

**CLASS X SCIENCE(086)
MIDTERM ASSESSMENT
SESSION 2024-25**

ROLL NO. 17

NAME: Dyudiman

80 marks.

Weightage:

3 Hour

Time Duration:

Important Instructions:

- This question paper consists of 39 questions in 5 sections.
- All questions are compulsory. However, an internal choice is provided in some questions. A student is expected to attempt only one of these questions.
- Section A consists of 20 objective type questions carrying 1 mark each.
- Section B consists of 6 Very Short questions carrying 02 marks each. Answers to these questions should be in the range of 30 to 50 words.
- Section C consists of 7 Short Answer type questions carrying 03 marks each. Answers to these questions should be in the range of 50 to 80 words.
- Section D consists of 3 Long Answer type questions carrying 05 marks each. Answers to these questions should be in the range of 80 to 120 words.
- Section E consists of 3 source-based/case-based units of assessment of 04 marks each with sub-parts.

SECTION - A (20 x 1 = 20)

Select one most appropriate option out of the four options given for each of the questions 1 to 20 -

- Hydrochloric acid turns phenolphthalein solution _____
 (a) Pink (b) Yellow (c) Colourless (d) Orange 1
- Non-Metallic oxide are generally _____ in nature.
 (a) Acidic (b) Basic (c) Neutral (d) Amphoteric 1
- Identify the parent acid and parent base of salt $(\text{NH}_4)_2\text{CO}_3$.
 (a) NH_3 and H_2CO_3 (b) H_2CO_3 and NH_4OH (c) NH_4OH and H_2CO_3 (d) H_2CO_3 and NH_4Cl 1
- Which of the following substances has the lowest PH value.
 (a) Sugar (b) Tomato juice (c) Vinegar (d) Washing Soda 1
- What substance is obtained by heating limestone in absence of air?
 (a) CaOCl_2 (b) $\text{Ca}(\text{OH})_2$ (c) CaO (d) CaCO_3 1
- An aqueous solution turns the red litmus solution blue. Excess addition of which of the following solutions would reverse the change?
 (a) Baking powder (b) NH_4OH (c) Lime (d) HCl acid 1
- Which one of the given is true, if a substance has a pH value of 4?
 (a) The substance is a base (b) The substance is an acid (c) The substance is a neutral substance (d) Either (A) or (B) 1

8. Which row in the table below shows the correct product of anaerobic respiration in humans and yeast respectively -

1

	HUMANS	HUMANS	YEAST	YEAST
	Lactic Acid	Carbon dioxide	Lactic Acid	Carbon dioxide
A	X	✓	X	X
B	✓	X	X	✓
C	X	✓	✓	X
D	✓	✓	✓	X

9. Which of the following statements is correct about receptors?

1

- a) Gustatory receptors detect taste while olfactory receptors detect smell
- b) Gustatory and Auditory receptors detect smell and taste respectively
- c) Auditory receptors detect smell and olfactory receptors detect taste
- d) Olfactory receptors detect taste and gustatory receptors smell

10. Column 1

Column 2

1

- 1) Hypothalamus
- 2) Pons
- 3) Medulla
- 4) Cerebellum

- i) Salivation and vomiting
- ii) Walking in a straight line
- iii) Controlling temperature or hunger
- iv) Breathing

- a) 1-iv 2-iii 3-i) 4- ii
- c) 1-iii 2-iv 3-i) 4- ii

- b) 1-iii 2-iv 3-ii) 4- i
- d) 1-iii 2-iv 3-i) 4- iii

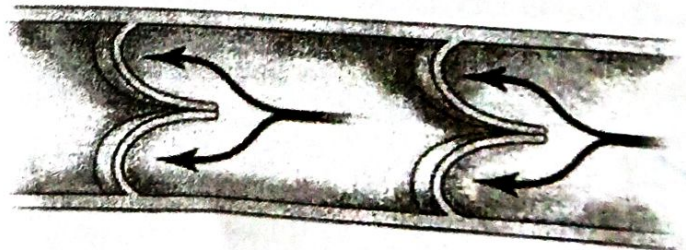
11. Which of the following statements are false about plant hormones?

