

Total No. of Printed Pages—15

X/25/S & T (NC)

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SCIENCE AND TECHNOLOGY

(New Course)

(FOR REGULAR 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 **56** questions.
- (ii) 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.
- (iii) The Question Paper contains 4 Sections, **Sections A, B, C and D**.
- (iv) **Section—A** contains Multiple Choice Questions (MCQ). Choose the most appropriate answer from the given options. The answers to this Section must be provided in the boxes provided in the Answer Sheet. Answers given anywhere else will not be counted for marking.

(2)

- (v) **Section—B** contains Very Short Answer-type Questions.
- (vi) **Section—C** contains Short Answer-type Questions.
- (vii) **Section—D** contains Long Answer-type Questions.

SECTION—A

Multiple Choice Questions. Attempt *all* questions : 1×30=30



The above reaction is an example of a

- (A) combination reaction
 - (B) double displacement reaction
 - (C) decomposition reaction
 - (D) displacement reaction
2. What happens when dilute hydrochloric acid is added to iron filings?
- (A) Hydrogen gas and iron chloride are produced
 - (B) Chlorine gas and iron chloride are produced
 - (C) No reaction takes place
 - (D) Iron salt and water are produced

(3)

3. One of the constituents of baking powder is sodium hydrogen carbonate. The other constituent is
- (A) hydrochloric acid
 - (B) tartaric acid
 - (C) acetic acid
 - (D) sulphuric acid
4. A solution turns red litmus blue. Its pH is likely to be
- (A) 1
 - (B) 4
 - (C) 5
 - (D) 10
5. Which of the following types of medication is needed in treating indigestion?
- (A) Antibiotic
 - (B) Antacid
 - (C) Analgesic
 - (D) Antiseptic

(4)

6. Generally, non-metals are not lustrous. Which of the following non-metals is lustrous?
- (A) Sulphur
 - (B) Oxygen
 - (C) Nitrogen
 - (D) Iodine
7. Which among the following alloys contains mercury as one of its constituents?
- (A) Stainless steel
 - (B) Amalgam
 - (C) Alnico
 - (D) Solder
8. Butanone is a four-carbon compound with the functional group
- (A) carboxylic acid
 - (B) alcohol
 - (C) aldehyde
 - (D) ketone

(5)

9. While cooking, if the bottom of the vessel is getting blackened on the outside, it means that
- (A) the food is not cooked completely
 - (B) the fuel is not burning completely
 - (C) the fuel is wet
 - (D) the fuel is burning completely
10. Which of the following metals can replace copper from a solution of copper sulphate?
- (A) Silver
 - (B) Gold
 - (C) Zinc
 - (D) Platinum
11. Saliva contains an enzyme called
- (A) amylase
 - (B) lipase
 - (C) pepsin
 - (D) trypsin

(6)

12. The breakdown of pyruvate to give carbon dioxide, water and energy takes place in

- (A) nucleus
- (B) cytoplasm
- (C) mitochondria
- (D) chloroplast

13. In a synapse, chemical signal is transmitted from

- (A) dendrite to cell body of the same neuron
- (B) axon to cell body of the same neuron
- (C) axonal end of one neuron to dendrite end of another neuron
- (D) cell body to axon of the same neuron

14. Which of the following is a plant hormone?

- (A) Insulin
- (B) Thyroxin
- (C) Oestrogen
- (D) Cytokinin

(7)

15. Asexual reproduction through budding takes place in

- (A) amoeba
- (B) yeast
- (C) plasmodium
- (D) leishmania

16. Which of the following diseases is not sexually transmitted?

- (A) Syphilis
- (B) Gonorrhoea
- (C) Warts
- (D) Hepatitis

17. A trait in an organism is influenced by

- (A) paternal DNA only
- (B) maternal DNA only
- (C) both maternal and paternal DNA
- (D) neither maternal nor paternal DNA

(8)

- 18.** Which of the following is an acquired character?
- (A) Skin colour
 - (B) Colour of eyes
 - (C) Attached or free ear lobes
 - (D) Size of the body
- 19.** Which one of the following is an artificial ecosystem?
- (A) Pond
 - (B) Crop field
 - (C) Forest
 - (D) Lake
- 20.** Depletion of ozone is mainly due to
- (A) carbon dioxide
 - (B) carbon monoxide
 - (C) chlorofluorocarbons
 - (D) methane

- 21.** The refractive index of water is
- (A) 1.0003
 - (B) 1.52
 - (C) 1.33
 - (D) 2.42
- 22.** 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
- 23.** In torches, searchlights and headlights of vehicles, the bulb is placed
- (A) between the pole and the focus of the reflector
 - (B) very near to the focus of the reflector
 - (C) between the focus and the centre of curvature of the reflector
 - (D) at the centre of curvature of the reflector

