

SECTION-A
PHYSICS (25 MARKS)

5 (15, 20)
2 (3, 4)
2 (3, 2)
3 (3, 1)
1 1 1

GENERAL INSTRUCTIONS

All questions are compulsory.

Questions 1 to 5 are MCQ type of 1 mark each,

Questions 6 and 7 are of 2 marks each,

Questions 8 and 9 are of 3 marks each,

Questions 10 is of 5 marks,

Questions 11 is source based of 5 marks

- 1 A 2 cm high object is placed at 32 cm in front of a concave mirror. The image is real, inverted and 3 cm high. Where will the image be formed? 1
- (a) 24 cm in front of the mirror
(b) 48 cm in front of the mirror
(c) 24 cm behind the mirror
(d) 48 cm behind the mirror
- 2 The power of a concave lens is $-4D$. Its focal length is 1
- (a) 0.25cm
(b) 25cm
(c) $-0.25cm$
(d) $-25cm$
- 3 In order to obtain a magnification of -0.4 by a concave mirror, the object must be placed 1
- (a) At F
(b) Between P and F
(c) Between F and C
(d) Beyond C
- 4 A student conducts an experiment using a convex lens of focal length 15 cm and an object of height 10 cm. He placed the object at 20 cm from the lens. Can the image be formed on a screen? 1
- (a) Yes, because a real image will be formed
(b) yes, because an erect image will be formed
(c) no, because an inverted image will be formed
(d) no, because a virtual image will be formed
- 5 Which mirror is used by a dentist to examine a small cavity? 1
- (a) Plane mirror
(b) Convex mirror
(c) Concave mirror
(d) combination of (b) and (c)

(iii) What is the speed of light in diamond?

- A) 2.42×10^8 m/s
- B) 1.24×10^8 m/s
- C) 4.14×10^8 m/s
- D) 2.14×10^8 m/s

(iv) If a light ray goes from air to water the refracted ray

- A) Always bends away from the normal
- B) Always bends towards the normal
- C) Bends towards the normal when incident ray is normal to the interface
- D) Bends towards the normal when incident ray is not normal to the interface

(v) The refractive index of diamond with respect to benzene is

- A) 1.61
- B) 0.62
- C) 3.63
- D) 0.98

SECTION-B
CHEMISTRY (25 MARKS)

GENERAL INSTRUCTIONS

All questions are compulsory.

Questions 1 to 5 are MCQ type of 1 mark each,

Questions 6 to 8 are of 2 marks each,

Questions 9 to 11 are of 3 marks each,

Question 12 is of 5 marks,

1 Which of the following reactions is an endothermic reaction?

- a) Burning of coal
- b) decomposition of vegetable matter into compost
- c) Process of respiration
- d) decomposition of calcium carbonate

2 Which of the following salts doesn't contain water of crystallization?

- a) blue vitriol
- b) baking soda
- c) washing soda
- d) gypsum

3 Sodium carbonate is a basic salt because it is a salt of

- a) strong acid and strong base
- b) weak acid and weak base
- c) strong acid and weak base
- d) weak acid and strong base

In the following questions, a statement of assertion (A) is given followed by a corresponding statement of reason (R). Select the correct answer to this question from the codes (a), (b), (c) and (d) as given below.

- (a) Both (A) and (R) are true and (R) is the correct explanation of (A).
- (b) Both (A) and (R) are true and (R) is not a correct explanation of (A).

(c) (A) is true but (R) is false

(d) (A) is false but (R) is true

- 4 Assertion- White silver chloride turns grey in the presence of light. 1
Reason- Decomposition of silver chloride in the presence of sunlight takes place to form silver metal and chlorine gas.
- 5 Assertion- Aqueous solutions of strong acids conduct electricity. 1
Reason- Strong acids ionise to large extent in water.
- 6 Give the chemical reactions:- 2
- a) When carbon dioxide is passed through lime water.
b) When excess carbon dioxide is passed through lime water.
- 7 a) What is the chemical formula and name of washing soda. 2
b) What happens when sodium hydrogen carbonate is heated?
- 8 Give reasons:- 2
- a) Glucose solution does not conduct electricity.
b) While diluting acids, it is always advised to add acid to water and not the reverse.
- 9 a) Write the name and chemical formula of calcium compound used for disinfecting drinking water. 3
b) How is this compound manufactured?
c) What is the colour of copper sulphate crystals before heating and after heating?
- 10 a) What is redox reaction? 3
b) Give example of a displacement reaction.
c) Why do we balance a chemical equation?
- 11 A metal nitrate A on heating gives a yellow residue along with the evolution of a brown gas B and a colourless gas C. Aqueous solution of A on reaction with potassium iodide forms a yellow precipitate of compound D. Identify A, B, C and D. 3
Give the chemical reactions.
- 12 A white powder is used by doctors to support fractured bones. (1x5=5) 5
- a) Write the name and chemical formula of the compound.
b) How is this powder prepared?
Why is this powder stored in a moisture proof container?
Give one more use of this white powder.
c) What happens when gypsum is heated above 373K.