1

- i) Different plant hormones help to coordinate growth, development and responses to the environment.
- ii) They are synthesised at places away from where they act and simply diffuse to the area of action
- iii) Auxins synthesised at the shoot tip, helps the cells to grow longer.
- iv) Auxin stimulates the cells to grow longer on the side of the shoot which is facing light

- a) i & iv
- b) ii & iii
- c) Only iv)
- d) Only iii)

12. Identify the picture given alongside and write a characteristic feature of this structure.



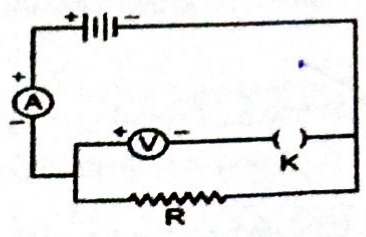
13. Both the spherical mirror & a thin spherical lens have a focal length of -15 cm. What type of mirror & Lens are these?

- (a) Both are convex
- (b) Both are concave
- (c) Concave mirror & convex Lens
- (d) Convex mirror & concave Lens

1

1 A student arranged an electric circuit as shown
He would observe

- (a) no reading in either the ammeter or the voltmeter
- (b) no reading in the voltmeter but a finite reading in the ammeter
- (c) no reading in the ammeter but a finite reading in the voltmeter
- (d) a finite reading in both the ammeter and the voltmeter



1

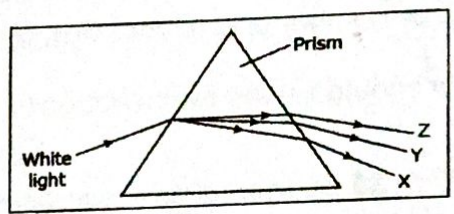
15. A student sitting on the last bench can read the letters written on the blackboard but is not able to read the letters written in his textbook. Which of the following statements is correct?

- (a) The near point of his eyes has receded away
- (b) The near point of his eyes has come closer to him
- (c) The far point of his eyes has come closer to him
- (d) The far point of his eyes has receded away

1

16. The image shows the dispersion of the white light in the prism. What will be the colours of the X, Y and Z?

- (a) X: red; Y: green; Z: violet
- (b) X: violet; Y: green; Z: red
- (c) X: green; Y: violet; Z: red
- (d) X: red; Y: violet; Z: green



1

Q. no 17 to 20 are Assertion - Reasoning based questions.

These consist of two statements - Assertion (A) and Reason (R). Answer these questions selecting the appropriate option 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 the correct explanation of A
- (c) A is true but R is false
- (d) A is False but R is true

17. Assertion (A) : When HCl is added to zinc granules, a chemical reaction occurs.
Reason (R) : Evolution of a gas and change in colour indicate that the chemical reaction is taking place.

1

18. Assertion : Brown fumes are produced when lead nitrate is heated.
Reason : Nitrogen dioxide gas is produced as a byproduct due to the decomposition of lead nitrate.

1

19. Assertion: Reflex arcs have evolved in animals because the thinking process of the brain is not fast enough.

Reason: Even after complex neuron networks have come into existence, reflex arcs continue to be more efficient for quick responses.

1

20. Assertion: A cell is a device which converts electrical energy to chemical energy.

Reason: Cell maintains constant potential difference between its terminals.

1

SECTION - B (6 x 2 = 12)

Q. no. 21 to 26 are very short answer questions carrying 02 marks each.

21. Explain feedback mechanism taking the example of one organ performing dual functions- both as an endocrine and exocrine organ.

2

22. a) Give the name of one plant hormone that inhibits growth? What is its other function?
 b) "There is no growth involved in this movement of *Mimosa pudica* to touch" - Explain.

OR

22. While participating in adventure sports one particular hormone level peaks - Name this hormone and explain its action on the human system in brief.

