

NEW STANDARD ACADEMY

Date : 20-07-2026

CLASS : 12TH NEET

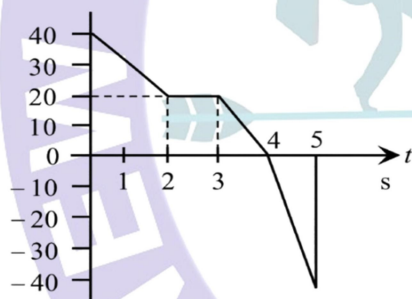
Marks:720
Time: 3 hours

PHYSICS

1. Which one of the following equations represent the motion of a body with finite constant acceleration? In these equations, y denotes the position of the body at time t and a , b , and c are the constants of the motion.

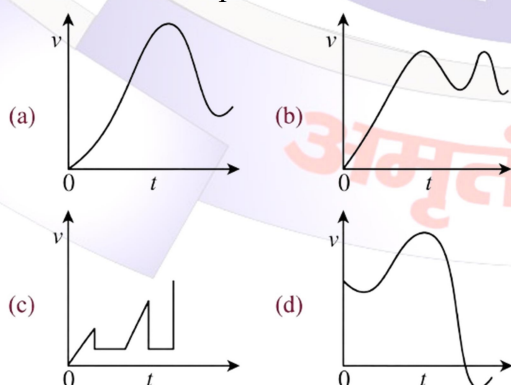
(1) $y = a/t + bt$ (2) $y = at$
(3) $y = at + bt^2$ (4) $y = at + bt^2 + ct^3$

2. In the following velocity-time graph of a body, the distance travelled and displacement of the body in 5 s in meters are respectively

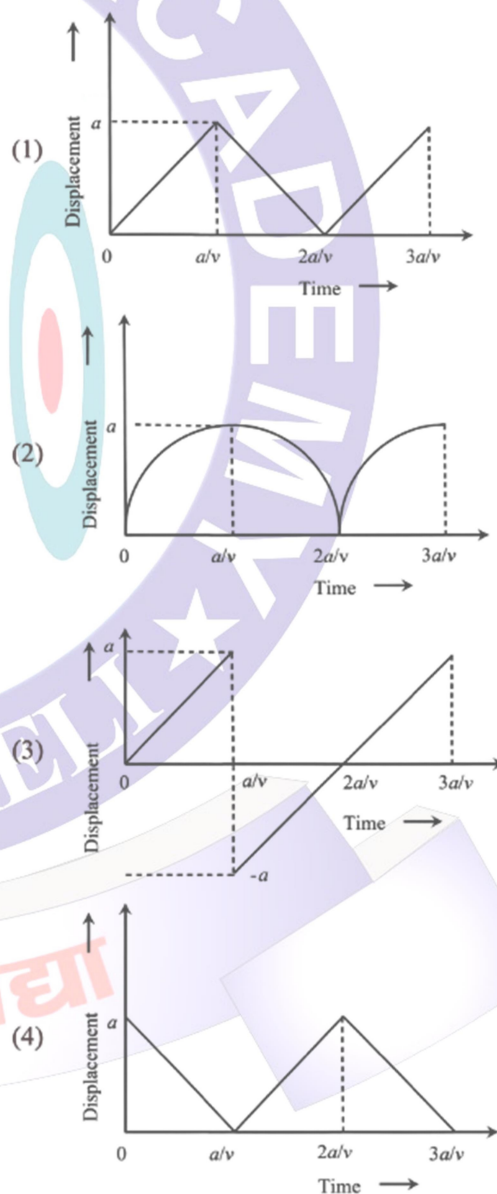


(1) 70,110 (2) 110,70
(3) 40,70 (4) 90,50

3. The following figures show some velocity v versus time t curves. But only some of these can be realized in practice.



- (1) only a , b and d (2) only a , b , c
(3) only b and c (4) all of them
4. A particle is confined to move along the x -axis between reflecting walls at $x = 0$ and $x = a$. Between these two limits it moves freely at constant velocity v . If the walls are perfectly reflecting, then its displacement-time graph is



5. The acceleration of a particle, starting from rest, varies with time according to the relation $a = kt + c$. Then the velocity v of the particle after time t will be

(1) $2k t^2 + ct$ (2) $\frac{1}{2} k t^2 + ct$
 (3) $kt^2 + ct$ (4) $\frac{1}{2} (kt^2 + ct)$

6. If the displacement of a particle varies with time according to the relation $x = \frac{K}{b} [1 - e^{-bt}]$ then the velocity (v) of the particle is

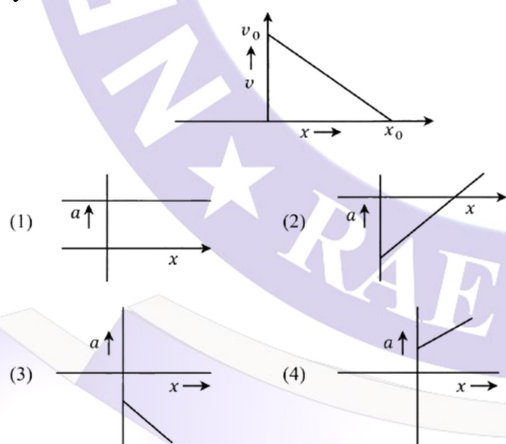
(1) $v = K e^{-bt}$ (2) $v = \frac{K}{b} e^{-bt}$
 (3) $v = \frac{K^2}{b} e^{-bt}$ (4) $v = \frac{K}{b^2} e^{-bt}$

7. A block is released from rest at $t = 0$ on a frictionless inclined plane. The distance travelled by the block in n^{th} s to $(n+1)^{\text{th}}$ s is represented by S_n and S_{n+1} respectively.

Then $\frac{S_n}{S_{n+1}}$ is

(1) $\frac{2n+1}{2n-1}$ (2) $\frac{2n-1}{2n+1}$
 (3) $\frac{2n}{2n-1}$ (4) $\frac{2n}{2n+1}$

8. Graph of velocity-distance is as shown. The graph of acceleration-distance is represented by



9. The acceleration of a particle as a function of time is given by $a = 1.5t - 0.15t^2$ (m/s^2). The particle starts motion from rest at time $t = 0$ s. Then the maximum velocity in the forward direction is

(1) 10 m/s (2) 25 m/s
 (3) 50 m/s (4) none of the above

10. Two cars start off to race with velocities 4 m/s and 2 m/s and travel in straight line with

uniform accelerations 1 m/s^2 and 2 m/s^2 respectively. If they reach the final point at the same instant, then the length of the path is

(1) 30 m (2) 32 m
 (3) 20 m (4) 24 m

11. The velocity of an object moving rectilinearly is given as a function of time by $v = 4t - 3t^2$ where v is in m/s and t is in seconds. The average velocity of particle between $t = 0$ to $t = 2$ s is

(1) 0 (2) -2 m/s
 (3) -4 m/s (4) $+2 \text{ m/s}$

12. The velocity v of a particle as a function of its position (x) is expressed as $v = \sqrt{c_1 - c_2 x}$ where c_1 and c_2 are positive constants. The acceleration of the particle is
- (1) c_2 (2) $-\frac{c_2}{2}$
 (3) $c_1 - c_2$ (4) $\frac{c_1 + c_2}{2}$

READ THE STATEMENTS CAREFULLY TO MARK THE CORRECT OPTION OUT OF THE OPTIONS GIVEN BELOW

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

13. **Assertion:** A particle moving with a constant velocity, changes its direction uniformly.

Reason: In a uniform motion, the acceleration is zero.

14. **Assertion:** Two objects moving with velocities v_1 and v_2 in the opposite directions, have their relative velocity along the direction of the one with a larger velocity.

Reason: The relative velocity between two

bodies moving with velocities v_1 and v_2 is given by $v = v_1 - v_2$ or $v = v_2 - v_1$

15. **Assertion:** Average speed of the particle in a uniform motion is the same as its average velocity, if the particle moves in a straight line.

