

VMC MEDICAL

Sample Paper

1 Year (Medical)

Duration: 2.5 Hrs

Maximum Marks: 320

For Students Presently in Class 11th (Stream: Medical)

PAPER SCHEME :

- The paper contains **80** Objective Type Questions divided into three sections: **Section - I (Physics), Section - II (Chemistry) and Section - III (Biology)**.
- **Section I and II** contain **20** Multiple Choice Questions each and **Section III** contains **40** 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.

SUGGESTIONS:

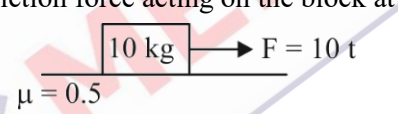
- Before starting the paper, spend 2-3 minutes to check whether all the pages are in order and report any issue to the invigilator immediately.
- Try to attempt the Sections in their respective order.
- Do not get stuck on a particular question for more than 1-1.5 minutes. Move on to a new question as there are 80 questions to solve.

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) $m_1 \leq m_2$
- If θ be the angle between two vectors \vec{P} and \vec{Q} , then $\vec{P} \cdot (\vec{Q} \times \vec{P})$ is equal to:

(A) zero (B) $P^2 Q \cos \theta$ (C) $PQ^2 \sin \theta$ (D) PQ^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) $1:3$

11. A car accelerates from rest at a constant rate 'A' for some time, after which it decelerates at a constant rate 'B' and comes to rest. If the total time elapsed is T, then the maximum velocity acquired by the car is:

(A) $\left(\frac{A^2 + B^2}{AB}\right)$ (B) $\left(\frac{A^2 - B^2}{AB}\right)T$ (C) $\left(\frac{A+B}{AB}\right)T$ (D) $\frac{ABT}{A+B}$

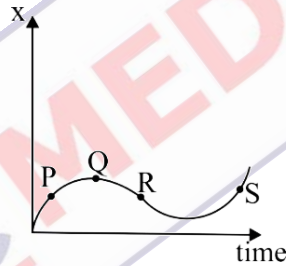
12. The time (t) is expressed as a function of distance (x) as, $t = \alpha x^2 + \beta x$, where α and β are constants. Then the retardation is given by:

(A) $2\alpha\beta v^2$ (B) $2\alpha v^3$ (C) $2\beta v^3$ (D) None of these

13. 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

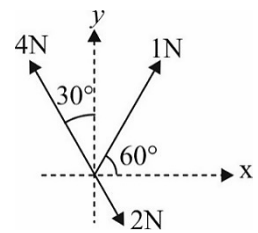
14. The displacement (x) versus time (t) graph of a moving particle is shown below. The instantaneous velocity of the particle is negative at the point.



- (A) P (B) Q (C) R (D) S

15. 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



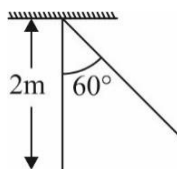
16. A particle of mass $4m$ at rest explodes into three fragments. Two of the fragments each of mass m each move with speed v at right angles to each other. The kinetic energy released in the process is:

(A) $2mv^2$ (B) $\frac{3}{2}mv^2$ (C) $\frac{1}{2}mv^2$ (D) $3mv^2$

17. 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) $18\hat{i} + 4\hat{j}$

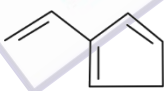
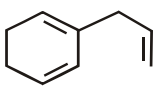
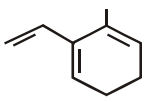
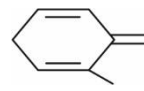
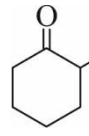
18. A rod of length '2m' and mass 0.5 kg is pivoted at one end as shown in figure. The increase in potential energy when $\theta = 60^\circ$ is: ($g = 10 \text{ m/s}^2$)

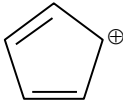
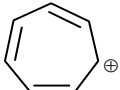




- (A) 1.25 J (B) 2.5 J (C) 5 J (D) 10 J

19. $x^2 + y^2 = 5$ is an equation of:
 (A) A straight line (B) A circle (C) A parabola (D) An ellipse
20. Slope of the line represented by $y = 3x + 4$ is:
 (A) 3 (B) -3 (C) 4 (D) -4

SECTION – II [CHEMISTRY]