23. Explain how the translocation of materials in phloem tissue in plants is achieved by utilising energy. 2

24. The magnification produced by a lens is - 0.5. Is this a converging or diverging lens? Find the power of this lens if the focal length of this lens is 40cm.

OR

24. (a) Why does the sky appear dark instead of blue to an astronaut? 2

(b) Why does the sun appear reddish early in the morning? 2

25. a) Find the work done to transfer 1 C of charge through a 6 V battery. 2

b) Find the number of electrons flowing per second in a conductor, if 1A current is passing through it.

26. Why should a magnesium ribbon be cleaned before burning in air? Write the reaction as well. 2

SECTION - C (7 x 3 = 21)

Q.no. 27 to 33 are short answer questions carrying 03 marks each.

27. A cloth's strip dipped in onion juice is used for testing a liquid 'X' and 'Y'. The liquid 'X' changes its odour whereas no change in odour is observed in liquid 'Y'.

(a) Which type of an indicator is onion juice?

(b) The liquid 'Y' turns blue litmus red. List the observations the liquid 'Y' will show on reacting with the following:

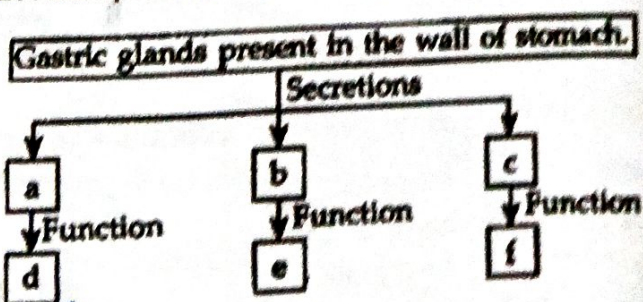
(A) Zinc granules

(B) Solid sodium carbonate

(1+1+1)

28. An element A reacts with water to form a compound B which is used in white washing. The compound B on heating forms an oxide C which on treatment with water gives back B. Identify A, B and C and give the reactions involved. (1+1+1)

29. Complete the following flow chart as per the given instructions.



(½ x 6)

30. An object is placed at a distance of 60 cm from a concave lens of focal length 30 cm.

- (i) Use lens formula to find the distance of the image from the lens
 (ii) List four characteristics of the image (nature, position, size, erect/inverted) formed by the lens in this case
 (iii) Draw ray diagram to justify your answer

3

- a) Write the function of each of the following parts of human eye: 3
i) Cornea (ii) Iris (iii) Crystalline lens (iv) Ciliary muscles
b) A person needs a lens of power -4.5 D for correction. Name the defect & find the focal length of the lens used.

32. a) Name the component in an electrical circuit used to i) change the current flowing in circuit
ii) measure the current. Draw the circuit symbol of the components identified.
b) A wire of length l & resistance R is stretched so that its length is doubled & area of cross section is halved. How will its resistance & resistivity change in this case?

OR

32. How will you use two identical glass prisms so that a narrow beam of white light incident on one prism emerges out of the second prism as white light? Draw and label the ray diagram.
State the cause of dispersion of white light passing through a glass prism. 3

33. Make a diagram of the unit of excretion and label at least four parts on the diagram. 3

OR

33. Sketch double circulation in mammals showing all the major blood vessels. Why is this type of circulation necessary in higher organisms? 2+1

SECTION - D (3 x 5 = 15)

Q.no. 34 to 36 are Long answer questions carrying 05 marks each..

- 34(a) Write the balanced equation for the following chemical reactions.