Reason: Average velocity is given by total displacement divided by total time

16. The charge passing through a conductor is a function of time and it is given by $q = (2t^2 - 4t + 3)$ mC. The current through the conductor at $t = 4$ s, is

- (1) 7 mA (2) 19 mA
(3) 15 mA (4) 12 mA

17. If an electron revolves in the path of a circle of radius of 0.5×10^{-10} m at frequency of 5×10^{15} cycles/s the electric current in the circle is (Charge of an electron $= 1.6 \times 10^{-19}$ C)

- (1) 0.4 mA (2) 0.8 mA
(3) 1.2 mA (4) 1.6 mA

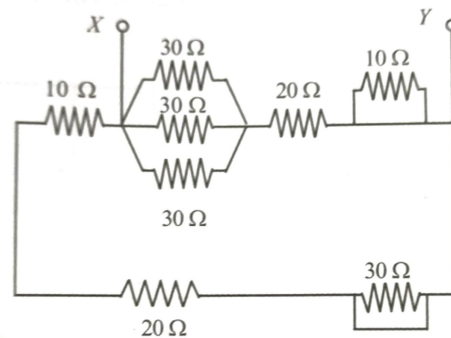
18. In a wire of circular cross-section with radius r , free electrons travel with a drift velocity V when a current I flows through the wire. What is the current in another wire of half the radius and of the same material when the drift velocity is $2V$

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

19. A current I flows through a uniform wire of diameter d when the mean drift velocity is v . The same current will flow through a wire of diameter $d/2$ made of the same material if the mean drift velocity of the electron is

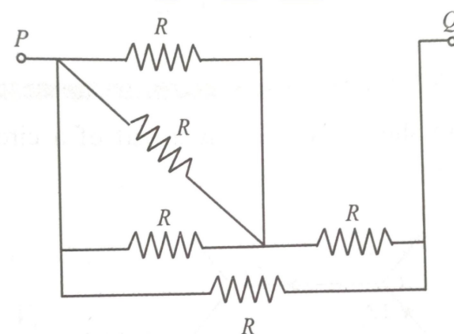
- (1) $v/4$ (2) $v/2$
(3) $4v$ (4) $2v$

20. Net resistance between X and Y is



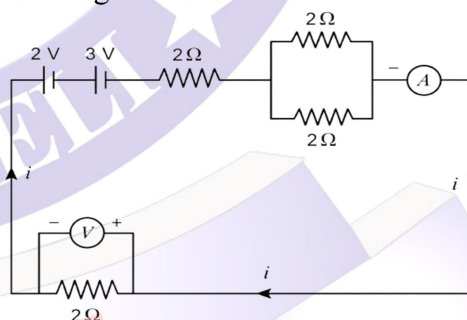
- (1) 5 Ω (2) 10 Ω
(3) 15 Ω (4) 60 Ω

21. If the equivalent resistance between the terminal point P and Q is 4 Ω in the given circuit, then find out the resistance of R in ohms



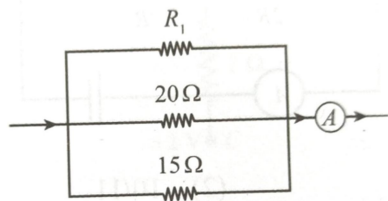
- (1) 7 (2) 4
(3) 2 (4) 5

22. Reading of ideal ammeter in ampere for the following circuit is



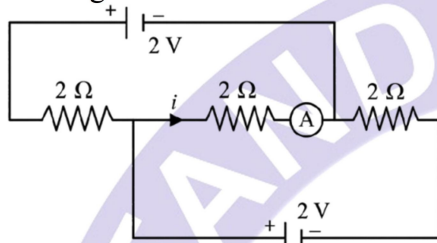
- (1) 1 (2) 2
(3) 3 (4) 4

23. In the given circuit, the current flowing through the resistance 20 Ω is 0.3 A, while the ammeter reads 0.8 A. What is the value of R_1



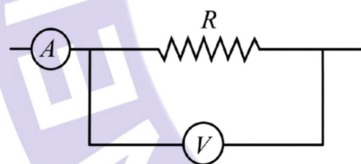
- (1) 30 Ω (2) 40 Ω
(3) 50 Ω (4) 60 Ω

24. Reading of ammeter is



- (1) 1 A (2) 2 A
(3) A/3 (4) 3 A

25. A part of a circuit is shown in figure. Here reading of ammeter is 5 A and voltmeter is 100 V. If voltmeter resistance is 2500 Ω, then the resistance R is approximately



- (1) 20 Ω (2) 10 Ω
(3) 100 Ω (4) 200 Ω

26. When a galvanometer is shunted with a 4 Ω resistance, the deflection is reduced to one-fifth. If the galvanometer is further shunted with a 2 Ω wire, the deflection will be (The main current remains the same)

- (1) $(8/13)^{\text{th}}$ of the original deflection only
(2) $(5/13)^{\text{th}}$ of the original deflection
(3) $(3/4)^{\text{th}}$ of the deflection when shunted with 4 Ω only
(4) $(5/13)^{\text{th}}$ of the deflection when shunted with 4 Ω only

27. A galvanometer gives a full deflection when a current of 0.2 mA is passed through it. The resistance of the galvanometer is 1000

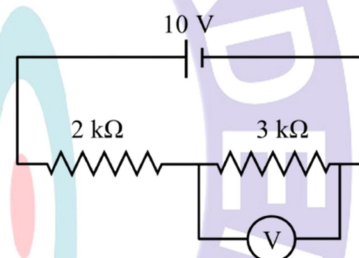
Ω. To convert it to an ammeter of range 2 ampere, the shunt resistance required is

- (1) 0.1 Ω (2) 0.01 Ω
(3) 1 Ω (4) 0.2 Ω

28. A cell of emf E and internal resistance r supplies current for the same time t through external resistances R_1 and R_2 respectively. If the heat produced in both cases is same, then the internal resistance is

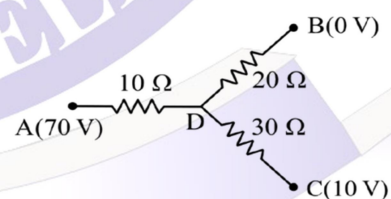
- (1) $\frac{1}{r} = \frac{1}{R_1} + \frac{1}{R_2}$ (2) $r = \frac{R_1 + R_2}{2}$
(3) $r = \sqrt{R_1 R_2}$ (4) $r = R_1 + R_2$

29. In the circuit shown in figure, the resistance of voltmeter is 6 KΩ. The voltmeter reading will be



- (1) 6 V (2) 5 V
(3) 4 V (4) 3 V

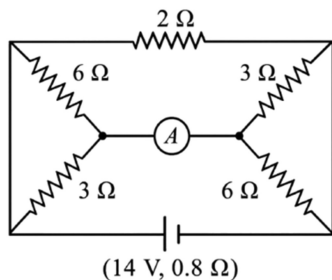
30. In the network shown, points A, B and C are at potentials of 70 V, zero and 10 V, respectively.



Which of the following is incorrect?

- (1) Point D is at a potential of 40 V.
(2) The current in the sections AD, DB, DC are in the ratio 3:2:1.
(3) The currents in the sections AD, DB, DC are in the ratio 1:2:3.
(4) The network draws a total power of 200 W.

31. The reading of ammeter shown in figure is



- (1) 6.56 A (2) 3.28 A
(3) 2.18 A (4) 1.09 A

IN THE FOLLOWING QUESTIONS, STATEMENT I IS FOLLOWED BY STATEMENT II. EACH QUESTION HAS THE FOLLOWING FOUR CHOICES OUT OF WHICH ONLY ONE IS CORRECT.

- (1) Both statement I and statement II are true.
(2) Both statement I and statement II are false.
(3) Statement I is true but statement II is false.
(4) Statement I is false but statement II is true.

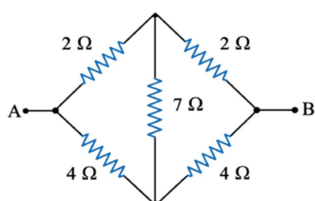
32. **Statement I:** The resistance of a copper wire varies directly with the length and the diameter of the wire.

