

AMITY INSTITUTE FOR COMPETITIVE EXAMINATIONS

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RMT - 4 (NEET PATTERN PRACTICE TEST) CLASS XI

Time :3hrs

Date :16/07/2025

M.M. :720

Topic Covered:

Physics : Kinematics and Newton's Laws of Motion

Chemistry : Structure of Atom

Botany : Biological Classification (Complete)

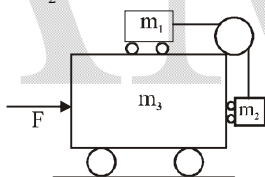
Zoology : Cell – Cycle (Complete)

INSTRUCTIONS :

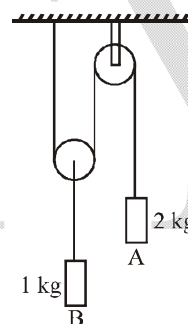
- (1) The paper contains 180 objective type questions (45 each in Physics, Chemistry, 90 Biology). Four alternatives are given for each question out of which only one is correct. Darken the correct alternative on the given answer-sheet, with a pencil or pen.
- (2) All the questions carry four marks each.
- (3) For each incorrect answer 1 mark will be deducted.
- (4) For unattempted questions the award is neither positive nor negative.
- (5) No student is permitted to leave examination hall before the time is complete.
- (6) Use of calculator is not permitted.
- (7) Use of unfair means shall invite cancellation of the test.
- (8) Answer once marked should not be changed.

PHYSICS

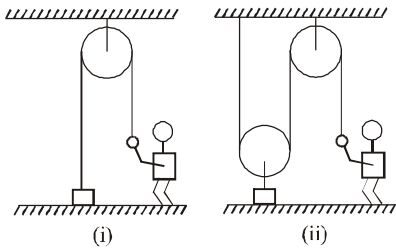
1. A frictionless cart carries two other frictionless carts as shown in fig. connected by a string over a pulley. The horizontal force F that must be applied so that m_1 and m_2 do not move relative to m_3 is



- (1) $(m_1 + m_2 + m_3) \frac{m_2 g}{m_1}$
 - (2) $(m_1 + m_2) \frac{m_2 g}{m_1}$
 - (3) $(m_2 + m_3) \frac{m_1 g}{m_2}$
 - (4) $(m_1 + m_2) \frac{m_1 g}{m_2}$
2. The respective accelerations of A and B in figure are

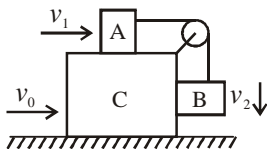


- (1) $\frac{2g}{3}$ downward and $\frac{g}{3}$ upwards
 - (2) $\frac{g}{3}$ downward and $\frac{g}{3}$ upwards
 - (3) $\frac{2g}{7}$ downward and $\frac{g}{7}$ upwards
 - (4) $\frac{g}{9}$ downward and $\frac{g}{11}$ upwards
3. In the figure shown, a person wants to raise a block lying on the ground to a height h . In which case he has to exert more force. Assume pulleys and strings are light



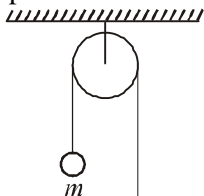
- (1) Figure (i) (2) Figure (ii)
(3) Same in both (4) Cannot be determined

4. To ground observer the block C is moving with v_0 and the blocks A and B are moving with v_1 and v_2 relative to C as shown in the figure. Identify the correct statement.



- (1) $v_1 = v_2$ (2) $v_1 = v$
(3) $v_1 + v_0 = v_2$ (4) None of these

5. In the arrangement shown in figure the mass M is very heavy compared to m ($M \gg m$). The tension T in the string suspended from the ceiling is

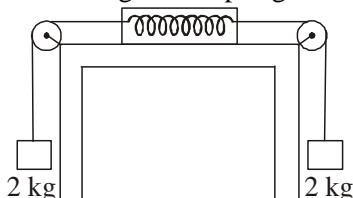


- (1) $4mg$ (2) $2mg$
(3) zero (4) none of these

6. The weights W and $2W$ are suspended from the ends of a light string passing over a smooth fixed pulley. If the pulley is pulled with an acceleration of g ($=10 \text{ m/s}^2$), the tension in the string will be

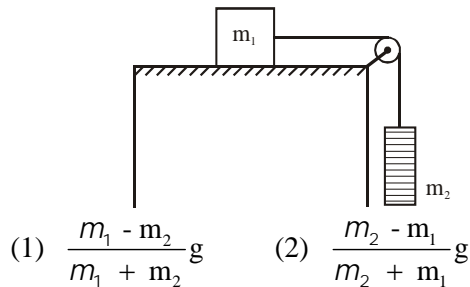
- (1) $\frac{W}{3}$ (2) $\frac{2W}{3}$
(3) $\frac{4W}{3}$ (4) $\frac{8W}{3}$

7. Two 2 kg weights are attached to a spring scale as shown. The reading in the spring balance would be



- (1) 0 kg (2) 2 kg
(3) 4 kg (4) 1 kg

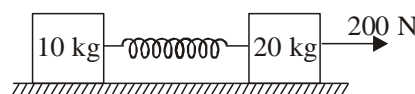
8. Figure shows a block of mass m_1 initially at rest on a smooth surface. It is connected to a mass m_2 by a string passing over a massless and frictionless pulley. The acceleration of the hanging mass m_2 is



- (1) $\frac{m_1 - m_2}{m_1 + m_2}g$ (2) $\frac{m_2 - m_1}{m_2 + m_1}g$

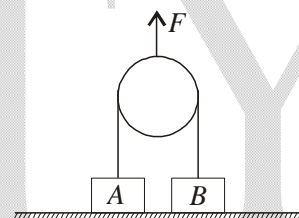
- (3) $\frac{m_1 g}{m_1 + m_2}$ (4) $\frac{m_2 g}{m_1 + m_2}$

9. Two masses of 10 kg and 20 kg , respectively, are connected by a spring of negligible mass, as shown. A force of 200 N acts on the 20 kg mass. At the instant shown, the 10 kg mass has acceleration of 8 ms^{-2} . At this instant acceleration of 20 kg mass is



- (1) 4 ms^{-2} (2) 6 ms^{-2}
(3) 8 ms^{-2} (4) 10 ms^{-2}

10. Two blocks A and B of masses 8 kg and 4 kg are connected by a light string, passing over a frictionless pulley of negligible mass. The system is initially at rest, as shown in the figure. When a force $F = 100 \text{ N}$ is applied on the pulley in the upward direction, accelerations of A and B, are respectively, ($g = 10 \text{ ms}^{-2}$)

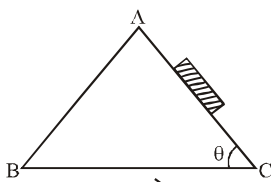


- (1) $0, 0$ (2) $0, 2.5 \text{ ms}^{-2}$
(3) $2.5 \text{ ms}^{-2}, 0$ (4) $2.5 \text{ ms}^{-2}, 2.5 \text{ ms}^{-2}$

11. A jet of water with area of cross section 3 square cm strikes wall at an angle $\theta = 60^\circ$ to the normal and rebounds elastically from the wall with the same speed. If the speed of water in the jet is 12 ms^{-1} then the force acting on the wall is

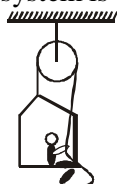
- (1) $4.31 \times 10^{-1} \text{ N}$ (2) 43.2 N
(3) 4.32×10^{-2} (4) $4.32 \times 10^{-3} \text{ N}$

12. A block is placed on the smooth face AC of a wedge, AC makes an angle θ with the horizontal. With what acceleration a must the wedge be moved so that the block has no motion relative to the wedge?



