

PART – III

MODEL QUARTERLY EXAM 2022-2023

SCIENCE

Time Allowed: 3:00 Hours]

[Maximum Marks : 75

- Instructions :** (1) Check the question paper for fairness of printing. If there is any lack of fairness, inform the Hall Supervisor immediately.
 (2) Use **Blue** or **Black** ink to write and underline and pencil to draw diagrams.

PART – I

Note : (i) Answer **all** the questions. **12x1=12**

(ii) Choose the most appropriate answer from the given four alternatives and write the option code and the corresponding answer.

- The unit of 'g' is m s^{-2} . It can be also expressed as
 a) cm s^{-1} b) N kg^{-1} c) $\text{N m}^2 \text{kg}^{-1}$ d) $\text{cm}^2 \text{s}^{-2}$
- A convex lens forms a real, diminished point sized image at focus. Then the position of the position of the object is placed
 a) focus b) infinity c) at $2f$ d) between f and $2f$
- The value of Boltzmann constant
 a) 3.81 JK^{-1} b) $8.03 \text{ mol}^{-1} \text{ K}^{-1}$ c) 1.38 JK^{-1} d) $8.31 \text{ mol}^{-1} \text{ K}^{-1}$
- SI unit of resistance is
 a) mho b) joule c) ohm d) ohm meter
- Which of the following is a triatomic molecule?
 a) Glucose b) Helium c) Carbon dioxide d) Hydrogen
- When pressure is decreased at constant temperature the solubility of gases in liquid _____.
 a) No change b) increases c) decreases d) no reaction
- Kreb's cycle takes place in
 a) chloroplast b) mitochondrial matrix
 c) stomata d) inner mitochondrial membrane
- Mammals are _____ animals.
 a) Cold blooded b) Warm blooded c) Poikilothermic d) All the above
- Nerve cells do not possess
 a) neurilemma b) sarcolemma c) axon d) dendrites
- Which one is referred as "Master Gland"?
 a) Pineal gland b) Pituitary gland c) Thyroid gland d) Adrenal gland
- Estrogen is secreted by
 a) Anterior pituitary b) Primary follicle
 c) Graffian follicle d) Corpus luteum
- The _____ units form the backbone of the DNA.
 a) 5 carbon sugar b) Phosphate c) Nitrogenous bases d) Sugar phosphate

PART - II**Note :** Answer any **seven** questions. **Question No. 22** is compulsorily.**7X2=14**

13. How does an astronaut float in a space shuttle?
14. State Boyle's law
15. Define : Atomicity
16. State Modern Periodic law.
17. Name the three basic tissues system in flowering plants.
18. a) Give the common name of the *Hirudinaria granulosa*.
b) How does leech suck blood from the host?
19. Name the parts of the hind brain.
20. What is bolting? How can it be induced artificially?
21. What do you understand by the term phenotype and genotype?
22. Draw a ray diagram to show the image formed by a convex lens when the object is placed between F and 2F.

PART - III**Note :** Answer any **seven** questions. **Question No. 32** is compulsorily.**7X4=28**

23. Differentiate mass and weight.(Any Four)
24. a) State Snell's law.
b) Why are traffic signals red in colour?
25. A torch bulb is rated at 3 V and 600 mA. Calculate it's
a) Power b) Resistance c) Energy consumed if it is used for 4 hour.
26. a) Calculate number of moles in 46g of Na
b) What is mass number?
27. In what way hygroscopic substances differ from deliquescent substances.
28. Describe and name three stages of cellular respiration that aerobic organisms use to obtain energy from glucose.
29. How is the circulatory system designed in leech to compensate the heart structure ?
30. Explain with an example the inheritance of dihybrid cross. How is it different from monohybrid cross?
31. Where are estrogens produced? What is the role of estrogens in the human body?
32. 'A' is a cylindrical structure that begins from the lower end of medulla and extend downwards. It is enclosed in bony cage 'B' and covered by membranes 'C'. As many as 'D' pairs of nerves arise from the structure 'A'.
 - (i) What is A?
 - (ii) Name (a) bony cage 'B' and (b) membranes 'C'
 - (iii) How much is D?

PART - IV**Note :** Answer **all** the questions. Draw diagrams wherever necessary**7X3=21**

33. a) (i) State Newton's laws of motion. (5)
(ii) While catching a cricket ball the fielder lowers his hands backwards. Why? (2)
(OR)
- b) (i) State Joule's law of heating. (2)
(ii) An alloy of nickel and chromium is used as the heating element. Why? (3)
(iii) How does a fuse wire protect electrical appliances? (2)
34. a) (i) Give the salient features of "Modern atomic theory". (5+2)
(ii) Calculate the number of water molecule present in one drop of water which weighs 0.18 g.
(OR)
- b) (i) 3.5 litres of ethanol is present in 15 litres of aqueous solution of ethanol. Calculate volume percent of ethanol solution. (3)
(ii) State Henry's law in effect of pressure in solubility. (2)
(iii) The aquatic animals live in more in cold region. Why? (2)
35. a) (i) Enumerate the functions of blood. (Any 5) (5)
(ii) Why is the colour of the blood red? (2)
(OR)
- b) (i) What are the phases of menstrual cycle? Indicate the changes in the ovary and uterus.
(ii) Draw and label the structure of human sperm. (5+2)