(10)

- 24.** In the human eye, the part which allows light to enter into the eye is
- (A) retina
 - (B) pupil
 - (C) eye lens
 - (D) cornea
- 25.** The band of colours obtained by splitting of white light is called
- (A) dispersion
 - (B) spectrum
 - (C) refraction
 - (D) deviation
- 26.** Myopia occurs due to
- (A) increase in focal length of the eye lens
 - (B) decrease in focal length of the eye lens
 - (C) contraction of the eyeball
 - (D) decrease in distance between retina and the eye lens

(11)

27. Kilowatt-hour is the unit of

- (A) electrical power
- (B) conductivity
- (C) resistivity
- (D) electrical energy

28. An electric bulb connected to 220 V generator carries a current of 0.5 A. The power of the bulb is

- (A) 440 W
- (B) 110 W
- (C) 1100 W
- (D) 44 W

29. The most important safety method used for protecting home appliances from short circuiting or overloading is

- (A) earthing
- (B) use of fuse
- (C) use of stabilizers
- (D) use of electric meter

(12)

- 30.** Force on a current-carrying conductor in a magnetic field depends on
- (A) direction of mechanical field lines
 - (B) direction of the magnetic field and current
 - (C) area of cross-section of the wire
 - (D) length of the wire

SECTION—B

Very Short Answer-type Questions. Answer any *ten* : $2 \times 10 = 20$

- 31.** Calcium oxide reacts with water. Justify your answer by giving balanced chemical equation for the chemical reaction. 2
- 32.** What is neutralization reaction? Give one example. 1+1=2
- 33.** Give two uses of Plaster of Paris. 2
- 34.** Explain the meaning of malleability and ductility. 1+1=2
- 35.** What is regeneration? Give one example. 1+1=2
- 36.** Define heredity. Who is known as the father of genetics? 1+1=2
- 37.** How does the embryo get nourishment and generate waste substance? 2

(13)

38. Give any two ways in which non-biodegradable substances affect the environment. 2
39. What changes can you make in your habits to become more environment-friendly? $\frac{1}{2} \times 4 = 2$
40. The radius of curvature of a spherical mirror is 20 cm. What is its focal length? 2
41. Why do the planets not twinkle? 2
42. A current of 0.5 A is drawn by a filament of an electric bulb for 10 minutes. Find the amount of electric charge that flows through the circuit. 2
43. What is heating effect of current? Name two electrical appliances which work on this effect. $1+1=2$

SECTION—C

Short Answer-type Questions. Answer any six : $3 \times 6 = 18$

44. What is redox reaction? With an example, show which reactant gets oxidized and which gets reduced. $1+1+1=3$
45. Give three differences between calcination and roasting. 3
46. Name the organ that produces bile. Give two functions of bile. $1+2=3$

(14)

47. Give three events that occur during the process of photosynthesis. 3
48. Name any three plant hormones and give their functions. 3
49. What is refraction of light? State the laws of refraction of light. 1+2=3
50. (a) List two properties of magnetic field lines.
(b) Why two magnetic field lines cannot intersect each other? 2+1=3
51. What is overloading? When can it occur? 1+2=3

SECTION—D

Long Answer-type Questions. Answer any *three* : 4×3=12

52. A dry pellet of a common base *B*, when kept in open, absorbs moisture and turns sticky. The compound is also a by-product by chlor-alkali process. Identify *B*. What type of reaction occurs when *B* is treated with an acidic oxide? Write the balanced chemical equation for one such solution. 4
53. (a) Give two differences between aerobic and anaerobic respiration.
(b) How are water and minerals transported in plants?
(c) What is excretion? 2+1+1=4

(15)

54. Draw the diagram of a flower and label it. Write the names of gamete producing organs in the flower.

$$(1+2)+(\frac{1}{2}+\frac{1}{2})=4$$

[For Visually Impaired Candidates only
in lieu of Question No. 54]

54. Write four points of difference between asexual and sexual reproduction.

4

55. (a) Define electric power.

(b) An electric oven is designed to work on the mains voltage of 220 V. This oven consumes 11 units of electrical energy in 5 hours. Calculate the—

(i) power rating of the oven;

(ii) current drawn;

(iii) resistance of the oven when it is red hot. $1+3=4$

56. (a) What is meant by power of accommodation?

(b) What is the far point and near point of the human eye with normal vision?

(c) A student has difficulty in reading the blackboard while sitting in the last row. What could be the defect, the student is suffering from? How can it be corrected?

$1+1+2=4$

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