Statement II: The resistance varies inversely with the area of cross-section of the wire.

33. **Statement I:** When cells are connected in parallel to the external load, the effective emf increases.

Statement II: Effective internal resistance of cells decreases when cells are connected in parallel.

34. The equivalent resistance between A and B of the circuit, is



- (1) $\frac{13}{12} \Omega$ (2) $\frac{8}{3} \Omega$
(3) 8Ω (4) $\frac{4}{3} \Omega$

35. The cell has an emf of 2V and internal resistance of this cell is 0.1Ω , it is connected to a resistance of 3.9Ω , the voltage across the cell will be

- (1) 1.5 V (2) 2V
(3) 1.95 V. (4) 1.8 V.

36. An electric bulb marked 40W and 200V, is used in a circuit of supply voltage 100V.

Now its power is

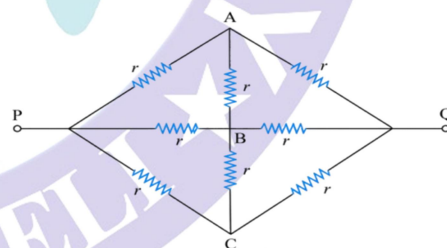
- (1) 100 W (2) 20 W
(3) 40 W (4) 10 W.

37. A wire of length L is drawn such that its diameter is reduced to half of its original diameter. If the initial resistance were 10Ω .

Its new resistance would be

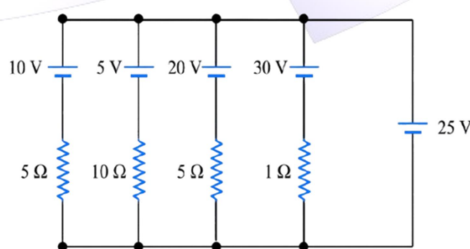
- (1) 40Ω (2) 80Ω
(3) 160Ω (4) 120Ω .

38. The equivalent resistance between the points P and Q in the network given here is equal to (given, $r = \frac{3}{2} \Omega$),



- (1) $\frac{1}{2} \Omega$ (2) 1Ω
(3) $\frac{3}{2} \Omega$ (4) 2Ω

39. In the circuit shown, current flowing through 25V cell is

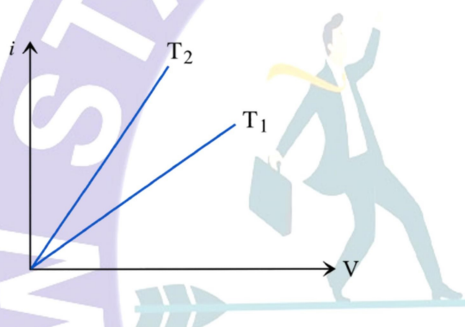


- (1) 7.2 A (2) 10A
(3) 12A (4) 14.2A.

40. Charge passing through a conductor of cross-section area, $A = 0.3\text{m}^2$ is given by $q = 3t^2 + 5t + 2$ in coulomb, where t is in second. What is the value of drift velocity at $t = 2\text{s}$ [Given $n = 2 \times 10^{25} / \text{m}^3$]

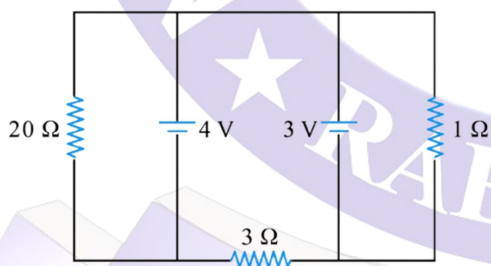
- (1) $0.77 \times 10^{-5} \text{ m/s}$ (2) $1.77 \times 10^{-5} \text{ m/s}$
(c) $2.8 \times 10^5 \text{ m/s}$ (d) $0.57 \times 10^5 \text{ m/s}$

41. The current i and voltage V graphs for a given metallic wire at two different temperatures T_1 and T_2 are shown in the Fig. It is concluded that



- (1) $T_1 > T_2$ (2) $T_1 < T_2$
(3) $T_1 = T_2$ (4) $T_1 = 2T_2$

42. The potential difference across 3Ω resistor shown in figure is



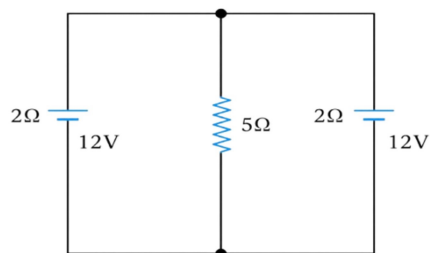
- (1) Zero (2) 1V
(3) 3.5 V (d) 7V.

43. A galvanometer of resistance 100Ω is converted to a voltmeter of range 10V by connecting a resistance of $10\text{k}\Omega$. The resistance required to convert the same galvanometer to an ammeter of range 1A is

- (1) 0.4Ω (2) 0.3Ω
(3) 1.2Ω (4) 0.1Ω .

44. In the arrangement shown in figure, the

current through 5Ω resistor is



- (1) 2 A (2) zero
(c) $\frac{12}{7} \text{ A}$ (4) 1 A.

45. The resistance of a wire at room temperature 30°C is found to be 10Ω . Now to increase the resistance by 10%, the temperature of the wire must be [The temperature coefficient of resistance of the material of the wire is $0.002 \text{ per } ^\circ\text{C}$]

- (1) 36°C (2) 83°C
(3) 63°C (4) 33°C .

CHEMISTRY

READ THE STATEMENTS CAREFULLY TO MARK THE CORRECT OPTION OUT OF THE OPTIONS GIVEN BELOW

(1) If both statements are true and Reason is the correct explanation of Assertion.

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

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

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

46. **Assertion:** The reaction having low value of activation energy are generally fast.

Reason: Temperature coefficient for reaction having low activation energy is large.

47. **Assertion:** For first order reaction, Half-life period is always independent of initial concentration.

Reason: Half life period for first order reaction is directly proportional to rate constant.

48. **Assertion:** In a reversible endothermic reaction, activation energy of the forward reaction is higher than that of the backward reaction.

Reason: The threshold energy of the forward reaction is more than that of the backward reaction.

49. **Assertion:** For a first order reaction, $t_{1/2}$ is independent of the initial concentration of reactants.

Reason: For a first order reaction, $t_{1/2}$ is twice the $t_{3/4}$.

50. **Assertion:** Formation of HI is a bimolecular reaction.

Reason: Two molecules of reactants are involved in this reaction.

IN THE FOLLOWING QUESTIONS, STATEMENT I IS FOLLOWED BY STATEMENT II. EACH QUESTION HAS THE FOLLOWING FOUR CHOICES OUT OF WHICH ONLY ONE IS CORRECT.

- (1) Both statement I and statement II are true.
 (2) Both statement I and statement II are false.
 (3) Statement I is true but statement II is false.
 (4) Statement I is false but statement II is true.

51. **Statement I:** The rate of the reaction is the rate of change of concentration of a reactant or a product.

Statement II: Rate of reaction remains constant during the complete reaction.

52. **Statement I:** Rate of reaction doubles when concentration of reactant is double if it is a first order reaction.

Statement II: Rate constant also double.