21. Ce (58) is a member of:
 (A) *s*-block (B) *p*-block (C) *d*-block (D) *f*-block
22. Which of these exists in liquid at room temperature?
 (A) Br₂ (B) O₂ (C) Cl₂ (D) O₃
23. Which of these is linear?
 (A) ICl₃ (B) I₃⁻ (C) ICl₅ (D) SF₆
24. Which of the following shows geometrical isomerism?
 (A) 1-Butene (B) 2-Butene (C) Propene (D) 1-Pentene
25. Electron affinity is numerically the greatest for:
 (A) O (B) Cl (C) F (D) Na
26. Out of the following which is correct?
 (A) Molecular orbitals are more stable than atomic orbitals
 (B) Molecular orbitals have different shape than atomic orbitals
 (C) Electron cloud extends all around the nuclei of bonded atoms in the molecules
 (D) All are correct
27. 2-ethenyl-3-methyl-cyclohexa-1,3-diene will be:
 (A)  (B)  (C)  (D) 
28. The correct IUPAC name of  CH₂CH₂COCH₃, will be:
 (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
29. One fermi is:
 (A) 10⁻¹³ cm (B) 10⁻¹⁵ cm (C) 10⁻¹⁰ cm (D) 10⁻¹² cm
30. A picometre is written as:
 (A) 10⁻⁹ m (B) 10⁻¹⁰ m (C) 10⁻¹¹ m (D) 10⁻¹² m
31. One atmosphere is equal to:
 (A) 101.325 K pa (B) 1013.25 K pa (C) 10⁵ Nm (D) None of these

32. The violet colour obtained with sodium nitroprusside in the test of sulphur in organic compounds is due to the formation of:
- (A) $\text{Na}_3[\text{Fe}(\text{CN})_6]$ (B) $\text{Na}_4[\text{Fe}(\text{CN})_5\text{NOS}]$
 (C) $\text{Na}_2[\text{Fe}(\text{CN})_5\text{S}]$ (D) $\text{Na}_4[\text{Fe}(\text{CN})_6]$
33. Which one of the following compounds is the most acidic?
- (A) $\text{HO}-\text{CH}_2-\text{COOH}$ (B) $\text{O}_2\text{N}-\text{CH}_2-\text{COOH}$
 (C) $\text{Cl}-\text{CH}_2-\text{COOH}$ (D) $\text{NC}-\text{CH}_2-\text{COOH}$
34. According to the Huckel's rule, which of the following species will be aromatic?
- (I)  (II)  (III)  (IV) 
- (A) (I) (B) (II) (C) (III) (D) (IV)
35. The potential energy of the e^- present in the ground state in Li^{+2} is represented by the expression:
- (A) $\frac{+3e^2}{4\pi\epsilon_0 r}$ (B) $\frac{-3e}{4\pi\epsilon_0 r}$ (C) $\frac{-3e^2}{4\pi\epsilon_0 r^2}$ (D) $\frac{-3e^2}{4\pi\epsilon_0 r}$
36. Identify the species not capable of acting as an electrophile:
- (A) BCl_3 (B) AlCl_3 (C) NH_4^+ (D) CO_2
37. Which of the following substances has the highest melting point?
- (A) NaCl (B) KCl (C) MgO (D) BaO
38. 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
39. Which of the following does not contain any coordinate bond?
- (A) H_3O^+ (B) BF_4^- (C) HF_2^- (D) NH_4^+
40. 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]

41. Houseflies are included in family.
- (A) Musca (B) Muscidae (C) Diptera (D) Insecta
42. 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