- (1) $g \sin \theta$ (2) $g \cos \theta$
(3) $g \tan \theta$ (4) $g \cot \theta$

13. A painter sits on Bosun's chair supported by a rope passing over a pulley as shown. The painter who weighs 1000 N exerts a force of 450 N on the chair downwards while pulling on the rope. If the chair weighs 250 N and $g = 10 \text{ ms}^{-2}$, then the upward acceleration of the system is

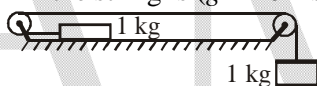


- (1) 0.45 ms^{-2} (2) zero
(3) 2 m/s^2 (4) $9/25 \text{ ms}^{-2}$

14. A monkey is descending from the branch of a tree with a constant acceleration. If the breaking strength of the branch is 75% of the weight of the monkey, the minimum acceleration with which the monkey can slide down without breaking the branch is

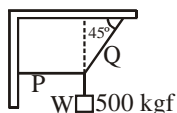
- (1) g (2) $\frac{3g}{4}$
(3) $g/2$ (4) $g/4$

15. Consider the system shown in figure. The pulley and the string and all the surfaces are frictionless. The tension in the string is ($g = 10 \text{ ms}^{-2}$)



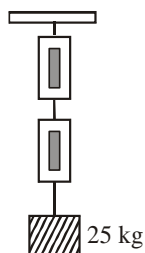
- (1) 0 N (2) 1 N
(3) 2 N (4) 5 N

16. A block W weighing 500 kgf is suspended by means of two strings P and Q as shown. The tension in the string P is



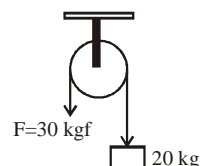
- (1) 350 kgf (2) 500 kgf
(3) 250 kgf (4) 600 kgf

17. A block of mass 25 kg is suspended through two light spring balances as shown in figure.



- (1) Both the scales will read 12.5 kg
(2) Both the scales will read 25 kg
(3) The upper scale will read 25 kg and lower zero
(4) The reading may be anything but their sum is 25 kg

18. Figure shows a weight of 20 kg suspended at one end of cord and a force of 30 kg applied at other end of the cord passing over a pulley. Neglecting weight of rope and pulley, tension in the cord will be

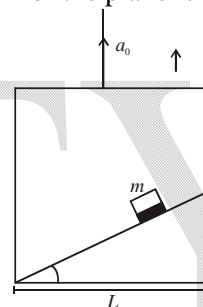


- (1) 30 kg (2) 20 kg
(3) 25 kg (4) 10 kg

19. The linear momentum P of a particle varies with time as follows: $P = a + bt^2$, where a and b are constants. The net force acting on the particle is

- (1) proportional to t (2) proportional to t^2
(3) constant (4) zero

20. A particle slides down a smooth inclined plane of elevation θ fixed in the elevator going up with an acceleration a_0 as shown. The base of the incline has length L . Then the time taken by the particle to reach the bottom of the plane is given by

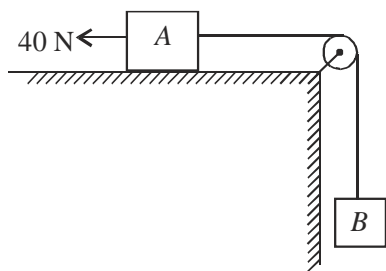


- (1) $\sqrt{\frac{2L}{(g + a_0) \sin \theta}}$ (2) $\sqrt{\frac{2L}{(g + a_0) \sin \theta \cos \theta}}$
(3) $\sqrt{\frac{2L}{g \sin \theta \cos \theta}}$ (4) $\sqrt{\frac{2L \sin \theta}{(g + a_0) \cos \theta}}$

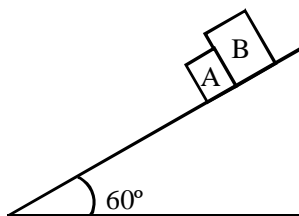
21. A stone is dropped from a certain height which can reach the ground in 5 seconds. It is stopped after three seconds of its fall and then is again released. The total time taken by the stone to reach the ground will be:

- (1) 6 s (2) 6.5 s
(3) 7 s (4) 7.5 s

22. Two blocks, each of mass 8 kg are connected to a light but strong string passing over a smooth pulley. Surface of table is also smooth. Acceleration of mass A is ($g = 10 \text{ ms}^{-2}$)



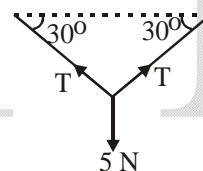
- (1) 0 (2) 3.5 ms^{-2}
 (3) 2.5 ms^{-2} (4) 5.0 ms^{-2}
23. A grass hopper can jump maximum distances 1.6 m. It spends negligible time on the ground. How far can it go in 10 seconds?
- (1) $5\sqrt{2} \text{ m}$ (2) $10\sqrt{2} \text{ m}$
 (3) $20\sqrt{2} \text{ m}$ (4) $40\sqrt{2} \text{ m}$
24. The blocks A and B are just touching each other and their masses are 2 kg and 4 kg, respectively. If inclined plane is smooth, then the contact force between A and B is



- (1) 10 N (2) 15 N
 (3) zero (4) 5 N
25. The point from where a ball is projected is taken as the origin of the co-ordinate axes. The x and y components of its displacement are given by : $x = 6t$ and $y = 8t - 5t^2$, what is the angle of projection?
- (1) $\tan^{-1} 3/4$ (2) $\tan^{-1} 4/3$
 (3) $\tan^{-1} 1/8$ (4) $\tan^{-1} 1/6$
26. A projectile is fired with velocity u making angle θ with the horizontal. What is the change in velocity when it is at the highest point?
- (1) $u \cos \theta$ (2) u
 (3) $u \sin \theta$ (4) $u \cos \theta - u$
27. A ball is projected upwards. The times corresponding to height h while ascending and descending are t_1 and t_2 respectively. What is the speed of projection? Take acceleration due to gravity as 10 m/s^2 :
- (1) $10 t_1$ (2) $10 t_2$
 (3) $10 (t_1 + t_2)$ (4) $5(t_1 + t_2)$
28. Two stones are projected with the same (magnitude) velocity but making different angles with the horizontal. Their ranges are equal. If the angle of projection of one is $\pi/3$, and its maximum height is y_1 , then the maximum height of the other will be :

- (1) $3y_1$ (2) $2y_1$
 (3) $y_1/2$ (4) $y_1/3$

29. From a 200 m high tower one ball is thrown upward with speed 10 m/s and another is thrown vertically downward at same speed simultaneously. The time difference of their reaching the ground will be nearest to
- (1) 12 s (2) 6 s
 (3) 2 s (4) 1 s
30. A ball is dropped from the top of the tower. The distance covered by it in the last one second is $(9/25)$ th of the height of the tower. What is the height of the tower?
- (1) 122.5 m (2) 100.5 m
 (3) 88.5 m (4) 64.5 m
31. If a rope can withstand a tension of 300 N, then the least acceleration with which a man of 50 kg can slide along it is ($g = 9.8 \text{ m/s}^2$)
- (1) 3.8 ms^{-2} (2) 2.8 ms^{-2}
 (3) 3.2 ms^{-2} (4) 4.2 ms^{-2}
32. Two roads cross at right angles at O. A person A walking along one of them at 3 m/s sees another person B walking at 4 m/s along the other road at O, when he is 10 m off. The nearest distance between the two persons is
- (1) 10m (2) 9 m
 (3) 8m (4) 7.2 m
33. A bird of weight 5 N sits at the mid-point of a clothesline. The line is so distorted that it makes 30° angles with the horizontal at each end as shown in figure. The tension in the clothesline is