(i) Hydrogen + Chlorine \rightarrow Hydrogen chloride

(ii) Barium chloride + Aluminium Sulphate \rightarrow Barium Sulphate + Aluminium Chloride

(iii) Sodium + Water \rightarrow Sodium hydroxide + Hydrogen

(b) $\text{Zn(s)} + \text{CuSO}_4(\text{aq}) \rightarrow \text{ZnSO}_4(\text{aq}) + \text{Cu(s)}$

Find the substance Oxidised and substance reduced in the reaction

3+2

35. i) Enumerate the three parts into which the hindbrain is divided and explain the important role of each of these parts in the control and coordination of our body.
ii) Which two parts of the brain are responsible for controlling the amount of hormone produced?
iii) What are the possible consequences of the lack or overproduction of Growth Hormone? (3+1+1)

OR

35. Explain with the aid of an explained diagram on how a plant grows towards light and the phenomena seen in this process (both at physical and also at hormonal level) (5)

36. a) The refractive index of a medium X wrt medium Y is $\frac{2}{3}$ & the refractive index of a medium Y wrt medium Z is $\frac{4}{3}$. Find the refractive index of medium Z wrt medium X.

b) Find the distance at which an object should be placed in front of a convex lens of focal length 10 cm to obtain an image of double its size.

OR

36. (a) List two causes of hypermetropia.

(b) Draw ray diagrams showing (i) a hypermetropic eye and (ii) its correction using a suitable optical device.

SECTION - E (4 x 3 = 12)

Q.no. 37 to 39 are case - based/data -based questions with 2 to 3 short sub - parts.
 37. One day Komal saw that her mother was roasting peanuts, she was surprised to observe that in spite of the very high temperature the salt does not melt and the peanuts get roasted. There are so many important compounds known, which have some characteristic properties like Bleaching powder used as a disinfectant, POP used for joining fractured bones, Baking powder used for making dhoklas and baking cake, Sodium chloride as a table salt etc . These properties make these compounds very useful in our daily routine.

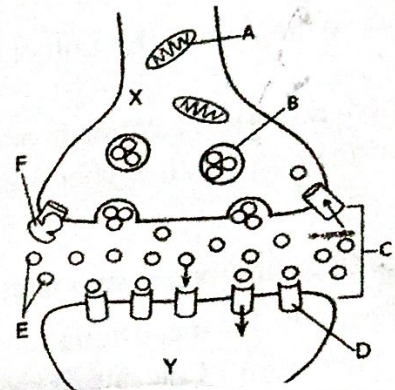
- (i) Bleaching powders chemical name is _____
- (ii) The ratio of the water molecule in plaster of paris and gypsum is _____
- (iii) Write a balanced reaction for the Chlor-alkali process.

OR

- (iii) List all the important products and their uses from the chlor alkali process? (1+1+2)

38. The diagram given below is the view of the neuromuscular junction. Study the same and the following question:

- a) What is the Gap C known as? What is the substance E released into this gap?
- b) What are the two different types of neurons? Differentiate between them?
- c) Name the receptor that detects taste and smell?
- d) X and Y are the two end structures to this complex -How does the impulse travel across this structure? (1+1+1+1)



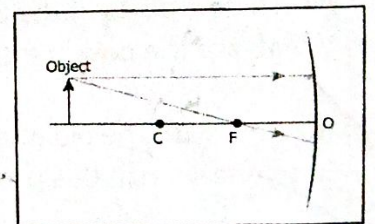
39. A concave mirror always forms a real and inverted image for different positions of the object. But if the object is placed between the focus and pole, the image formed is virtual and erect. A convex mirror always forms a virtual, erect and diminished image. A concave mirror is used as a doctor's head mirror. The convex mirror is used as a rear view mirror in automobiles because it can form a small and erect image of an object.

- i) The image shows the path of incident rays to a concave mirror. Where would the reflected rays meet for the image formation to take place?

- (a) Behind the mirror
- (b) Between F and O
- (c) Between C and F
- (d) Beyond C

- ii) Draw the reflected rays & show the image formation in the above image shown . Give any two uses of this mirror.

- iii) To get an image larger than the object, one can use
- (a) convex mirror but not a concave mirror
- (b) a concave mirror but not a convex mirror
- (c) either a convex mirror or a concave mirror
- (d) a plane mirror.



OR

- iii) Name the mirror that
- (a) can give real as well as virtual image of an object
- (b) will always give virtual image of same size of an object

(1+2+1)