53. Match Column I with Column II.

Column I	Column II
(a) $\text{SO}_2\text{Cl}_2 \rightarrow \text{SO}_2 + \text{Cl}_2$	p. pseudo unimolecular reaction
(b) $2\text{NO}_2 \rightarrow 2\text{N}_2 + \text{O}_2$	q. first order reaction
(c) $2\text{NO} + \text{O}_2 \rightarrow 2\text{NO}_2$	r. second order reaction
(d) $\text{CH}_3\text{COOC}_2\text{H}_5 + \text{H}_2\text{O} + \text{H}^+ \rightarrow \text{CH}_3\text{COOH} + \text{C}_2\text{H}_5\text{OH}$	s. third order

- (1) $a \rightarrow p, b \rightarrow q, c \rightarrow r, d \rightarrow s$
 (2) $a \rightarrow q, b \rightarrow p, c \rightarrow s, d \rightarrow r$

(3) $a \rightarrow s, b \rightarrow r, c \rightarrow q, d \rightarrow p$

(4) $a \rightarrow q, b \rightarrow r, c \rightarrow s, d \rightarrow p$

54. Match Column I with Column II.

Column I	Column II
(a) First order reaction	p. $\propto \frac{1}{a^{n-1}}$
(b) Zero order reaction	q. Radioactive decay
(c) Trimolecular reaction	r. Photochemical reaction
(d) Half-life period of 'n' the order	s. $2\text{CO} + \text{O}_2 \rightarrow 2\text{CO}_2$

(1) $a \rightarrow p, b \rightarrow q, c \rightarrow r, d \rightarrow s$

(2) $a \rightarrow q, b \rightarrow r, c \rightarrow s, d \rightarrow p$

(3) $a \rightarrow r, b \rightarrow s, c \rightarrow q, d \rightarrow p$

(4) $a \rightarrow s, b \rightarrow r, d \rightarrow q, c \rightarrow p$

55. Match Column I with Column II.

Column I	Column II
(a) Collision theory	p. Unit of k : $\text{mol L}^{-1} \text{s}^{-1}$
(b) Zero order reaction	q. Bimolecular reaction
(c) Photochemical reaction	r. Fractional order
(d) Intercept (in Arrhenius plot)	s. $\ln A$
(e) Order of reaction	t. Zero order reaction

(1) $a \rightarrow q, b \rightarrow p, c \rightarrow t, d \rightarrow s, e \rightarrow r$

(2) $a \rightarrow p, b \rightarrow q, c \rightarrow t, d \rightarrow s, e \rightarrow r$

(3) $a \rightarrow r, b \rightarrow s, c \rightarrow q, d \rightarrow t, e \rightarrow p$

(4) $a \rightarrow s, b \rightarrow q, d \rightarrow r, c \rightarrow p, e \rightarrow t$

56. In the reaction

$\text{BrO}_3^-(\text{aq}) + 5\text{Br}^-(\text{aq}) + 6\text{H}^+ \rightarrow 3\text{Br}_2(\text{l}) + 3\text{H}_2\text{O}(\text{l})$ The rate of appearance of bromine (Br_2) is related to rate of disappearance of bromide ions as following:

$$(1) \frac{d(\text{Br}_2)}{dt} = \frac{3}{5} \frac{d(\text{Br}^-)}{dt} \quad (2) \frac{d(\text{Br}_2)}{dt} = -\frac{3}{5} \frac{d(\text{Br}^-)}{dt}$$

$$(3) \frac{d(\text{Br}_2)}{dt} = -\frac{5}{3} \frac{d(\text{Br}^-)}{dt} \quad (4) \frac{d(\text{Br}_2)}{dt} = \frac{5}{3} \frac{d(\text{Br}^-)}{dt}$$

57. In a zero-order reaction for every 10° rise of temperature, the rate is doubled. If the temperature is increased from 10°C to 100°C the rate of the reaction will become:

- (1) 64 times (2) 128 times
 (3) 256 times (4) 512 times

58. Activation energy E_a and rate constants k_1

and k_2 of a chemical reaction at two different temperatures (T_1 and T_2) are related by:

$$(1) \ln \frac{k_2}{k_1} = -\frac{E_a}{R} \left(\frac{1}{T_2} + \frac{1}{T_1} \right)$$

$$(2) \ln \frac{k_2}{k_1} = \frac{E_a}{R} \left(\frac{1}{T_1} + \frac{1}{T_2} \right)$$

$$(3) \ln \frac{k_2}{k_1} = -\frac{E_a}{R} \left(\frac{1}{T_1} - \frac{1}{T_2} \right)$$

$$(4) \ln \frac{k_2}{k_1} = -\frac{E_a}{R} \left(\frac{1}{T_2} - \frac{1}{T_1} \right)$$

59. A reaction having equal energies of activation for forward and reverse reaction has

$$(1) \Delta G = 0 \quad (2) \Delta H = 0$$

$$(3) \Delta H = \Delta G = \Delta S = 0 \quad (4) \Delta S = 0$$

60. The reaction quotient (Q) for the reaction $N_2(g) + 3H_2(g) \rightleftharpoons 2NH_3(g)$ is given by

$$Q = \frac{[NH_3]^2}{[N_2][H_2]^3}$$

The reaction will proceed from right to left if

$$(1) Q = K_c \quad (2) Q < K_c$$

$$(3) Q > K_c \quad (4) Q = 0$$

where K_c is the equilibrium constant.

61. The rapid change of pH near the stoichiometric point of an acid-base titration is the basis of indicator detection. pH of the solution is related to ratio of the concentrations of the conjugate acid (HIn) and base (In^-) forms of the indicator by the expression

$$(1) \log \frac{[In^-]}{[HIn]} = pK_{in} - pH$$

$$(2) \log \frac{[HIn]}{[In^-]} = pK_{in} - pH$$

$$(3) \log \frac{[HIn]}{[In^-]} = pH - pK_{in}$$

$$(4) \log \frac{[In^-]}{[HIn]} = pH - pK_{in}$$

62. The dissociation equilibrium of a gas AB_2 can be represented

$2AB_{2(g)} \rightleftharpoons 2AB_{(g)} + B_{2(g)}$ The degree of dissociation is x and is small compared to 1.

The expression relating the degree of dissociation (x) with equilibrium constant K_p and total pressure P is

$$(1) (2K_p / P)^{1/2} \quad (2) (K_p / P)$$

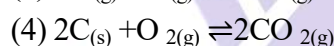
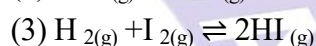
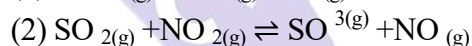
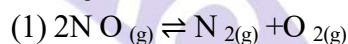
$$(3) 2K_p r / P \quad (4) (2K_p / P)^{1/3}$$

63. The dissociation constants for acetic acid and HCN at $25^\circ C$ are 1.5×10^{-5} and 4.5×10^{-10} respectively. The equilibrium constant for the equilibrium $CN^- + CH_3COOH \rightleftharpoons HCN + CH_3COO^-$ would be

$$(1) 3.0 \times 10^{-5} \quad (2) 3.0 \times 10^{-4}$$

$$(3) 3.0 \times 10^4 \quad (4) 3.0 \times 10^5$$

64. In which of the following equilibrium K_c and K_p are not equal?



65. For the reaction, $N_{2(g)} + O_{2(g)} \rightleftharpoons 2NO_{(g)}$, the equilibrium constant is K_1 . The equilibrium constant is K_2 for the reaction, $2NO_{(g)} + O_{(g)} \rightleftharpoons 2NO_{2(g)}$, What is K for the reaction $NO_{2(g)} \rightleftharpoons \frac{1}{2} N_{2(g)} + O_{2(g)}$?

$$(1) \frac{1}{2K_1K_2} \quad (2) \frac{1}{4K_1K_2}$$

$$(3) \left[\frac{1}{K_1K_2} \right]^{1/2} \quad (4) \frac{1}{K_1K_2}$$

66. Buffer solutions have constant acidity and alkalinity because

(1) They have large excess of H^+ or OH^- ions

(2) They have fixed value of pH

(3) These give unionized acid or base on reaction with added acid or alkali

(4) Acids and alkalis in these solutions are shielded from attack by other ions

67. Given that the equilibrium constant for the reaction, $2SO_{2(g)} + O_{2(g)} \rightleftharpoons 2SO_{3(g)}$ has a value of 278 at a particular temperature, the value of the equilibrium constant for the following reaction at the same temperature?



$$(1) 1.8 \times 10^{-3} \quad (2) 3.6 \times 10^{-3}$$

$$(3) 6 \times 10^{-2} \quad (4) 1.3 \times 10^{-5}$$

68. The K_{sp} of Ag_2CrO_4 , $AgCl$, $AgBr$ and AgI are respectively, 1.1×10^{-12} , 1.8×10^{-10} ,

5.0×10^{-13} , 8.3×10^{-17} Which one of the following salts will precipitate last if AgNO_3 solution is added to the solution containing equal moles of NaCl , NaBr , NaI and Na_2CrO_4 ?

