmitted?

(A) Syphilis

(B) Hepatitis

(C) HIV-AIDS

(D) Gonorrhoea

29. The breakdown of glucose into pyruvate takes place in

(A) mitochondria

(B) cytoplasm

(C) nucleus

(D) plasma membrane

30. The transfer of character from one generation to the next generation is known as

(A) evolution

(B) speciation

(C) genetics

(D) heredity

(**12**)

Section—B

(Very Short Answer-type Questions)

Answer any *ten* questions :   2×10=20

31. State the laws of reflection of light.   2

32. What do you understand by the term 'myopic eye'? How can it be corrected?   1+1=2

33. Name two devices which can produce continuous current.   1+1=2

34. What is meant by the term 'magnetic field lines'? List any two properties of magnetic field lines.   1+½+½=2

35. What is an electromagnet? Give two practical uses of electromagnet.   1+½+½=2

36. What is an oxidation reaction? Give an example of oxidation reaction.   1+1=2

37. Write any two uses of Plaster of Paris.   1+1=2

38. Give reason as to why sodium and potassium are kept immersed in kerosene oil.   2

39. What are hydrocarbons? Name two types of hydrocarbons.   1+½+½=2

40. State the modern periodic law. How many groups and periods are there in the modern periodic table?   1+½+½=2

41. What are villi? Where are they present?   1½+½=2

42. Name the four plant hormones or phytohormones.   ½×4=2

43. What is pollination? Name two types of pollination.   1+½+½=2

44. Define inheritance or heredity. Who is known as the father of genetics?   1+1=2

SECTION—C

(Short Answer-type Questions)

Answer any *six* questions :   3×6=18

45. *(a)* What do you understand by the term 'electric fuse'?   1

     (b) How does a fuse wire protect an electric circuit?   2

46. Define power of a lens. A convex lens has focal length of 40 cm. Calculate its power.   1+2=3

47. *(a)* State Ohm's law.   1

    (b) Give the factors of resistance of a wire on which it depends.   ½×4=2

48. What changes are observed when hydrated ferrous sulphate is heated strongly? State the type of chemical reaction.   3

49. What is water of crystallization? Write the name and formula of two salts containing water of crystallization.   3

50. Draw the structure of the following compounds :   1+1+1=3

    (a) Ethanoic acid

    (b) Propanone

    (c) Ethanol

[For Visually Impaired Students only]

50. Differentiate between roasting and calcination (any *three* points).   3

51. *(a)* Define excretion. Name two excretory organs in humans. 1+½+½=2

(b) Give the functional unit of kidney and nervous system. ½+½=1

52. State Darwin's theory of natural selection. ½×6=3

53. What are homologous organs? Give two examples. 1+1+1=3

SECTION—D

### (Long Answer-type Questions)

Answer any *three* questions : 4×3=12

54. State any four common characteristics of light. 4

55. Define the term 'resistivity' of a material. Four resistors of resistances 24 Ω, 12 Ω, 8 Ω and 4 Ω are connected in parallel. Calculate the total resistance of the circuit. 2+2=4

56. *(a)* Why there is a necessity for the classification of elements? Give three reasons. 3

(b) An element *A* has atomic number 14, to which period does this element belong? 1

57. Write the difference between photosynthesis and respiration (any *four*). 4

58. *(a)* Label the parts *(i)*, *(ii)*, *(iii)* and *(iv)* : ½×4=2
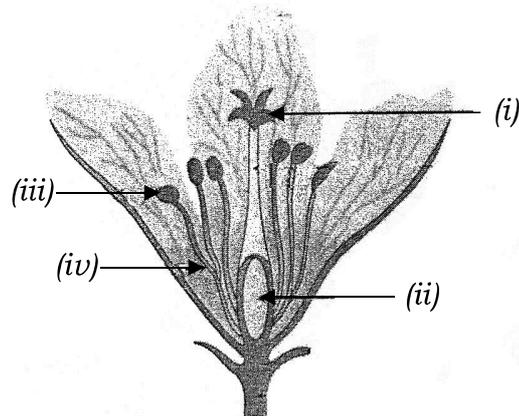
(b) Mention the post-fertilization changes in the flower. 2

[For Visually Impaired Students only]

58. What are the different types of heterotrophic nutrition? Give one example of each. 4

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