SECTION-C
BIOLOGY (30 MARKS)

General instructions

All questions are compulsory,

however, there are internal choices for 3 and 5 marks questions.

Question 1 to 8 carry 1 mark each.

Question 9 to 12 carry 3 marks each.

Question 13 and 14 carry 5 marks each.

- 1 In which of the following groups of organisms, food material is broken down outside the body and then absorbed in? 1
- (A) mushroom, green plants, amoeba
(B) yeast, mushroom, bread mould
(C) paramecium, amoeba, cuscuta
(D) cuscuta, lice, tapeworm
- 2 Plants use completely different process for excretion as compared to animals. Which one of the following processes is NOT followed by plants for excretion? 1
- (A) They can get rid of excess water by transpiration.
(B) They selectively filter toxic substances through their leaves.
(C) Waste products are stored as resins and gums in old xylem.
(D) They excrete waste substances into the soil around them.
- 3 Opening and closing of stomatal pore depends on: 1
- (A) Atmospheric temperature
(B) oxygen concentration around stomata
(C) carbon dioxide concentration around stomata
(D) water content in the guard cells
- 4 The inner lining of the stomach is protected by one of the following from hydrochloric acid. Choose the correct one 1
- (A) Mucus
(B) Salivary amylase
(C) Pepsin
(D) Bile
- 5 Choose the function of pancreatic juice from the following: 1
- (A) Trypsin digests proteins and lipase digests carbohydrates
(B) Trypsin digests emulsified fats and lipase digests proteins
(C) Trypsin and lipase digest fats
(D) Trypsin digests proteins and lipase digests emulsified fat
- 6 The breakdown of pyruvate into carbon dioxide, energy and water takes place in _____. 1
- (A) mitochondria
(B) cytoplasm
(C) Endoplasmic reticulum
(D) ribosomes
- 7 What prevents back flow of blood during contraction? 1
- (A) Valves in heart
(B) Thick muscular walls of ventricles
(C) Thin walls of atria
(D) All

8. Xylem helps in _____. 1
 (A) transportation of water (B) translocation of food
 (C) both (A) and (B) (D) transportation of water and minerals
9. The force that blood exerts against the wall of a blood vessel is called blood pressure. This pressure is much greater in arteries than in veins. During ventricular systole, the pressure of blood inside the artery is called systolic pressure and during ventricular diastole, the pressure in the artery is called diastolic pressure.

Based on your knowledge, after reading this topic, answer the following questions

- (i) The normal systolic pressure and diastolic pressure is 1
 (a) 120/80 mm Hg (b) 80/120 mm Hg
 (c) 120/100 mm Hg (d) 100/120 mm Hg
- (ii) Which of the following instruments is used to measure blood pressure 1
 (a) Spirometer (b) Haemometer
 (c) Sphygmomanometer (d) Calorimeter
- (iii) Which valves guard opening between right atria and right ventricle, and left atria and left ventricle? 1
 (a) Tricuspid and Bicuspid valves (b) Bicuspid and Tricuspid valves
 (c) Semilunar valves (d) None of these
10. Why the small intestine in herbivores longer than in carnivores? 3

OR

Why pancreas is called a myxocrine or heterocrine gland?

11. How many parts is the human brain divided into? Name them along with their function. 3
12. Define phytohormones. [1] 3
 Name two growth hormones. [0.5+0.5]
 Name growth inhibitor of plant. [0.5]
 Name the plant hormone which helps in cell division. [0.5]
13. What do you mean by reflex action and reflex arc? [1+1+1.5+1.5] 5
 Explain the structure and function of a neuron with the help of a labelled diagram.

OR

Give the structure and function of a nephron.

Draw a labelled diagram of the human urinary system. [3+2]

14. What do you mean by double circulation of blood in human heart? 5
 Why the left and right sides of the human heart separated?
 Why the walls of the left ventricle are thicker and stronger muscles than the other chambers of the heart? [1.5+1.5+2]