- (1) AgBr (2) Ag_2CrO_4
(3) AgI (4) AgCl

69. pH of a saturated solution of $\text{Ca}(\text{OH})_2$ is 9.

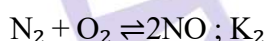
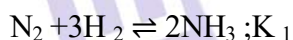
The solubility product (K_{sp}) of $\text{Ca}(\text{OH})_2$ is

- (1) 0.5×10^{-15} (2) 0.25×10^{-10}
(3) 0.125×10^{-15} (4) 0.5×10^{-10}

70. Which will make basic buffer?

- (1) 50 mL of 0.1 M NaOH + 25 mL of 0.1 M CH_3COOH
(2) 100 mL of 0.1 M CH_3COOH + 100 mL of 0.1 M NaOH
(3) 100 mL of 0.1 M HCl + 200 mL of 0.1 M NH_4OH
(4) 100 mL of 0.1 M HCl + 100 mL of 0.1 M NaOH

71. The following equilibrium constants are given:



The equilibrium constant for the oxidation of NH_3 by oxygen to give NO is

- (1) $\frac{K_2 K_3^2}{K_1}$ (2) $\frac{K_3^2 K_2}{K_1}$
(3) $\frac{K_1 K_2}{K_3}$ (4) $\frac{K_2 K_3^3}{K_1}$

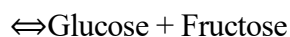
72. Following solutions were prepared by mixing different volumes of NaOH and HCl of different concentrations:

- (a) 60 ml M/10 HCl + 40 ml M/10 NaOH
(b) 55 ml M/10 HCl + 45 ml M/10 NaOH
(c) 75 ml M/5 HCl + 25 ml M/5 NaOH
(d) 100 ml M/10 HCl + 100 ml M/10 NaOH

pH of which one of them will be equal to 1?

- (1) b (2) a
(3) d (4) c

73. Hydrolysis of sucrose is given by the following reaction $\text{Sucrose} + \text{H}_2\text{O}$



If the equilibrium constant (K_c) is 2×10^{13} at 300 K, the value of $\Delta_r G^\ominus$ in kJ mol^{-1} at the same temperature will be:

- (1) $-8.314 \text{ J mol}^{-1} \text{ K}^{-1} \times 300 \text{ K} \times \ln(4 \times 10^{13})$
(2) $-8.314 \text{ J mol}^{-1} \text{ K}^{-1} \times 300 \text{ K} \ln(2 \times 10^{13})$
(3) $8.314 \text{ J mol}^{-1} \text{ K}^{-1} \times 300 \text{ K} \ln(2 \times 10^{13})$
(4) $8.314 \text{ J mol}^{-1} \text{ K}^{-1} \times 300 \text{ K} \ln(3 \times 10^{13})$

74. Find out the solubility of $\text{Ni}(\text{OH})_2$ in 0.1 M NaOH . Given that the ionic product of $\text{Ni}(\text{OH})_2$ is 2×10^{-15}

- (1) $1 \times 10^{-8} \text{ M}$ (2) $2 \times 10^{-13} \text{ M}$
(3) $2 \times 10^{-8} \text{ M}$ (4) $1 \times 10^{-13} \text{ M}$

75. The $\text{p}K_b$ of dimethylamine and $\text{p}K_a$ of acetic acid are 3.27 and 4.77, respectively at T (K). correct option for the pH of dimethylammonium acetate solution is:

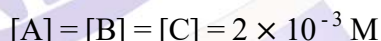
- (1) 8.50 (2) 5.50
(3) 7.75 (4) 6.25

76. The pH of the solution containing 50 mL each of 0.10 M sodium acetate and 0.01 M acetic acid is

[Given $\text{p}K_a$ of CH_3COOH = 4.57]

- (1) 4.57 (2) 2.57
(3) 5.57 (4) 3.57

77. For the reaction $2\text{A} \rightleftharpoons \text{B} + \text{C}$, $K_c = 4 \times 10^{-3}$ At a given time, the composition of reaction mixture is:

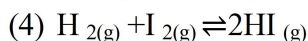
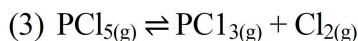


Then which of the following is correct?

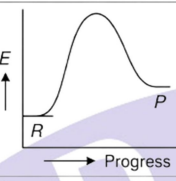
- (1) Reaction has a tendency to go in backward direction.
(2) Reaction has gone to completion in forward direction.
(3) Reaction is at equilibrium.
(4) Reaction has a tendency to go in forward direction.

78. In which of the following equilibria, K_p and K_c are NOT equal?

- (1) $\text{CO}(\text{s}) + \text{H}_2\text{O}(\text{s}) \rightleftharpoons \text{CO}_2(\text{s}) + \text{H}_2(\text{s})$
(2) $2\text{BrCl}(\text{g}) \rightleftharpoons \text{Br}_2(\text{g}) + \text{Cl}_2(\text{g})$



79. Match the following:

Column-I	Column-II
(a) Zero order	(i) $k = Ae^{-E_a/RT}$
(b) First order	(ii) 
(c) Endothermic reaction	(iii) $k = \frac{2.303}{t} \log \frac{[A]_0}{[A]}$
(d) Arrhenius equation	(iv) $k = \frac{1}{t} ([A]_0 - [A])$

(1) (a)-(iv), (b)-(iii), (c)-(ii), (d)-(i)

(2) (a)-(i), (b)-(ii), (c)-(iii), (d)-(iv)

(3) (a)-(ii), (b)-(iii), (c)-(iv), (d)-(i)

(4) (a)-(iii), (b)-(iv), (c)-(i), (d)-(ii)

80. Match the following:

Column-I (Straight Line)	Column-II (Slope)
(a) rate v/s $[A]$, 1 order	(i) $-K$
(b) $\ln[A]$ v/s t (1 st order)	(ii) K
(c) $t_{1/2}$ v/s $[A]_0$ (zero order)	(iii) $\frac{1}{K}$
(d) $t_{100\%}$ v/s $[A]_0$ (zero order)	(iv) $\frac{1}{2K}$

(1) (a)-(ii), (b)-(i), (c)-(i), (d)-(iii)

(2) (a)-(iii), (b)-(i), (c)-(iv), (d)-(ii)

(3) (a)-(ii), (b)-(i), (c)-(iv), (d)-(iii)

(4) (a)-(iv), (b)-(iii), (c)-(ii), (d)-(i)

81. Match the rate law given in column-I with the dimensions of rate constants given in column-II and mark the appropriate choice.

Column-I	Column-II
(a) $\text{Rate} = k[\text{NH}_3]^0$	(i) $\text{mol L}^{-1} \text{s}^{-1}$
(b) $\text{Rate} = k[\text{H}_2\text{O}_2][\text{I}^-]$	(ii) $\text{L mol}^{-1} \text{s}^{-1}$
(c) $\text{Rate} = k[\text{CH}_3\text{CHO}]^{3/2}$	(iii) s^{-1}
(d) $\text{Rate} = k[\text{C}_2\text{H}_5\text{Cl}]$	(iv) $\text{L}^{1/2} \text{mol}^{-1/2} \text{s}^{-1}$

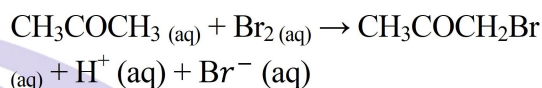
(1) (a)-(iv), (b)-(iii), (c)-(ii), (d)-(i)

(2) (a)-(i), (b)-(ii), (c)-(iii), (d)-(iv)

(3) (a)-(ii), (b)-(i), (c)-(iv), (d)-(iii)

(4) (a)-(i), (b)-(ii), (c)-(iv), (d)-(iii)

82. The bromination of acetone that occurs in acid solution is represented by this equation:



These kinetic data were obtained from given reaction concentrations.