- (1) 5 N (2) $5 \cos 30^\circ \text{ N}$
 (3) $5 \sin 30^\circ \text{ N}$ (4) 5.98 N
34. A particle moves according to the equation $x = 5t^2 + 2t + 5$ where x is displacement and t is time. Its average velocity in first 3 seconds is
- (1) 17 ms^{-1} (2) 32 ms^{-1}
 (3) 16 ms^{-1} (4) None of these
35. When a body is in translatory equilibrium
- (1) The body is definitely at rest
 (2) the body is definitely in the state of uniform motion
 (3) The body will be either at rest or in the state of uniform motion
 (4) None of the above

36. The position x of a particle varies with time (t) as $x = at^2 - bt^3$. The acceleration at time t of the particle will be equal to zero, where t is equal to

- (1) $\frac{2a}{3b}$ (2) $\frac{a}{b}$
(3) $\frac{a}{3b}$ (4) zero

37. For a particle displacement-time relation is $t = \sqrt{x} + 3$. Its displacement, when its velocity is zero, is

- (1) 2m (2) 4m
(3) 0 (4) None of these

38. A car moves along a straight line whose equation of motion is given by $s = 12t + 3t^2 - 2t^3$, where s is in meters and t in seconds. The velocity of car at start will be

- (1) 7 m/s (2) 9 m/s
(3) 12 m/s (4) 16 m/s

39. A body of mass 2 kg moving on a horizontal surface with an initial velocity of 4 m/s comes to rest after 2 seconds. If one wants to keep this body moving on the same surface with a velocity of 4 m/s, the force required is

- (1) 8 N (2) 4 N
(3) Zero (4) 2 N

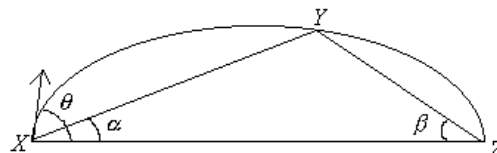
40. Displacement (x) of a particle is related to time (t) as $x = at + bt^2 - ct^3$ where a , b and c constants of motion. The velocity of the particle when its acceleration is zero is given by

- (1) $a + \frac{b^2}{c}$ (2) $a + \frac{b^2}{2c}$
(3) $a + \frac{b^2}{3c}$ (4) $a + \frac{b^2}{4c}$

41. A body dropped from a height H above the ground strikes an inclined plane at a height h above the ground. As a result of the impact, the velocity of the body becomes horizontal. The body will take the maximum time to reach the ground if

- (1) $h = \frac{H}{4}$ (2) $h = \frac{H}{2\sqrt{2}}$
(3) $h = \frac{H}{2}$ (4) $h = \frac{H}{\sqrt{2}}$

42. A particle is projected with a velocity u making an angle θ with the horizontal such that the trajectory just grazes the vertices of the triangle then



- (1) $\tan \theta = \cos \alpha + \cos \beta$
(2) $\cot \theta = \cos \alpha + \cos \beta$
(3) $\sin \theta = \sin \alpha + \sin \beta$
(4) $\tan \theta = \tan \alpha + \tan \beta$

43. Two Cannons installed at the top of a cliff 10m high fire a shot each with speed $5\sqrt{3} \text{ ms}^{-1}$ at some interval. One cannon fires at 60° with horizontal whereas the second fires horizontally. The coordinates of point of collision of the shots are

- (1) $\frac{1}{3} \text{ m}, \frac{1}{3\sqrt{5}} \text{ m}$ (2) $5\sqrt{3} \text{ m}, 5 \text{ m}$
(3) $3\sqrt{5} \text{ m}, 3 \text{ m}$ (4) $\frac{1}{5\sqrt{3}} \text{ m}, \frac{1}{5} \text{ m}$

44. The direction of net force on a particle is always the direction of

- (1) Velocity of the particle
(2) Momentum of the particle
(3) Rate of change of momentum
(4) All of these

45. Displacement of particle is related to time as: $x = 2 + 3t^2 - 6t^3$. Find acceleration of particle at

- $t = 1$ second.
(1) Zero (2) -30 m/s^2
(3) $+30 \text{ m/s}^2$ (4) 20 m/s^2

CHEMISTRY

46. Total number of degenerate orbitals in 2^{nd} shell of Li^{2+} ion is

- (1) 2 (2) 4
(3) 8 (4) 9

47. An increasing order (lowest first) for the values of e/m for electron(e), proton(p), neutron (n) and (α) particle is

- (1) e, p, n, α (2) n, α , p, e
(3) n, p, e, α (4) n, p, α , e

48. Angular nodes present in 4s and 2p orbitals respectively are

- (1) 1, 0 (2) 3, 0
(3) 0, 1 (4) 2, 3

49. If the series limit of wavelength of the Lyman series for the hydrogen atoms is 912 \AA , then the series limit of wavelength for the Balmer series of the hydrogen atom is:

- (1) 912 \AA (2) $912 \times 2 \text{ \AA}$
(3) $912 \times 4 \text{ \AA}$ (4) $912/2 \text{ \AA}$

50. The radius of hydrogen atom in the ground state is 0.53 \AA , the radius of ${}^3\text{Li}^{2+}$ in the similar state is

- (1) 1.06 \AA (2) 0.265 \AA
(3) 0.175 \AA (4) 0.53 \AA

51. Which of the following set of quantum numbers is correct?

- (1) $n=4, l=3, m=+4, s=+\frac{1}{2}$
(2) $n=3, l=2, m=+3, s=-\frac{1}{2}$
(3) $n=2, l=2, m=+2, s=+\frac{1}{2}$
(4) $n=1, l=0, m=0, s=-\frac{1}{2}$

52. Which of the d-orbitals lie/s in the xy-plane?

- (1) d_{xz} only (2) d_{xy} only
(3) $d_{x^2-y^2}$ only (4) d_{xy} and $d_{x^2-y^2}$

53. Which of the following electronic transitions in a hydrogen atom will require the largest amount of energy?

- (1) From $n=1$ to $n=2$
(2) From $n=2$ to $n=3$
(3) From $n=\infty$ to $n=1$
(4) From $n=3$ to $n=5$

54. If the speed of electron in the Bohr's first orbit of hydrogen atom be x , then speed of the electron in second orbit of He^+ is

- (1) $x/2$ (2) $2x$
(3) x (4) $4x$

55. The number of spectral lines that are possible when electrons in fourth energy level in different hydrogen atoms return to the ground state is

- (1) 4 (2) 6
(3) 8 (4) 3

56. The two particles A and B have de Broglie wavelengths 1 nm and 5 nm respectively. If mass of A is four times the mass of B, the ratio of kinetic energies of A and B would be

- (1) $5:1$ (2) $25:4$
(3) $20:1$ (4) $5:4$

57. The orbital diagram in which both the Pauli's exclusion principle and Hund's rule is violated is

- (1) $\begin{array}{|c|c|c|c|} \hline 2s & 2p & 2s & 2p \\ \hline \uparrow\downarrow & \uparrow\uparrow\uparrow & \uparrow\downarrow & \uparrow\downarrow\uparrow \\ \hline \end{array}$ (2) $\begin{array}{|c|c|c|c|} \hline 2s & 2p & 2s & 2p \\ \hline \uparrow\downarrow & \uparrow\downarrow\uparrow & \uparrow\downarrow & \uparrow\downarrow\uparrow \\ \hline \end{array}$

