



Sample Paper

1 Year (Medical)

Duration: 2 Hrs

Maximum Marks: 260

For Students Presently in Class 11 (Stream: Medical)

PAPER SCHEME:

- The paper contains **65** Objective Type Questions divided into three sections: **Section - I (Physics), Section - II (Chemistry) and Section - III (Biology).**
- **Section - I** contain **15 Multiple Choice Questions.** Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE CHOICE** is correct.
- **Section - II** contains **15 Multiple Choice Questions.** Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE CHOICE** is correct.
- **Section - III** contains **35 Multiple Choice Questions.** Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE CHOICE** is correct.

MARKING SCHEME:

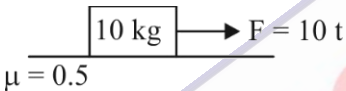
- For each question in Section-I, II and III, **4 marks** will be awarded for correct answer and **-1 negative marking** for incorrect answer.

SECTION – I [PHYSICS]

- Suppose the kinetic energy of a body oscillating with amplitude A and at a distance x is given by $K = \frac{Bx}{x^2 + A^2}$. The dimensions of B are the same as that of:

(A) work/time (B) work $\times$ distance (C) work/distance (D) work $\times$ time
- An experiment measures quantities a, b, c and then x is calculated as $x = ab^2/c^3$. If the percentage errors in a, b, c are $\pm 1\%, \pm 3\%$ and $\pm 2\%$ respectively, the percentage error in x can be:

(A) $\pm 13\%$ (B) $\pm 7\%$ (C) $\pm 4\%$ (D) $\pm 1\%$
- A block is initially at rest. The friction force acting on the block at time $t = 4$ sec will be:



(A) 50 N (B) 30 N (C) 25 N (D) 40 N
- A spring of spring constant k is broken in the length of ratio 1 : 3. The spring constant of larger part will be:

(A) $\frac{4k}{3}$ (B) $\frac{2k}{3}$ (C) $\frac{k}{3}$ (D) $\frac{5k}{3}$
- The adjacent sides of a parallelogram is represented by vectors $2\hat{i} + 3\hat{j}$ and $\hat{i} + 4\hat{j}$. The area of the parallelogram is:

(A) 5 units (B) 3 units (C) 8 units (D) 11 units
- A body is released from the top of a tower of height H metre. After 2 seconds it is stopped and then instantaneously released. What will be its height after next 2 seconds?

(A) $(H - 5)$ metre (B) $(H - 10)$ metre (C) $(H - 20)$ metre (D) $(H - 40)$ metre
- A metal ball falls from a height of 32 metre on a steel plate. If the coefficient of restitution is 0.5, to what height will the ball rise after second bounce?

(A) 2m (B) 4m (C) 8m (D) 16m
- A ball of mass m_1 makes a head on elastic collision with a ball of mass m_2 which is initially at rest. The transfer of kinetic energy to the second ball is maximum when:

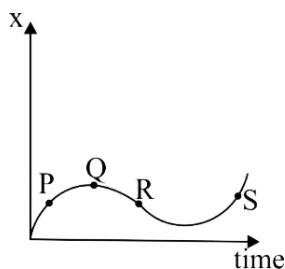
(A) $m_1 \gg m_2$ (B) $m_1 = m_2$ (C) $m_1 \ll m_2$ (D) $m_1 \leq m_2$
- The displacement-time graph for two bodies P and Q are straight lines inclined at angles of 30° and 60° with the time-axis. Then the ratio of their velocities is respectively equal to:

(A) $1 : \sqrt{3}$ (B) $1 : 2$ (C) $\sqrt{3} : 1$ (D) $1 : 3$
- The time (t) is expressed as a function of distance (x) as, $t = \alpha x^2 + \beta x$, where α and β are constants. Then the retardation is given by:

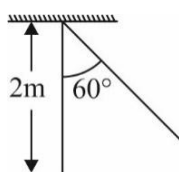
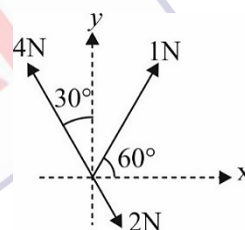
(A) $2\alpha\beta v^2$ (B) $2\alpha v^3$ (C) $2\beta v^3$ (D) None of these
- A stone is dropped into a well in which the level of water is H below the top of the well. If u is velocity of sound, the time t after which the splash is heard is given by:

(A) $t = \frac{2H}{u}$ (B) $t = \sqrt{\frac{2H}{g}} + \frac{H}{u}$ (C) $t = \sqrt{\frac{2H}{u}} + \frac{H}{g}$ (D) None of these

12. The displacement (x) versus time (t) graph of a moving particle is shown below. The instantaneous velocity of the particle is negative at the point.