Initial concentrations, (M)

$[\text{CH}_3\text{COCH}_3]$	$[\text{Br}_2]$	$[\text{H}^+]$
0.30	0.05	0.05
0.30	0.10	0.05
0.30	0.10	0.10
0.40	0.05	0.20

Initial rate, disappearance of Br_2 , Ms^{-1}

$$5.7 \times 10^{-5}$$

$$5.7 \times 10^{-5}$$

$$1.2 \times 10^{-4}$$

$$3.1 \times 10^{-4}$$

Based on these data, the rate equation is:

$$(1) \text{Rate} = k [\text{CH}_3\text{COCH}_3] [\text{Br}_2] [\text{H}^+]^2$$

$$(2) \text{Rate} = k [\text{CH}_3\text{COCH}_3] [\text{Br}_2] [\text{H}^+]$$

$$(3) \text{Rate} = k [\text{CH}_3\text{COCH}_3] [\text{H}^+]$$

$$(4) \text{Rate} = k [\text{CH}_3\text{COCH}_3] [\text{Br}_2]$$

83. The rate constants k_1 and k_2 for two different reactions are $10^{16} \cdot e^{-2000/T}$ and $10^{15} \cdot e^{-1000/T}$, respectively. The temperature at which $k_1 = k_2$ is:

$$(1) 2000 \text{ K} \quad (2) 1000/2.303 \text{ K}$$

$$(3) 1000 \text{ K} \quad (4) 2000/2.303 \text{ K}$$

84. Which of the following statements for the order of a reaction is incorrect?

(A) Order of reaction is always a whole number.

(B) Order of reaction can be determined experimentally.

(C) Order of reaction is not influenced by stoichiometric coefficient of the reactants.

(D) Order of reaction is sum of power to the

concentration terms of reactants to express rate of reaction.

85. What is the activation energy for a reaction if its rate doubles when the temperature is raised from 20°C to 35°C ($R = 8.314\text{ J mol}^{-1}\text{ K}^{-1}$)

(1) 269 kJ mol^{-1} (2) 34.7 kJ mol^{-1}
(3) 15.1 kJ mol^{-1} (4) 342 kJ mol^{-1}

86. The decomposition of phosphine (PH_3) on tungsten at low pressure is a first order reaction. It is because the:

(1) rate of decomposition is very slow.
(2) rate is proportional to the surface coverage.
(3) rate is independent of surface coverage.
(4) rate is inversely proportional to the surface coverage.

87. When initial concentration of the reactant is doubled, the half-life period of a zero order reaction

(1) Is tripled (2) Is doubled
(3) Is halved
(4) Remains unchanged

88. The correct difference between first and second order reactions is that

(1) A first-order reaction can be catalyzed; a second-order reaction cannot be catalyzed
(2) The half-life of a first-order reaction does not depend on $[\text{A}]$ the half-life of a second-order reaction does depend on $[\text{A}]$
(3) The rate of a first-order reaction does not depend on reactant concentrations; the rate of a second-order reaction does depend on reactant concentrations
(4) The rate of a first-order reaction does depend on reactant concentrations; the rate of a second-order reaction does not depend on reactant concentrations

89. An increase in the concentration of the reactants of a reaction leads to change in:

(1) activation energy
(2) heat of reaction

(3) threshold energy
(4) collision frequency

90. Given below are two statements: One is labelled as Assertion A and the other is labelled as Reason R.

Assertion A: A reaction can have zero activation energy.

Reasons R: The minimum extra amount of energy absorbed by reactant molecules so that their energy becomes equal to threshold value, is called activation energy.

In the light of the above statements, choose the correct answer from the options given below:

(A) Both A and R are true, and R is NOT the correct explanation of A.
(B) A is true but R is false.
(C) A is false but R is true.
(D) Both A and R are true and R is the correct explanation of A.

BIOLOGY

91. Find the correct matching

a) First month	i) Eye lids separates
b) Second month	ii) Movement of foetus
c) Third month end	iii) Major organ system
d) Fifth month	iv) Limbs and digits
e) Sixth month	v) Heart

(1) a-iv, b-v, c-iii, d-i, e-ii
(2) a-v, b-iv, c-ii, d-i, e-iii
(3) a-v, b-iv, c-iii, d-ii, e-i
(4) a-i, b-iv, c-iii, d-ii, e-v

92. Which is the longest phase of menstrual cycle:

(1) Follicular phase (2) Luteal phase
(3) Ovulatory phase (4) All

93. Given below are two statements:

Statement I:

Oogenesis is initiated during the embryonic development stage.

Statement-II-

A large number Graafian follicle degenerate during the phase from birth to puberty.

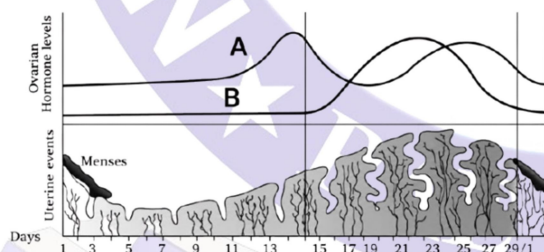
Choose the correct answer from the option given below:

- (1) Both Statement I and Statement II are incorrect
- (2) Statement I is correct but Statement II is incorrect
- (3) Statement I is incorrect but Statement II is correct
- (4) Both Statement I and Statement II are correct

94. Uterine contractions called foetal ejection reflex for parturition is induced by:

- (1) Oxytocin
- (2) Fully developed foetus
- (3) Placenta
- (4) Both 2 and 3

95. The following graph shown the levels of ovarian hormones during a menstrual cycle what do A and B represent



- | | |
|--|--|
| <p>A</p> <ul style="list-style-type: none"> (1) FSH (2) Estrogen (3) Progesterone (4) LH | <p>B</p> <ul style="list-style-type: none"> LH Progesterone Estrogen FSh |
|--|--|

96. Given below are two statements:

Statement I:

Placenta release estrogen, progesterone, hCG, hPL, ADH and relaxin during pregnancy.

Statement-II:

hCG, hPL and relaxin are produced in

woman only during pregnancy.

Choose the correct answer from the option given below:

- (1) Both Statement I and Statement II are incorrect
- (2) Statement I is correct but Statement II is incorrect
- (3) Statement I is incorrect but Statement II is correct
- (4) Both Statement I and Statement II are correct

97. What is the correct sequence of sperm formation:

- (1) Spermatogonia → Spermatocytes → Spermatozoa → Spermatids
- (2) Spermatogonia → Spermatids → Spermatocytes → Spermatozoa
- (3) Spermatogonia → Spermatocytes → Spermatids → Spermatozoa
- (4) Spermatocytes → Spermatozoa → Spermatids → Spermatogonia

98. Match the following and choose the correct option:

- | | |
|--------------------|--|
| A. Testis | i. Tiny finger like structure |
| B. Infundibulum | ii. Funnel shaped |
| C. Fimbriae | iii. Oval in shape |
| D. Clitoris | iv. Finger like projections appear on the trophoblast |
| E. Chorionic Villi | v. Edges of the infundibulum possess finger-like projections |

- (1) A-iii, B-ii, C-v, D-iv, E-i
- (2) A-ii, B-iii, C-v, D-i, E-iv
- (3) A-iii, B-ii, C-v, D-i, E-iv
- (4) A-iii, B-v, C-, D-i, E-iv

99. Find out the correct match from the following table:

Column -I	Column -II	Column -III
i. Perimetrium	External thin layer	Blastocyst implant in this layer
ii. Myometrium	Middle thick layer of smooth muscle	Exhibits strong Contraction during delivery of the body
iii. Endometrium	Inner glandular layer	Undergoes cyclical changes during menstrual cycle

- (1) ii only (2) i and ii
(3) ii and iii (4) iii only

100. Given below are two statements: one is labelled as Assertion (A) and the other is labelled as Reason (R).

Assertion (A): The testes are situated outside the abdominal cavity within a pouch called scrotum.