- (3) $\begin{array}{|c|c|c|c|} \hline \uparrow\downarrow & \downarrow\downarrow\downarrow & \uparrow\downarrow & \uparrow\downarrow\uparrow\downarrow \\ \hline \end{array}$ (4) $\begin{array}{|c|c|c|c|} \hline \uparrow\downarrow & \uparrow\downarrow\uparrow\downarrow & \uparrow\downarrow & \uparrow\downarrow\uparrow \\ \hline \end{array}$

58. If uncertainty in the position of electron is zero, the uncertainty in its momentum would be

- (1) zero (2) $\geq \frac{h}{4\pi}$
(3) $< \frac{h}{4\pi}$ (4) Infinite

59. Let mass of electron is half, mass of proton is two times and mass of neutron is three fourth of original masses, then new atomic weight of ${}^{16}\text{O}$ atoms

- (1) increases by 37.5%
(2) remain constant
(3) increases by 12.5%
(4) decreases by 25%

60. The atom A, B, C have the configuration

$A \rightarrow [Z(90) + n(146)]$, $B \rightarrow [Z(92) + n(146)]$,
 $C \rightarrow [Z(90) + n(148)]$ So that

- (a) A and C – Isotones
(b) A and C – Isotopes
(c) A and B – Isobars
(d) B and C – Isobars
(e) B and C – Isotopes

The wrong statements are

- (1) a, b only (2) c, d, e only
(3) a, c, d only (4) a, c, e only

61. Angular momentum for p-orbital electron is

- (1) $\frac{3h}{\pi}$ (2) Zero
(3) $\frac{\sqrt{2}h}{2\pi}$ (4) None

62. Multiplication of electron velocity and radius for a orbit in an atom is

- (1) Proportional to mass of electron
(2) Proportional to square of mass of electron
(3) Inversely proportional to mass of electron
(4) Does not depend upon mass of electron

63. The radius of a shell for H-atom is 4.761 \AA . The value of n is

- (1) 3 (2) 9
(3) 5 (4) 4

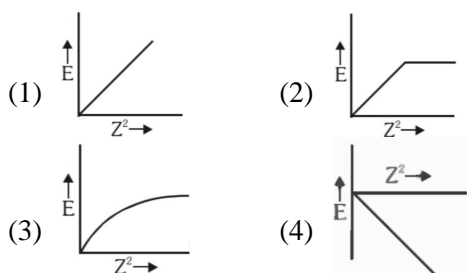
64. For Li^{+2} ion, $r_2 : r_5$ will be

- (1) $9:25$ (2) $4:25$
(3) $25:4$ (4) $25:9$

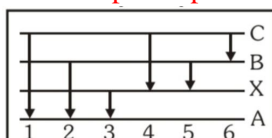
65. The ratio between kinetic energy and the total energy of the electron of hydrogen atom according to Bohr's model is

- (1) $2:1$ (2) $1:1$
(3) $1:-1$ (4) $1:2$

66. The graphical representation of energy of electron and atomic number is



67. Which is not a correct order of energy for 1, 2nd & 3rd orbit
- $E_1 > E_2 > E_3$
 - $(PE)_1 < (PE)_2 < (PE)_3$
 - $(KE)_1 > (KE)_2 > (KE)_3$
 - (1) and (3) both
68. The spectrum of He is expected to be similar to that of
- H
 - Na
 - He^+
 - Li^+
69. Which one of the following electron transitions between energy levels produces the line of shortest wavelength in hydrogen spectrum?
- $n_2 \rightarrow n_1$
 - $n_3 \rightarrow n_1$
 - $n_4 \rightarrow n_1$
 - $n_4 \rightarrow n_3$
70. The ratio of minimum frequency of Lyman & Balmer series will be
- 1.25
 - 0.25
 - 5.4
 - 10
71. The first Lyman transition in the hydrogen spectrum has $\Delta E = 10.2$ eV. The same energy change is observed in the second Balmer transition of
- Le^{2+}
 - Le^+
 - He^+
 - Be^{3+}
72. In H-atom, electron transits from 6th orbit to 2nd orbit in multi step. Then total spectral lines (without Balmer series) will be
- 6
 - 10
 - 4
 - 0
73. If 9.9 eV energy is supplied to H atom, the no. of spectral lines emitted is equal to
- 0
 - 1
 - 2
 - 3
74. The figure indicates the energy level diagram for the origin of six spectral lines in emission spectrum (e.g. line no. 5 arises from the transition from level B to X). Which of the following spectral line will not occur in the absorption spectrum?



- 1, 2, 3
- 3, 2
- 4, 5, 6
- 3, 2, 1

75. A certain electronic transition from an excited state to ground state of the H atom in one or more step gives rise to three lines in the ultra violet region of the spectrum. How many lines does this transition produce in the infrared region of the spectrum
- 1
 - 2
 - 3
 - 4
76. An electron has a kinetic energy of 2.8×10^{-23} J. de-Broglie wavelength will be nearly ($m_e = 9.1 \times 10^{-31}$ kg)
- 9.28×10^{-24} m
 - 9.28×10^{-7} m
 - 9.28×10^{-8} m
 - 9.28×10^{-10} m
77. Number of waves in fourth orbit
- 4
 - 5
 - 0
 - 1
78. What is the ratio of the de-Broglie wavelengths for electrons accelerated through 200 volts and 50 volts
- 1 : 2
 - 2 : 1
 - 3 : 10
 - 10 : 3
79. A particle X moving with a certain velocity has a debroglie wavelength of 1 \AA . If particle Y has a mass of 25% that of X and velocity 75% that of X, de-broglie wavelength of Y will be
- 3 \AA
 - 5.33 \AA
 - 6.88 \AA
 - 48 \AA
80. The uncertainty in position of an electron & helium atom are same. If the uncertainty in momentum for the electron is 32×10^5 , then the uncertainty in momentum of helium atom will be
- 32×10^5
 - 16×10^5
 - 8×10^5
 - None
81. Which of the following has least de-Broglie λ ?
- e^-
 - p
 - CO_2
 - SO_2
82. The maximum number of electrons in a p-orbital with $n = 6$ and $m = 0$ can be
- 14
 - 6
 - 2
 - 10
83. The maximum probability of finding an electron in the d_{xy} orbital is
- Along the x-axis
 - Along the y-axis
 - At an angle of 45° from the x and y axis
 - At an angle of 90° from the x and y axis
84. n and ℓ values of an orbital A are 3 and 2 and for another orbital B are 5 and 0. The energy of
- B is more than A
 - A is more than B
 - A and B are of same energy
 - None
85. The total spin resulting from a d^9 configuration is
- $1/2$
 - 2
 - 1
 - $3/2$

86. Which of the following transition neither shows absorption nor emission of energy in case of hydrogen atom
 (1) $3p_x \rightarrow 3s$ (2) $3d_{xy} \rightarrow 3d_{yz}$
 (3) $3s \rightarrow 3d_{xy}$ (4) All the above
87. Which of the following pairs of ions have the same electronic configuration ?
 (1) $\text{Cr}^{3+}, \text{Fe}^{3+}$ (2) $\text{Fe}^{3+}, \text{Mn}^{2+}$
 (3) $\text{Fe}^{3+}, \text{Co}^{3+}$ (4) $\text{Se}^{3+}, \text{Cr}^{3+}$
88. The distance between 3^{rd} and 2^{nd} orbit of hydrogen atom is
 (1) $2.646 \times 10^{-8} \text{ cm}$ (2) $2.116 \times 10^{-8} \text{ cm}$
 (3) $1.058 \times 10^{-8} \text{ cm}$ (4) $0.529 \times 10^{-8} \text{ cm}$