- (A) P (B) Q (C) R (D) S
13. Three forces acting on a body are shown in figure. To have the resultant force only along the y -direction, the magnitude of the minimum additional force needed is:
- (A) $\frac{\sqrt{3}}{4}$ N (B) $\sqrt{3}$ N (C) 0.5 N (D) 1.5 N
14. An object of mass 3 kg is at rest. Now a force of $\vec{F} = 6t^2\hat{i} + 4t\hat{j}$ is applied on the object then velocity of object at $t = 3$ sec. is:
- (A) $18\hat{i} + 3\hat{j}$ (B) $18\hat{i} + 6\hat{j}$ (C) $3\hat{i} + 18\hat{j}$ (D) $18\hat{i} + 4\hat{j}$
15. A rod of length '2m' and mass 0.5 kg is pivoted at one end as shown in figure. The increase in potential energy when $\theta = 60^\circ$ is: ($g = 10 \text{ m/s}^2$)

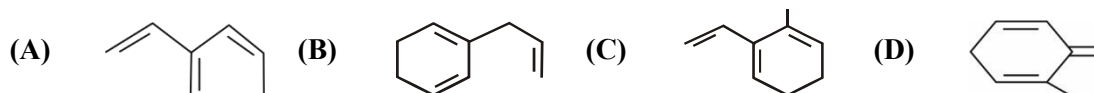


- (A) 1.25 J (B) 2.5 J (C) 5 J (D) 10 J

SECTION – II [CHEMISTRY]

16. Ce (58) is a member of:
- (A) s -block (B) p -block (C) d -block (D) f -block
17. Which of these exists in liquid at room temperature?
- (A) Br_2 (B) O_2 (C) Cl_2 (D) O_3
18. Which of these is linear?
- (A) ICl_3 (B) I_3^- (C) ICl_5 (D) SF_6
19. Which of the following shows geometrical isomerism?
- (A) 1-Butene (B) 2-Butene (C) Propene (D) 1-Pentene
20. Electron affinity is numerically the greatest for:
- (A) O (B) Cl (C) F (D) Na

21. 2-ethenyl-3-methyl-cyclohexa-1,3-diene will be:



22. The correct IUPAC name of



- (A) 1-(2-cyclohexanone-enyl)-2-butanone (B) 1-(2-oxobutyl)-cyclohexanone
(C) 1-(2-cyclohex-2-one-1-enyl)butanone (D) 2-(3-oxobutyl)-cyclohexanone

23. One fermi is:

- (A) 10^{-13} cm (B) 10^{-15} cm (C) 10^{-10} cm (D) 10^{-12} cm

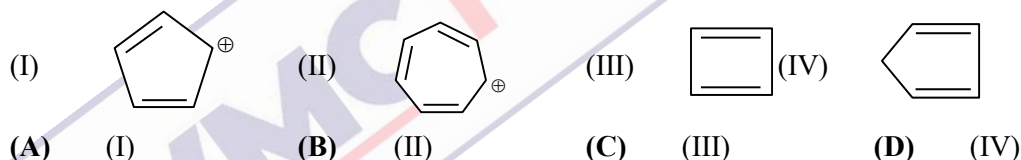
24. A picometre is written as:

- (A) 10^{-9} m (B) 10^{-10} m (C) 10^{-11} m (D) 10^{-12} m

25. One atmosphere is equal to:

- (A) 101.325 Kpa (B) 1013.25 Kpa (C) 10^5 Nm (D) None of these

26. According to the Huckel's rule, which of the following species will be aromatic?



27. Which of the following substances has the highest melting point?

- (A) NaCl (B) KCl (C) MgO (D) BaO

28. Which of these is a correct feature of cathode rays?

- (A) These do not travel in straight lines
(B) These can transfer momentum to another body
(C) These are electromagnetic rays and propagate with the velocity of light
(D) All of these are correct statements

29. Which of the following does not contain any coordinate bond?

- (A) H_3O^+ (B) BF_4^- (C) HF_2^- (D) NH_4^+

30. In which of the following diatomic molecules/ions is the bond order of each molecule/ion = 2.5?

- (A) N_2^+ , NO, O_2^+ (B) O_2^+ , NO, CN^- (C) N_2^+ , CN^- , O_2^+ (D) CN^- , N_2^+ , N_2

SECTION – III [BIOLOGY]

31. Which statement correctly represents kingdom Protista?

- (A) Its boundaries are not well defined
(B) It includes both unicellular eukaryotes and prokaryotes
(C) All members of this kingdom are of animal in nature
(D) This kingdom does not include saprophytes