Reason (R): Scrotum helps in maintaining the low temperature of testes which is necessary for sper-matogenesis.

In the light of the above statements, choose the correct answer from the options given below

- (1) Both (A) and (R) are true but (R) is not the correct explanation of (A)
(2) (A) is true but (R) is false
(3) (A) is false but (R) is true
(4) Both (A) and (R) are true and (R) is the correct explanation of (A)

101. Given below are two statements:

Statement I:FSH act at the leydig cells and stimulates synthe-sis and secretion of androgens.

Statement-II:LH act on sertoli cells and stimulates secretion of some factor which help in the process of spermiogenesis.

Choose the correct answer from the option given below:

- (1) Both Statement I and Statement II are incorrect
(2) Statement I is correct but Statement II

is incorrect

(3) Statement I is incorrect but Statement II is correct

(4) Both Statement I and Statement II are correct

102. Given below are two statements:

Statement I:The ovary are located in Pelvic region and each ovary is about 2-4 c.m in length

Statement II:Stroma of ovary divided into two zone a peripheral cortex and an inner medulla.

Choose the correct answer from the option given below:

- (1) Both Statement I and Statement II are incorrect
(2) Statement I is correct but Statement II is incorrect
(3) Statement I is incorrect but Statement II is correct
(4) Both Statement I and Statement II are correct

103. Given below are two statements:

Statement I:Progesterone is essential for maintnance of endometrium.

Statement II:The ovary secretes estrogen, progesterone, L.H. and F.S.H

Choose the correct answer from the option given below:

- (1) Both Statement I and Statement II are incorrect
(2) Statement I is correct but Statement II is incorrect
(3) Statement I is incorrect but Statement II is correct
(4) Both Statement I and Statement II are correct

104. Given below are two statements:

Statement -I:

Lack of menstruation is always indicator of preg-nancy.

Statement-II: In human being menstrual

cycle ceases around

50 year of age.

Choose the correct answer from the option given below:

- (1) Both Statement I and Statement II are incorrect
- (2) Statement I is correct but Statement II is incorrect
- (3) Statement I is incorrect but Statement II is correct
- (4) Both Statement I and Statement II are correct

105. Several mammary ducts are connected to Lactiferous duct via:

- (1) Mammary duct (2) Ampulla
- (3) Eustachian duct (4) Stenson's duct

106. Each testis have around how many testicular lobules

- (1) 100 (2) 50
- (3) 250 (4) 150

107. Seminal plasma, which is rich in fructose, calcium and enzymes is a product of:

- (1) Seminal vesicles (2) Prostate
- (3) Bulbourethral gland
- (4) All of these

108. The functions of male accessory duct and glands are maintained by:

- (1) Pituitary hormones
- (2) Hypophyseal hormones
- (3) Androgens
- (4) All

109. Interstitial cells found in human testis are secretory source of:

- (1) Glucagon (2) Androgens
- (3) Progesterone (4) hCG

110. Given below are two statements: one is labelled as Assertion (A) and the other is labelled as Reason (R)

Assertion (A): In India IUDs like copper T is one of most widely accepted method of contraception.

Reason (R): it can be self inserted by the

user.

In the light of the above statements, choose the correct answer from the options given below:

- (1) Both (A) and (R) are true but (R) is not the correct explanation of (A)
- (2) (A) is true but (R) is false
- (3) (A) is false but (R) is true
- (4) Both (A) and (R) are true and (R) is the correct explanation of (A)

111. Given below are two statements:

Statement I: Hormone releasing IUDs make the uterus unsuitable for implantation and cervix hostile to sperm.
Statement-II: LNG-20 and multiloaded 375 are hormone releasing IUD.

Choose the correct answer from the option given below:

- (1) Both Statement I and Statement II are incorrect
- (2) Statement I is correct but Statement II is incorrect
- (3) Statement I is incorrect but Statement II is correct
- (4) Both Statement I and Statement II are correct

112. Match column I with column II and select the correct option from the given codes

Column I	Column II
(a) Non-medicated IUDs	(i) Progestasert
(b) Copper releasing IUDs	(ii) Lippes loop
(c) Hormone releasing IUDs	(iii) Multiload 375
(1) a-ii, b-i, c-iii	(2) a-ii, b-iii, c-i
(3) a-i, b-iii, c-ii	(4) a-i, b-ii, c-iii

113. Emergency contraceptives are effective within which time period:

- (1) Within 72 hours of ovulation
- (2) Within 72 hours of spermiogenesis
- (3) Within 72 hours of coitus
- (4) Within 72 hours of implantation

114. What is the work of Multiload 375

- (1) To inhibit ovulation
- (2) To inhibit insemination
- (3) To suppress fertilising capacity of sperms
- (4) To inhibit gametogenesis

115. How many MTP are performed in a year all over the world:

- (1) 4.5 to 5 million
- (2) 450 to 500 million
- (3) 4 to 5 million
- (4) 45 to 50 million

116. Late detection and improper treatment of STIs leads to

- (1) pelvic inflammatory diseases
- (2) abortions, still birth, ectopic pregnancies
- (3) infertility or cancer of reproductive tract
- (4) All of these

117. Full form of ICSI is:

- (1) Inter Cytoplasmic Sperm Insemination
- (2) Intra Cytoplasmic Sperm Injection
- (3) Intra Cervical Sperm Injection
- (4) Inter Cervical Sperm Injection

118. Artificial insemination means

- (1) Transfer of sperms of husband to a test tube containing ova
- (2) Artificial introduction of sperms of a healthy donor into the vagina
- (3) Introduction of sperms of a healthy donor directly into the ovary
- (4) Transfer of ovum of a healthy donor into the fallopian tube of another female who can not produce one

119. Which of the following are a kind of assisted reproductive technologies:

- (1) ICSI
- (2) IUI
- (3) IUT
- (4) All of these

120. How many disease are sexually transmitted infection: Pneumonia, Typhoid, syphilis, cholera, chlamydiasis, genital warts, Diabetes, Hepatitis-B,

Genital Herpes, AIDS, Gonorrhoea, malaria:

- (1) 3
- (2) 4
- (3) 7
- (4) 5

121. In a female child at the birth oocyte is in the stage of

- (1) Anaphase 2nd of meiotic division
- (2) Prophase 1st of meiotic division
- (3) Maturation
- (4) Ovum

122. Length of fallopian tube

- (1) 10-12 cm
- (2) 22-24 cm
- (3) 24-30 cm
- (4) 30-32 cm

123. The male reproductive system is located in the pelvis region. It does not includes

- (1) A pair of testes
- (2) Epididymis and vas deferens
- (3) Bartholins glands
- (4) Ejaculatory duct

124. Nature of ovarian hormones are

- (1) Steroid hormones
- (2) Proteinaceous hormone
- (3) Amino acid derivatives
- (4) Vitamin derivatives

125. The vasa efferentia leave the A... and open into epididymis located along the posterior surface of each testis. The epididymis leads to ...B.... that ascends to the abdomen and loops over the urinary bladder.