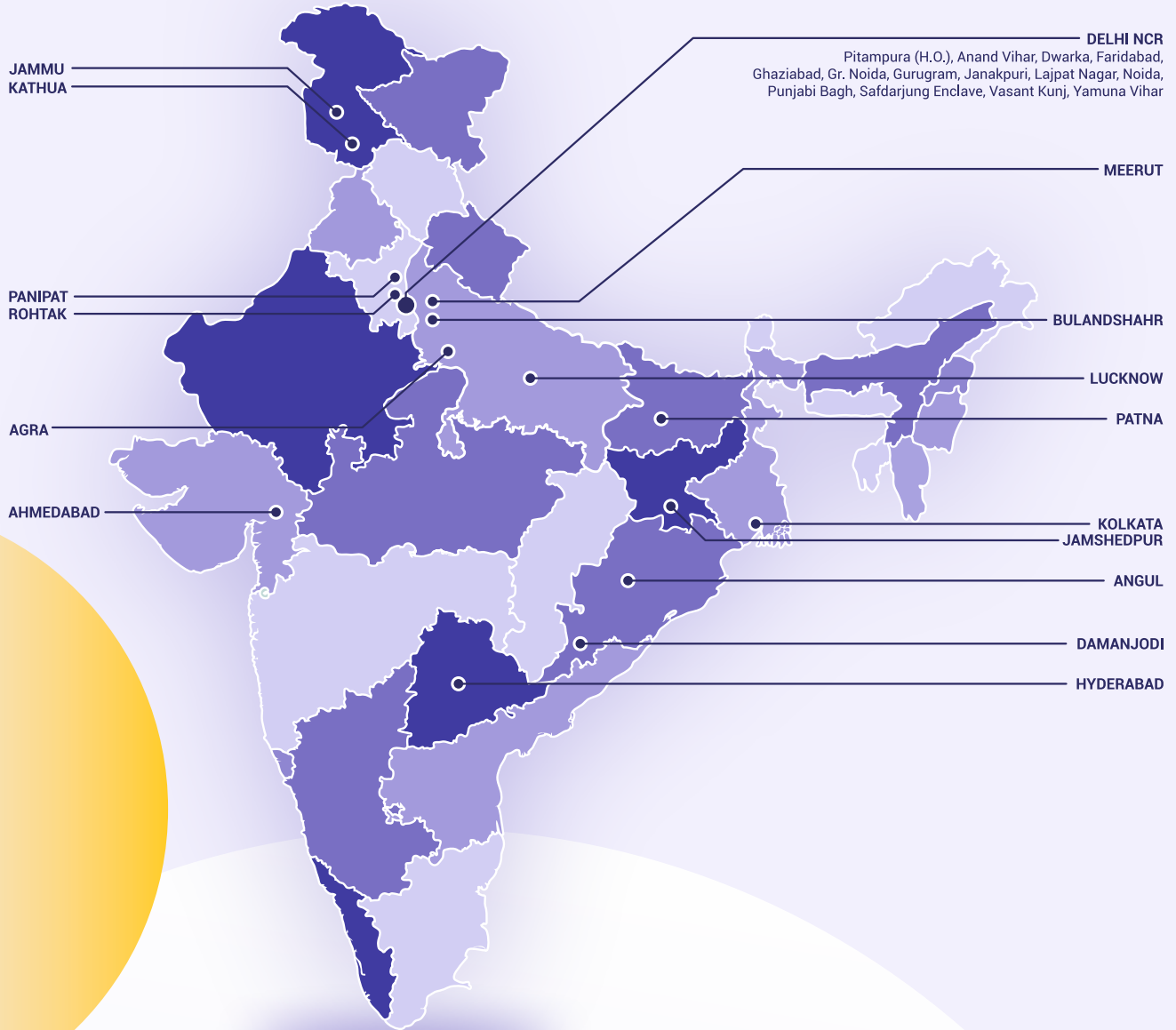
43. Which of the following represent first vascular cryptogamae?
(A) Pteridophytes (B) Angiosperms (C) Gymnosperms (D) Bryophyte
44. Tap root system in dicots develops from of embryo:
(A) plumule (B) radicle (C) epicotyl (D) hypocotyl
45. Which of the following group of organisms can be present in deep sea water?
(A) Eubacteria (B) Blue-green algae
(C) Saprophytic fungi (D) Red Algal
46. 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
47. Growth from any part of plant other than radicle.
(A) taproots (B) adventitious roots
(C) both (A) and (B) (D) epiphytic roots
48. Aerial hanging roots present in a Banyan tree is:
(A) fibrous (B) respiratory (C) epiphytic (D) prop roots
49. In which plant, root has symbiotic relationship with cyanobacteria:
(A) *Cycas* (B) *Equisetum* (C) *Psilotum* (D) *Pinus*
50. Which of the following organism produce non-motile isogamous gametes?
(A) *Spirogyra* (B) *Volvox*
(C) *Fucus* (D) *Chlamydomonas*
51. 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
52. Which of the following plant has less differentiated body?
(A) Funaria (B) Sphagnum (C) Salvinia (D) Marchantia
53. Plants growing in swamp areas have some roots which shows positive geotropism. These roots are known as:
(A) pneumatophores (B) mycorrhizal
(C) pneumathodes (D) assimilatory
54. Specialized cells for nitrogen fixation, present in cyanobacteria is known as:
(A) Akinetes (B) Heterocysts (C) Hormogonia (D) Nodules
55. Which of the following organism show true Coelom?
(A) Platyhelminthes (B) Aschelminthes
(C) Annelids (D) Coelenterates