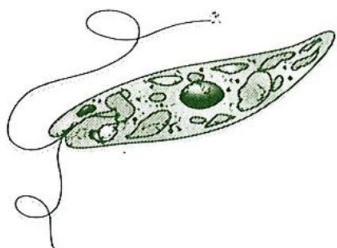
89. The shortest wavelength of H atom in the Lyman series is λ_1 . The longest wavelength in the Balmer series of He^+ is
 (1) $\frac{5\lambda_1}{9}$ (2) $\frac{27\lambda_1}{5}$
 (3) $\frac{9\lambda_1}{5}$ (4) $\frac{36\lambda_1}{5}$
90. What is the spin-only magnetic moment value (BM) of a divalent metal ion with atomic number 25, in its aqueous solution ?
 (1) 5.92 (2) 5
 (3) zero (4) 5.26

BOTANY

91. The Two Kingdom classification system was proposed by:
 (1) Aristotle (2) Haeckel
 (3) Linnaeus (4) Whittaker
92. Read the following statements and select the correct option:
 A. Aristotle was the earliest to attempt a more scientific basis for classification
 B. Aristotle classified plants on the basis of their morphological characters and categorized them into herbs, shrubs and trees
 C. Aristotle divided animals into two groups: those which are motile and those which are not
 (1) Only (A) is correct
 (2) (A) and (B) are correct
 (3) (A) and (C) are correct
 (4) (A), (B) and (C) are correct
93. Assertion: Linnaeus two kingdom classification system was found inadequate
 Reason : The system did not distinguish between prokaryotes & eukaryotes
 (1) If both Assertion and Reason are true and the Reason is the correct explanation of the Assertion.
 (2) If both Assertion and Reason are true but the Reason is not the correct explanation of the Assertion.
 (3) If Assertion is true but Reason is false.
 (4) If both Assertion and Reason are false.
94. The two Kingdom system of classification did not distinguish between:
 (1) Unicellular and multicellular organisms
 (2) Photosynthetic and non-photosynthetic organisms
 (3) Prokaryotic and eukaryotic organisms
 (4) All of these
95. The cell wall of monerans is usually made up of:
 (1) Protein
 (2) Cellulose

- (3) Amino acid + Polysaccharides
 (4) Cellulose, hemicellulose and pectin
96. Cyanobacteria are:
 A. Mostly multicellular, colonial, filamentous
 B. Also referred to as blue-green algae
 C. Fresh water, marine or terrestrial algae
 (1) Only (A) is correct
 (2) Both (A) and (B) are correct
 (3) Both (B) and (C) are correct
 (4) (A), (B) and (C) are correct
97. Majority of bacteria are nutritionally _____.
 (1) Photoautotrophs (2) Chemoautotrophs
 (3) Heterotrophs (4) Symbiotics
98. Assertion: Cyanobacteria often form algal blooms in polluted water bodies.
 Reason: Cyanobacteria are Eubacteria.
 (1) If both Assertion and Reason are true and the Reason is the correct explanation of the Assertion.
 (2) If both Assertion and Reason are true but the Reason is not the correct explanation of the Assertion.
 (3) If Assertion is true but Reason is false.
 (4) If both Assertion and Reason are false.
99. Read the following statements carefully:
 A: Dinoflagellates have two flagella: one lies longitudinally and the other lies transversely in a furrow between the cell plates.
 B: Dinoflagellates do not harm marine life.
 (1) Only (A) is correct
 (2) Both are correct
 (3) Only (B) is correct
 (4) Both are incorrect
100. Assertion: Boundaries of kingdom Protista are not well defined.
 Reason : Members of Protista are primarily aquatic
 (1) If both Assertion and Reason are true and the Reason is the correct explanation of the Assertion.

- (2) If both Assertion and Reason are true but the Reason is not the correct explanation of the Assertion.
 (3) If Assertion is true but Reason is false.
 (4) If both Assertion and Reason are false
101. Identify the figure and select incorrect statements:



- (1) Found in fresh stagnant water
 (2) Presence of proteinaceous layer called pellicle instead of cell wall
 (3) Photosynthetic pigments are identical to those of algae
 (4) Show flagellar locomotion
102. Diatomaceous earth is:
 (1) Indestructible frustule of diatoms
 (2) Gritty in nature
 (3) Used in polishing, filtration of oil and syrups
 (4) All of the above
103. Gritty soil of commercial use is formed by cell wall deposits of:
 (1) Diatoms (2) Dinoflagellates
 (3) Rhodophyceae (4) Euglenoids
104. Which of the following release toxins that may even kill other marine animals like fishes?
 (1) Gonyaulax (2) Paramecium
 (3) Euglenoids (4) Sporozoans
105. Which organism is responsible for making these appear red by rapid multiplication?
 (1) *Euglena* (2) *Noctiluca*
 (3) *Gonyaulax* (4) *Plasmodium*
106. Select the odd one out with respect to Euglenoids:
 (1) Mostly fresh water organisms.
 (2) Have a protein rich pellicle layer.
 (3) Two equal flagella present
 (4) Have pigments identical to higher plants.
107. Read the following statements and select the correct option:
 A. *Euglena* is considered as the connecting link between plants and animals
 B. In the absence of sunlight, *Euglena* starts photosynthesis, while in the presence of sunlight, it behaves like a heterotroph.
 (1) Only (A) is correct
 (2) Only (B) is correct
 (3) Both (A) and (B) are correct
 (4) Both (A) and (B) are incorrect
108. Mark the correct statement for *Euglena*
 (1) Represents photosynthesis protist
 (2) Live in fresh water
 (3) Possess flagella.
 (4) All of the above.

109. According to the classification system of R.H. Whittaker, how many kingdoms comprise eukaryotes?

- (1) One (2) Four
 (3) Three (4) Two

110. According to ...A... classification, *Chlamydomonas* and *Chlorella* are kept along with ...B... under kingdom ...C...

	A	B	C
(1)	RH Whittaker	Paramecium	Protista
(2)	Linnaeus	Paramecium	Monera
(3)	Linnaeus	Angiosperms	Algae
(4)	RH Whittaker	Yeast	Fungi

111. In the Five Kingdom classification, multicellular and eukaryotic organisms with heterotrophic mode of nutrition are included in:

- (1) Plantae (2) Fungi
 (3) Animalia (4) Both (2) and (3)

112. Select the incorrect statement with respect to Whittaker's system of classification:

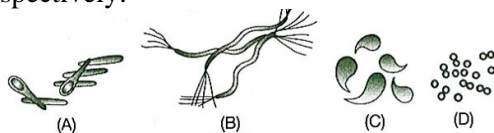
- (1) Monera: Autotrophic or heterotrophic organisms with non-cellulosic cell wall
 (2) Protista: Unicellular eukaryotic organisms with tissue level of body organization
 (3) Plantae: Autotrophic organisms with cellulosic cell wall and tissue level body organization
 (4) Fungi: Multicellular eukaryotic organisms with loose tissue body organization

113. Assertion: R. H. Whittaker proposed a five kingdom classification system.

Reason: Members of kingdom Protista are unicellular eukaryotes.

- (1) If both Assertion and Reason are true and the Reason is the correct explanation of the Assertion.
 (2) If both Assertion and Reason are true but the Reason is not the correct explanation of the Assertion.
 (3) If Assertion is true but Reason is false.
 (4) If both Assertion and Reason are false.