32. Which of the following represent first vascular cryptogamae?
(A) Pteridophytes (B) Angiosperms (C) Gymnosperms (D) Bryophyte
33. Tap root system in dicots develops from of embryo:
(A) plumule (B) radicle (C) epicotyl (D) hypocotyl
34. Which of the following group of organisms can be present in deep sea water?
(A) Eubacteria (B) Blue-green algae
(C) Saprophytic fungi (D) Red Algae
35. Read the following statements and identify the correct option regarding fungi.
(A) They are autotrophic (B) They lack a rigid cell wall
(C) They are heterotrophs (D) They lack a nuclear membrane
36. Aerial hanging roots present in a Banyan tree is:
(A) fibrous (B) respiratory (C) epiphytic (D) prop roots
37. In which plant, root has symbiotic relationship with cyanobacteria:
(A) *Cycas* (B) *Equisetum* (C) *Psilotum* (D) *Pinus*
38. Which of the following organism produce non-motile isogamous gametes?
(A) *Spirogyra* (B) *Volvox*
(C) *Fucus* (D) *Chlamydomonas*
39. Find the incorrect option regarding cell and their cell wall degrading enzyme:
(A) Plant cells-Cellulase (B) Algae-Methylase
(C) Fungi-Chitinase (D) Bacteria-Lysozyme
40. Specialized cells for nitrogen fixation, present in cyanobacteria is known as:
(A) Akinetes (B) Heterocysts (C) Hormogonia (D) Nodules
41. Which of the following organism show true Coelom?
(A) Platyhelminthes (B) Aschelminthes
(C) Annelids (D) Coelenterates
42. Which of the following exhibit bilateral symmetry?
(A) Jelly fish, Comb jelly (B) Earthworm, Round worm
(C) Tape worm, Star fish (D) Sponge, Sea anemone
43. Which of the following organisms have flame cells as excretory cells?
(A) Platyhelminthes (B) Annelids
(C) Mollusca (D) Arthropoda
44. Which of the following animal is a vertebrate but lacks jaws?
(A) *Petromyzon* (B) Dog fish
(C) Seals (D) Snakes

45. Which of the following is a correct difference between cartilaginous and bony fishes?
- (A) Bony fish have placoid scales, but cartilaginous fish do not
(B) Bony fishes are marine but cartilaginous fish are not
(C) Bony fishes have separate sexes but cartilaginous fish do not
(D) Bony fishes gills are covered by operculum but gills of cartilaginous fish are exposed.
46. Which of the following structure has ciliated epithelia?
- (A) Fallopian tube only (B) Bronchioles and fallopian tube
(C) Fallopian tube and Bowman's capsule (D) Bowman's capsule only
47. Which of the following tissue stores fat?
- (A) Adipose tissue (B) Epithelial tissue
(C) Dense regular connective tissue (D) Muscular tissue
48. Which of the following junctions prevent leakage from one cell to another?
- (A) Gap Junction (B) Plasmodesmata
(C) Tight Junction (D) Adhering Junction
49. Which of the following muscles are involuntary with cylindrical shape?
- (A) Muscles of Jaws (B) Muscles of Heart
(C) Muscles of Intestine (D) Muscles of Shoulder
50. Which of the following structure joins bone to muscle?
- (A) Ligament (B) Tendon
(C) Loose connective tissue (D) Both (B) and (C)
51. Which of the following phylum show alternation of generation?
- (A) Mollusca (B) Echinodermata
(C) Coelenterate (D) Platyhelminthes
52. Which of the following is also known as saw fish?
- (A) *Octopus* (B) *Lepisma*
(C) *Trygon* (D) *Pristis*
53. Which cell organelle is responsible for packaging of secretory proteins?
- (A) Ribosome (B) Nucleus
(C) Golgi body (D) Mitochondria
54. An enzyme is:
- (A) Biological catalyst (B) Mostly protein in nature
(C) Mostly heat labile (D) All of these
55. Glucose is not:
- (A) a monosaccharide (B) monomer of Glycogen
(C) sweet sugar (D) a pentose
56. According to Singer and Nicholson the structure of plasma membrane is:
- (A) Fluid (B) Solid
(C) Quasi fluid (D) Liquid of very low viscosity
57. Which of the following is a double walled structure in an animal cell?
- (A) Mitochondria (B) Chloroplast
(C) Ribosome (D) Both (A) and (B)

58. Which of the following is not a part of endomembrane system?
(A) Lysosome (B) Vacuole
(C) Mitochondria (D) Endoplasmic reticulum
59. Which of the following plastid is a store house of starch?
(A) Amyloplast (B) Chromoplast (C) Aleuroplast (D) Elaioplast
60. How many peripheral doublets are seen in a structure of transverse section of cilia?
(A) 9 (B) 13 (C) 11 (D) 18
61. The chromosomes with one short arm and another slightly longer arm are:
(A) Metacentric (B) Sub-Metacentric
(C) Acentric (D) Both (A) and (B)
62. Identify the correct combination:
(A) Maltose : Glucose + Galactose (B) Lactose : Glucose + Glucose
(C) Amylose : Galactose + Galactose (D) Sucrose : Glucose + Fructose
63. Identify the amino-acid
$$\begin{array}{c} \text{H} \\ | \\ \text{H}_2\text{N} - \text{C} - \text{COOH} \\ | \\ \text{CH}_3 \end{array}$$

(A) Glycine (B) Serine (C) Alanine (D) Aspartic acid
64. Which of the following is correct combination of secondary metabolite?
(A) Codeine, Abrin (B) Glutamic acid, Cellulose
(C) Concavalin A, Glucose (D) Ricin, Aspartic acid
65. Which of the following is most abundant chemical in living organisms?
(A) Proteins (B) Water (C) Nucleic acids (D) Carbohydrates



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