56. 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
57. Which of the following organisms have flame cells as excretory cells?
(A) Platyhelminthes (B) Annelids
(C) Mollusca (D) Arthropoda
58. Which of the following animal is a vertebrate but lacks jaws?
(A) *Petromyzon* (B) Dog fish
(C) Seals (D) Snakes
59. 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.
60. 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
61. Which of the following tissue stores fat?
(A) Adipose tissue (B) Epithelial tissue
(C) Dense regular connective tissue (D) Muscular tissue
62. Which of the following junctions prevent leakage from one cell to another?
(A) Gap Junction (B) Plasmodesmata (C) Tight Junction (D) Adhering Junction
63. 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
64. Which of the following is not function of a neuron?
(A) Inhibiting another neuron
(B) Stimulating another neuron
(C) Forming myelin sheath on another neuron
(D) Both (A) and (C)
65. Which of the following structure joins bone to muscle?
(A) Ligament (B) Tendon
(C) Loose connective tissue (D) Both (B) and (C)
66. Which of the following phylum show alternation of generation?
(A) Mollusca (B) Echinodermata (C) Coelenterate (D) Platyhelminthes
67. Which of the following is also known as saw fish?
(A) *Octopus* (B) *Lepisma* (C) *Trygon* (D) *Pristis*
68. Which cell organelle is responsible for packaging of secretory proteins?
(A) Ribosome (B) Nucleus (C) Golgi body (D) Mitochondria

69. An enzyme is:
 (A) Biological catalyst (B) Mostly protein in nature
 (C) Mostly heat labile (D) All of these
70. Glucose is not:
 (A) a monosaccharide (B) monomer of Glycogen
 (C) sweet sugar (D) a pentose
71. According to Singer and Nicholson the structure of plasma membrane is:
 (A) Fluid (B) Solid
 (C) Quasi fluid (D) Liquid of very low viscosity
72. Which of the following is a double walled structure in an animal cell?
 (A) Mitochondria (B) Chloroplast
 (C) Ribosome (D) Both (A) and (B)
73. Which of the following is not a part of endomembrane system?
 (A) Lysosome (B) Vacuole
 (C) Mitochondria (D) Endoplasmic reticulum
74. Which of the following plastid is a store house of starch?
 (A) Amyloplast (B) Chromoplast (C) Aleuroplast (D) Elaioplast
75. How many peripheral doublets are seen in a structure of transverse section of cilia?
 (A) 9 (B) 13 (C) 11 (D) 18
76. The chromosomes with one short arm and another slightly longer arm are:
 (A) Metacentric (B) Sub-Metacentric
 (C) Acentric (D) Both (A) and (B)
77. Identify the correct combination:
 (A) Maltose : Glucose + Galactose (B) Lactose : Glucose + Glucose
 (C) Amylose : Galactose + Galactose (D) Sucrose : Glucose + Fructose
78. 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
79. 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
80. Which of the following is most abundant chemical in living organisms?
 (A) Proteins (B) Water (C) Nucleic acids (D) Carbohydrates

VMC CENTRES ACROSS INDIA



Head Office: Aggarwal Corporate Heights,
1st Floor, Netaji Subhash Place, Opp. Wazirpur Depot,
Pitampura, Delhi.

Ph.: (011) 45221191 / 92, 8002007500

VMC Vidyamandir
Classes SINCE 1986

IIT JEE | NEET | FOUNDATION

www.vidyamandir.com

[youtube.com/@VMCJEE](https://www.youtube.com/@VMCJEE)

[instagram.com/vmc_learning](https://www.instagram.com/vmc_learning)

[facebook.com/VmcLearning](https://www.facebook.com/VmcLearning)

www.vidyamandir.com/studyhub

neet.vidyamandir.com

[youtube.com/@VMCMEDICAL](https://www.youtube.com/@VMCMEDICAL)

[instagram.com/vmcmedical_plus](https://www.instagram.com/vmcmedical_plus)

[facebook.com/VMCMedicalPlus](https://www.facebook.com/VMCMedicalPlus)

www.vidyamandir.com/studyhub