114. Identify the diagrams labelled as A, B, C, D, respectively:



	A	B	C	D
(1)	Bacilli	Spirilla	Vibrio	Cocci
(2)	Bacilli	Spirilla	Cocci	Vibrio
(3)	Vibrio	Bacilli	Spirilla	Cocci
(4)	Vibrio	Cocci	Spirilla	Bacilli

115. Read the following statements carefully and select the correct option for bacteria:

- A. They are the sole members of kingdom Monera.
 B. They are the most abundant microorganisms.
 C. They cannot live in snow and deep oceans.
 D. No bacteria live in or on other organisms as parasites.

- (1) (A) and (B) (2) (B) and (C)
 (3) (C) and (D) (4) (A) and (D)

116. Bacteria is a group of prokaryotic organisms that is characterised by:

- (1) Peptidoglycan cell wall
 (2) Absence of membrane-bound cell organelle
 (3) Presence of 70S ribosomes
 (4) All of the above

117. State true (T) or false (F) for the given statements and select the correct option:

- A. Hundreds of bacteria are present in a handful of soil
 B. Bacteria are grouped under three categories based on their shape
 C. Bacteria are very simple in structure and very complex in behaviour
 D. Most bacteria synthesize their own food from inorganic substances

	A	B	C	D
(1)	T	F	T	T
(2)	T	F	T	F
(3)	F	T	T	T
(4)	F	F	T	T

118. According to five kingdom classification system; organisms with prokaryotic cell structure were placed in:

- (1) Kingdom Protista (2) Kingdom Fungi
 (3) Monera (4) Plantae

119. Assertion: The three domain system divides kingdom Monera into three domains.

Reason : Six kingdom classification was proposed by R.H. Whittaker.

- (1) If both Assertion and Reason are true and the Reason is the correct explanation of the Assertion.
 (2) If both Assertion and Reason are true but the Reason is not the correct explanation of the Assertion.
 (3) If Assertion is true but Reason is false.
 (4) If both Assertion and Reason are false.

120. Which of the following statement explains *Archaeobacteria* :

- (1) Pseudopeptidoglycan in cell wall
 (2) Some are Obligate anaerobes
 (3) Also present in gut of ruminant mammals
 (4) All of the above

121. Choose the incorrect match:

- (1) *Gonyaulax* – Red tide
 (2) Euglenoids – Heterotrophs when deprived of sunlight
 (3) Desmids – Pyrrophytes
 (4) Diatoms – Soap box like appearance

122. Assertion: Euglenoids are mostly fresh water.

Reason : They have a fat rich layer called pellicle which makes their body flexible.

- (1) If both Assertion and Reason are true and the Reason is the correct explanation of the Assertion.
 (2) If both Assertion and Reason are true but the Reason is not the correct explanation of the Assertion.
 (3) If Assertion is true but Reason is false.
 (4) If both Assertion and Reason are false.

123. The walls are embedded with silica, and thus, are indestructible in:

- (1) Diatoms (2) Slimemoulds
 (3) Dinoflagellates (4) Euglenoids

124. Nutritionally, protists are:

- (1) Photoautotrophs (2) Heterotrophs
 (3) Mixotrophs (4) All of these

125. The mode of nutrition present in *Euglena* is referred to as:

- (1) Osmotrophy (2) Mixotrophy
 (3) Phototrophy (4) Chemotrophy

126. The Five Kingdom system of classification was proposed by:

- (1) R.H. Whittaker (2) Haeckel
 (3) Linnaeus (4) Copeland

127. Select the incorrect statement:

- (1) The three domain system divides Kingdom Protista into two domains.
 (2) Two kingdom classification system was given by Linnaeus.
 (3) Cell structure is one of the criterion for five kingdom classification system.
 (4) Monerans lack nuclear membrane.

128. In the light of the recent classification of living organisms into three domains of life (Bacteria,

Archaea and Eukaryota), which of the following statements is true about Archaea?

- (1) Archaea completely differ from prokaryotes
- (2) Archaea resemble Eukaryota in all respects
- (3) Archaea have some novel features that are absent in other prokaryotes and eukaryotes
- (4) Archaea completely differ from both prokaryotes and eukaryotes

129. Assertion: The number of criteria used in classifying organisms in five kingdom classification is five.

Reason: Carl Woese gave five kingdom classification system.

- (1) If both Assertion and Reason are true and the Reason is the correct explanation of the Assertion.
- (2) If both Assertion and Reason are true but the Reason is not the correct explanation of the Assertion.
- (3) If Assertion is true but Reason is false.
- (4) If both Assertion and Reason are false.

130. Which kingdom represents the presence of all the ecological types of organisms: producer, consumer and decomposer?

- (1) Plantae
- (2) Fungi
- (3) Protista
- (4) Both (1) and (3)

131. Consider the following table and select the appropriate answer

Characters	Monera	Protista	Fungi	Plantae	Animalia
Cell type	A	Eukaryotic	Eukaryotic	Eukaryotic	Eukaryotic
Nuclear membrane	Absent	Present	B	Present	Present
Body organisation	Cellular	C	D	Tissue/Organ	Tissue system

	A	B	C	D
1	Prokaryotic	Present	Multicellular	Loose tissue
2	Prokaryotic	Present	Cellular	Loose tissue
3	Prokaryotic	Absent	Multicellular	Tissue/Organ
4	Prokaryotic	Present	Loose tissue	Organ system

132. Bacteria, archaeobacteria and Mycoplasma belong to:

- (1) Protista
- (2) Eukaryotes
- (3) Monera
- (4) Plantae

133. Fill in the blanks and choose the correct option:

- (i) ...A... are the sole members of kingdom Monera
- (ii) Rod shaped bacteria is B

	A	B
(1)	Bacteria	Bacillus
(2)	Cyanobacteria	Cocci
(3)	Protozoans	Bacillus
(4)	Archaeobacteria	Vibrio

134. The most extensive metabolic diversity is found in:

- (1) Monera
- (2) Protista
- (3) Fungi
- (4) Plantae

135. The most common mode of reproduction in bacteria is:

- (1) Binary fission
- (2) Reproduction
- (3) Budding
- (4) Gene recombination

ZOOLOGY

136. In mitosis, nucleolus and nuclear membrane disappear at

- (1) interphase
- (2) prophase
- (3) metaphase
- (4) telophase

137. What is the stage of mitosis in which chromosomes are arranged on the equator of spindle?

- (1) Anaphase
- (2) Prophase
- (3) Metaphase
- (4) Telophase

138. Best stage to observe shape, size and number of chromosomes is _____

- (1) interphase
- (2) metaphase
- (3) prophase
- (4) telophase

139. In anaphase of mitosis

(1) chromosomes get arranged in middle of cell.

(2) nuclear envelope disappears.

(3) chromosome fibres become clear.

(4) chromosomes aggregate at opposite poles to form daughter nuclei.

140. Which of the following cellular structures always disappears during mitosis and meiosis?

- (1) Plastid and nuclear membrane
- (2) Nucleolus and nuclear membrane
- (3) Endoplasmic reticulum and mitochondria
- (4) Endoplasmic reticulum and plasma membrane

141. In meiosis, division is

- (1) I reductional and II equational.

- (2) Ist equational and IIInd reductional.
 (3) both reductional.
 (4) both equational.
142. Interkinesis is a
 (1) stage between meiosis I and meiosis II.
 (2) stage between two mitotic divisions.
 (3) interphase.
 (4) both (2) and (3)
143. Synapsis occurs between
 (1) spindle fibres and centromeres.
 (2) mRNA and ribosomes.
 (3) a male and female gamete.
 (4) two homologous chromosomes.
144. During mitosis, nuclear envelope, nucleolous begin to form and ER to reappear at _____
 (1) prophase (2) late metaphase
 (3) anaphase (4) telophase
145. The synaptonemal complex appears
 (1) between homologous chromosomes.
 (2) in zygotene stage.
 (3) composed of DNA + protein.
 (4) All of the above
146. Chromosome synapsis or bivalent formation occurs in _____
 (1) leptotene (2) zygotene
 (3) pachytene (4) diplotene
147. Crossing over occurs between
 (1) sister chromatids of homologous chromosomes.
 (2) non-sister chromatids of homologous chromosomes.
 (3) sister chromatids of non-homologous chromosomes.
 (4) non-sister chromatids of non-homologous chromosomes.
148. Crossing over occurs during _____
 (1) leptotene (2) pachytene
 (3) diplotene (4) diakinesis
149. Recombination involves
 (1) crossing over
 (2) chromosome duplication
 (3) spindle formation
 (4) cytokinesis
150. Chiasmata are first seen in _____
 (1) leptotene (2) zygotene
 (3) pachytene (4) diplotene
151. In which stage, the chromosomes appear thin and long thread-like ?
 (1) Zygotene (2) Leptotene
 (3) Pachytene (4) Prophase
152. Terminalization occurs during _____
 (1) mitosis (2) diakinesis
 (3) meiosis II (4) cytokinesis
153. Electron micrographs of which stage indicate that chromosomes accompanied by the formation of complex structure called synaptonemal complex?
 (1) Zygotene (2) Pachytene
 (3) Diplotene (4) Diakinesis
154. The microtubules of the mitotic spindle attach to a specializes structure in the centromere region of each chromosome called the _____.
 (1) Telomere (2) Centriole
 (3) Chromatin (4) Kinetochore
155. Cell plate grows from
 (1) wall to centre
 (2) centre to walls
 (3) one wall to another
 (4) simultaneously
156. Select the correct statement with respect to mitosis.
 (1) Chromatids separate but remain in the centre of the cell in anaphase.
 (2) Chromatids start moving towards opposite poles in telophase.
 (3) Golgi complex and endoplasmic reticulum are still visible at the end of prophase.
 (4) Chromosomes move to the spindle equator and get aligned along equatorial plate in metaphase.
157. Which one of the following precedes re-formation of the nuclear envelope during M phase of the cell cycle ?
 (1) Decondensation from chromosomes, and re assembly of the nuclear lamina.
 (2) Transcription from chromosomes, and re-assembly of the nuclear lamina.
 (3) Formation of the contractile ring, and formation of the phragmoplast.
 (4) Formation of the contractile ring, and transcription from chromosomes.
158. Which of the following statement is not true for homologous chromosome pairs ?
 (1) They come from only one of the individual's parents.
 (2) They usually contain slightly different versions of the same genetic information.
 (3) They segregate from each other during meiosis I.
 (4) They synapse during meiosis I.
159. Which of the following statement(s) is/are true ?

- (1) Cell plate represents the middle lamella between the walls of two adjacent cells.
- (2) At the time of cytokinesis, organelles like mitochondria and plastids get distributed between the daughter cells.
- (3) Cytokinesis in plant cell is centrifugal and takes place by cell-plate formation while animal cells by furrowing/cleavage and is centripetal.
- (4) All of the above
160. Significance of mitosis involves
- (1) the growth of multicellular organism.
- (2) cell repair.
- (3) production of diploid daughter cells with identical genetic complement.
- (4) all of the above
161. Which of the following statement(s) is/are correct about S-phase (synthetic phase) ?
- (i) It occurs between G_1 and G_2 phase.
- (ii) It marks the period during which DNA replicates.
- (iii) At the end of this phase, DNA is doubled but the number of chromosomes remains unchanged.
- (iv) As the DNA is doubled in this phase number of chromosomes is also doubled.
- (v) Centrioles replicate in this phase. (vi) Amount of DNA changes from $2C$ to $4C$.
- (1) (i), (ii), (iv), (v), (vi)
- (2) (i), (ii), (iii), (v), (vi)
- (3) All of the above
- (4) Only (iv)
162. Which of the following statements related to G_0 stage of the cell cycle are correct?
- (i) It is a quiescent stage.
- (ii) In this phase, cell cycle is stopped.
- (iii) G_0 cells do not grow or proliferate but metabolically active.
- (iv) G_0 cells can divide in response to some stimulus.
- (1) (i), and (ii)
- (2) (i), (ii) and (iii)
- (3) Only (i) and (iv)
- (4) All of the above
163. Which one is correct about bivalent ?
- (i) Bivalent are tetrads.
- (ii) A bivalent means 4 chromatids and 2 centromere.
- (iii) One bivalent consists of 2 homologous chromosomes each and sister chromatids.
- (iv) Bivalents formation occurs in zygotene.
- (1) All of these (2) Only (iii)
- (3) (iii) and (iv) (4) Only (iv)
164. Which one is correct about crossing over/genetic recombination?
- (i) It occurs in tetrad stage which occurs in pachytene of prophase I of meiosis I.
- (ii) It occurs between non-sister chromatids of homologous chromosomes.
- (iii) It is recombinase enzyme mediated process.
- (iv) It is also the reciprocal transfer of genes between the non-homologous chromosomes
- (1) All of the above
- (2) All except (iv)
- (3) (ii), (iii) and (iv)
- (4) (iii) and (iv)
165. Read the following statements about cell division and select the correct statements.
- (i) M phase represents the phase when actual cell division occurs and I phase represents the phase between two successive M phase.
- (ii) In the 24 hours, average duration of cell cycle of a human cell, cell division proper lasts for only about an hour.
- (iii) M phase constitutes more than 95% of the duration of cell cycle.
- (1) (i) and (ii) (2) (ii) and (iii)
- (3) (i) and (iii) (4) (i), (ii) and (iii)
166. Assertion: The stage between two mitotic divisions is called interkinesis.
Reason: Interkinesis is generally short lived.
- (1) If both Assertion and Reason are true and the Reason is the correct explanation of the Assertion.
- (2) If both Assertion and Reason are true but the Reason is not the correct explanation of the Assertion.
- (3) If Assertion is true but Reason is false.
- (4) If both Assertion and Reason are false.
167. Assertion: Diplotene is characterized by the presence of chiasmata.
Reason: Diplotene can last for months and years in oocytes of some vertebrates.
- (1) If both Assertion and Reason are true and the Reason is the correct explanation of the Assertion.
- (2) If both Assertion and Reason are true but the Reason is not the correct explanation of the Assertion.
- (3) If Assertion is true but Reason is false.
- (4) If both Assertion and Reason are false.
168. Assertion: Interphase occupies 75-95% of the total generation time.
Reason: Interphase (I-phase) is the long non-dividing phase.
- (1) If both Assertion and Reason are true and the Reason is the correct explanation of the Assertion.
- (2) If both Assertion and Reason are true but the Reason is not the correct explanation of the Assertion.
- (3) If Assertion is true but Reason is false.
- (4) If both Assertion and Reason are false.

169. Assertion: Small disc-shaped structures at the surface of the centromeres are called kinetochores.
Reason: Kinetochore serve as the sites of attachment of spindle fibres to the centromeres.

- (1) If both Assertion and Reason are true and the Reason is the correct explanation of the Assertion.
- (2) If both Assertion and Reason are true but the Reason is not the correct explanation of the Assertion.
- (3) If Assertion is true but Reason is false.
- (4) If both Assertion and Reason are false.

170. Assertion: Karyokinesis follows cytokinesis.
Reason: Karyokinesis is the division of cytoplasm into two daughter cells.

- (1) If both Assertion and Reason are true and the Reason is the correct explanation of the Assertion.
- (2) If both Assertion and Reason are true but the Reason is not the correct explanation of the Assertion.
- (3) If Assertion is true but Reason is false.
- (4) If both Assertion and Reason are false.

171. Assertion: The final stage of meiotic prophase I is diplotene.

Reason: Diplotene is marked by terminalisation of chiasmata.

- (1) If both Assertion and Reason are true and the Reason is the correct explanation of the Assertion.
- (2) If both Assertion and Reason are true but the Reason is not the correct explanation of the Assertion.
- (3) If Assertion is true but Reason is false.
- (4) If both Assertion and Reason are false.

172. Assertion: The crossing over is an enzyme-mediated process.

Reason: The enzyme involved in crossing over is lyase.

- (1) If both Assertion and Reason are true and the Reason is the correct explanation of the Assertion.
- (2) If both Assertion and Reason are true but the Reason is not the correct explanation of the Assertion.
- (3) If Assertion is true but Reason is false.
- (4) If both Assertion and Reason are false.

173. Assertion: Metaphase II begins with splitting of centromere of each chromosome into two.

Reason: In Anaphase II chromosomes align at the equator.

- (1) If both Assertion and Reason are true and the Reason is the correct explanation of the Assertion.
- (2) If both Assertion and Reason are true but the Reason is not the correct explanation of the Assertion.

(3) If Assertion is true but Reason is false.

(4) If both Assertion and Reason are false.

174. Match the description (given in column I) with correct stage of prophase I (given column II) and choose the correct option.

Column I	Column II
A. Chromosomes are moved to spindle equator	I. Pachytene
B. Centromere splits and chromatids apart	II. Zygotene
C. Pairing between homologous chromosomes takes place	III. Anaphase
D. Crossing between homologous chromosomes	IV. Metaphase
(1) A – I; B – II; C – III; D – IV	
(2) A – II; B – III; C – IV; D – I	
(3) A – IV; B – III; C – II; D – I	
(4) A – III; B – I; C – IV; D – II	

175. Match the terms (given in column I) with their explanation (given in column II) and choose the correct combination from the options given below.

Column I (Terms)	Column II (Explanation)
A. Terminalization	I. Pairing of homologous chromosomes.
B. Synapsis	II. Point of attachment between homologous chromosomes.
C. Chiasmata	III. Nuclear protein complex that helps in adherence of sister chromatids and then homologous chromosomes.
D. Synaptonemal complex	IV. Shifting of chiasmata outwards towards the ends of a bivalent.
(1) A – IV; B – I; C – II; D – III	
(2) A – II; B – III; C – IV; D – I	
(3) A – II; B – IV; C – III; D – I	
(4) A – IV; B – I; C – III; D – II	

176. Match the description given in column-I with their stages given in column-II and identify the correct answer.

Column-I	Column-II
A. Initiation of the I assembly of mitotic spindle	Anaphase
B. Proteins are synthesized in preparation for mitosis while cell growth continues.	II. Prophase
C. Spindle fibres	III. Interphase

attach to kinetochores
of chromosomes.

- D. Movement of chromatids towards opposite poles
- IV. Metaphase

The correct match is

- (1) A – II; B – III; C – IV; D – I
(2) A – III; B – II; C – I; D – IV
(3) A – I; B – III; C – II; D – IV
(4) A – IV; B – III; C – I; D – II

177. Select the correctly matched pair.

- A. S phase – DNA replication
B. Zygotene – Synapsis
C. Diplotene – Crossing over
D. Meiosis – Both haploid and diploid cells

- (1) A and B (2) C and D
(3) B and D (4) A and C

178. Find the correctly matched pairs and choose the correct option.

- A. Zygotene – Pairing of homologous chromosomes
B. Pachytene – Dissolution of the

complex synaptonemal
takes place

- C. Diplotene – Bivalent chromosomes appear as tetrads
D. Diakinesis – Terminalization of chiasmata takes place

- (1) A and C (2) A and D
(3) A and B (4) B and C

179. Choose the mismatch pair.

- (1) Karyokinesis – Division of centromere
(2) Cytokinesis – Division of cytoplasm
(3) S-phase – DNA synthesis
(4) Synapsis – Pairing of homologous chromosomes

180. Find out the wrongly matched pair of the stage of prophase I with their feature.

- (1) Zygotene – Synaptonemal complex
(2) Pachytene – Mutation
(3) Diplotene – Chiasmata
(4) Diakinesis – Terminalization

AMITY

ANSWERS

PHYSICS

1.	(1)	2.	(1)	3.	(1)	4.	(1)	5.	(1)
6.	(4)	7.	(2)	8.	(4)	9.	(2)	10.	(2)
11.	(2)	12.	(3)	13.	(3)	14.	(4)	15.	(4)
16.	(2)	17.	(2)	18.	(1)	19.	(1)	20.	(2)
21.	(3)	22.	(3)	23.	(3)	24.	(3)	25.	(2)
26.	(3)	27.	(4)	28.	(4)	29.	(3)	30.	(1)
31.	(1)	32.	(3)	33.	(1)	34.	(1)	35.	(3)
36.	(3)	37.	(3)	38.	(3)	39.	(2)	40.	(3)
41.	(3)	42.	(4)	43.	(2)	44.	(3)	45.	(2)

CHEMISTRY

46.	(2)	47.	(2)	48.	(3)	49.	(3)	50.	(3)
51.	(4)	52.	(2)	53.	(1)	54.	(3)	55.	(2)
56.	(2)	57.	(1)	58.	(4)	59.	(1)	60.	(4)
61.	(3)	62.	(3)	63.	(1)	64.	(2)	65.	(3)
66.	(4)	67.	(1)	68.	(4)	69.	(3)	70.	(3)
71.	(3)	72.	(1)	73.	(1)	74.	(3)	75.	(1)
76.	(3)	77.	(1)	78.	(1)	79.	(2)	80.	(1)
81.	(4)	82.	(3)	83.	(3)	84.	(1)	85.	(1)
86.	(4)	87.	(2)	88.	(1)	89.	(3)	90.	(1)

BOTANY

91.	(3)	92.	(4)	93.	(1)	94.	(4)	95.	(3)
96.	(3)	97.	(3)	98.	(2)	99.	(1)	100.	(2)
101.	(3)	102.	(4)	103.	(1)	104.	(1)	105.	(3)
106.	(3)	107.	(1)	108.	(4)	109.	(2)	110.	(1)
111.	(4)	112.	(2)	113.	(2)	114.	(1)	115.	(1)
116.	(4)	117.	(1)	118.	(3)	119.	(4)	120.	(4)
121.	(3)	122.	(3)	123.	(1)	124.	(4)	125.	(2)
126.	(1)	127.	(1)	128.	(4)	129.	(3)	130.	(3)
131.	(2)	132.	(3)	133.	(1)	134.	(1)	135.	(1)

ZOOLOGY

136.	(2)	137.	(3)	138.	(2)	139.	(4)	140.	(2)
141.	(1)	142.	(1)	143.	(4)	144.	(4)	145.	(4)
146.	(2)	147.	(2)	148.	(2)	149.	(1)	150.	(4)
151.	(2)	152.	(2)	153.	(1)	154.	(4)	155.	(2)
156.	(4)	157.	(1)	158.	(1)	159.	(4)	160.	(4)
161.	(2)	162.	(4)	163.	(1)	164.	(2)	165.	(1)
166.	(4)	167.	(2)	168.	(1)	169.	(2)	170.	(4)
171.	(4)	172.	(3)	173.	(4)	174.	(3)	175.	(1)
176.	(1)	177.	(1)	178.	(2)	179.	(1)	180.	(2)