- (1) A- rete testis B- vas deferens
- (2) A- testis B-vas efferentia
- (3) A-testis B- vas deferens
- (4) A- rete testis B- vas efferentia

126. Select the incorrect option regarding structure and function of different layers of uterine wall

- (1) Myometrium harbours receptors for oxytocin hormone
- (2) Endometrium is shed cyclically to the outside of the body in all mammals during menstrual phase

- (3) Perimetrium is most external, thin, membranous layer
(4) All

127. Labia majora are fleshy folds of tissue, which extend down from the mons pubis and surround the

- (1) Urethral orifice
(2) Vaginal opening.
(3) Urethral meatus
(4) All of these

128. During pregnancy all events of the menstrual cycle

- (1) Go faster
(2) Stop completely
(3) Go down slowly
(4) Do not go any change

129. Read the following statements and find the incorrect one

- (1) The blastomeres of the blastocyst are arranged into an outer layer called trophoblast
(2) The inner cell mass develops into proper embryo
(3) hCG, hPL and relaxin are produced in women only during pregnancy.
(4) Progesterone hormone secreted by corpus luteum and up to 3 month from placenta

130. Gestation period is the time interval

- (1) From fertilization to lactation
(2) From implantation to parturition
(3) From zygote to death
(4) All

131. The characteristic features of angiospermic microsporangium is/are:

- (a) It is generally surrounded by four wall layers
(b) Outer three wall layers that involve in the function of protection and also help in dehiscence of anther to release the pollen
(c) The inner most wall layer that helps nourishes the developing pollen grains -

endothecium

(d) Cell of tapetum multinucleated

Select the correct option:

- (1) a, c and d are correct
(2) c and d are correct
(3) a,b and d are correct
(4) a,b,c and d are correct

132. In which of the following fruit thalamus contributes to the fruit formation:

- (1) Apple (2) Banana
(3) Berry (4) Grape.

133. There is a special phenomenon found in Asteraceae family which is a type of

asexual reproduction that mimics sexual reproduction, which among the following is that:

- (1) Syngamy (2) Apomixis
(3) Polyembryony (4) Parthenogenesis

134. Which is incorrect:

- (1) Vegetative cell is bigger has abundant food reserve and large irregular shaped nucleus
(2) Generative cell is small and float in the cytoplasm. of vegetative cell
(3) Generative cell is spindle shape
(4) None

135. The gynoecium consists of many free pistils in flowers of:

- (1) Papaver (2) Michelia
(3) Aloe (4) Tomato

136. Ovule is a small structure attached to placenta by means of stalk called:

- (1) Micropyle (2) Funicle
(3) Hilum (4) Integument

137. Which is incorrect:

- (1) Sporogenous tissue undergo meiotic division to form microspore tetrad.
(2) A typical angiosperm embryo sac at maturity is 8 nucleate and 7 celled.
(3) Method of embryo sac formation from a single megaspore is monosporic development.

(4) Wind pollination requires heavy and sticky pollen grain for easy transportation.

138. Both, autogamy and geitonogamy are prevented in:

- (1) Castor (2) Maize
- (3) Papaya (4) Cucumber.

139. Endosperm is present in seed of:

- (1) Pea (2) Groundnut
- (3) Castor (4) Both (1) and (2)

140. Even in the absence of pollinating agents seed setting is ensured in

- (1) Salvia (2) Fig
- (3) Zostera (4) Commelina

141. What set is correct regarding recent record of viable seed

- (1) Phoenix dactylifera/2000 years old/King Herod's Palace/Near Dead sea
- (2) Phoenix dactylifera/10000 years old/King Herod's Palace/Dead sea 110
- (3) Lupinus/2000 years old/Arctic Tundra
- (4) None

142. In artificial hybridization, to protect stigma from contamination what procedure is used in monoecious flower:

- (1) Emasculation (2) Bagging
- (3) Decapitation (4) 1 and 2

143. Match the characters of the pollen grains with their agent of pollination.

- | A | B |
|--|----------------------|
| (i) light and non-sticky | (a) Water |
| (ii) long, ribbon-like, covered with mucilaginous covering | (b) Insects |
| (iii) sticky | (c) Air |
| (1) i-b; ii-a; iii-c | (2) i-c; ii-a iii-b |
| (3) i-a; ii-c; iii-b | (4) i-c; ii-b; iii-a |

144. Match the Columns:

- | Column-I | Column-II |
|-------------------------|-----------------|
| (a) Ovary | (1) Fruit |
| (b) Triple fusion | (ii) Endosperm |
| (c) Persistent nucellus | (iii) Perisperm |

(d) Removal of anther (iv) Emasculation

- (1) a-i, b-ii, c-iii, d-iv
- (2) a-ii, b-i, c-iii, d-iv
- (3) a-i, b-iii, c-ii, d-iv
- (4) a-ii, b-iii, c-i, d-iv.

145. A typical dicotyledonous embryo, consists of an embryonal axis and two cotyledons.

The portion of embryonal axis above the level of cotyledons is the:

- (1) Hypocotyl (2) Epicotyl
- (3) Epiblast (d) Radicle

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147. Given below are two statements:

Statement I: The M.M.C undergoes meiotic division, results in the production of four megaspores

Statement II:

In majority of flowering plants. One of the megaspore is functional while the other three degenerate.

Choose the correct answer from the options given below

- (1) Both Statement I and Statement II are incorrect
- (2) Statement I is correct but Statement II is incorrect
- (3) Statement I is incorrect but Statement II is correct
- (4) Both, Statement I and Statement II are correct

148. Egg apparatus consists of:

- (1) One synergid and one egg cell
- (2) Two synergids and one egg cell
- (3) Three synergids and one egg cell
- (4) One synergid and two egg cells.

149. Group of compactly arranged homogenous cells in the centre of

microsporangium is:

- (1) Endogenous tissue
- (2) Cortical cell
- (3) Sporogenous tissue
- (4) Both (1) and (2)

150. In Citrus during polyembryony which cells divide and protrude into embryo sac and develop into embryo:

- (1) Nucellus cells (2) Style cells
- (3) Stigma cells (4) Pollen tube cells

151. Correct statement for cleistogamy

- (1) No pollinating agent is required
- (2) It assures heterozygosity
- (3) It allows xenogamy
- (4) It favours pollination by insect

152. Perisperm differs from endosperm in

- (1) Its formation by fusion of secondary nucleus with several sperms
- (2) Being a haploid tissue
- (3) Having no reserve food.
- (4) Being a diploid tissue.

153. The female flower buds need for artificial hybridisation

- (1) Emasculation only
- (2) Bagging only
- (3) Both of above
- (4) None

154. Pollen grains of rice and wheat lose their viability in minutes of their release

- (1) 30 (2) 10
- (3) 60 (4) 90

155. Embryo sac of angiosperms contains

- (1) 3-celled egg apparatus, 3 antipodal cells and 2 polar nuclei
- (2) 2-celled egg apparatus, 3 antipodal cells and 2 polar nuclei
- (3) 3-celled egg apparatus, 2 antipodal cells and 1 polar nucleus
- (4) 3-celled egg apparatus, 1 antipodal cell and 2 polar nuclei.

156. Cross pollination does not occur in

- (1) Allogamous flowers

(2) Geitonogamous flowers

(3) Cleistogamous flowers

(4) Chasmogamous flowers.

157. Select the plants pollinated by water

- (a) Water Hyacinth (b) Zostera
- (c) Amorphophallus (d) Vallisneria
- (e) Yucca.

(1) a, d and e (2) b and e

(3) b and d (4) b, c, d

158. With respect to angiosperms, identify the incorrect pair from the following

- (1) Antipodals -2n
- (2) Vegetative cell of male gametophyte -n
- (3) Primary endosperm nucleus -3n
- (4) Cells of nucellus of ovule - 2n

159. Given below are two statements one is labelled as Assertion (A) and the other is labelled as Reason (R)

Assertion (A) Geitonogamy is just ecologically self-pollination

Reason (R) From geneticist's point of view geitonogamy is equivalent to self-pollination

In the light of the above statements, choose the correct answer from the options given below:

- (1) Both (A) and (R) are correct but (R) is not the correct explanation of (A)
- (2) (A) is correct but (R) is not correct
- (3) (A) is not correct but (R) is correct
- (4) Both (A) and (R) are correct and (R) is the correct explanation of (A)

160. After double fertilization, embryo sac/ovule contents have

- (1) 1 diploid and 1 haploid cell
- (2) 1 diploid and 1 triploid cell
- (3) 2 haploid and 1 triploid cell
- (4) 1 haploid and 1 triploid cell.

161. Normally how many pollen mother cells are necessary for formation of 400 seeds

- (1) 200 (2) 500
- (3) 100 (4) 400.

162. The coconut water is
 (1) Cellular endosperm.
 (2) Free-nuclear endosperm
 (3) Helobial endosperm
 (4) None
163. Nucellar polyembryony is reported in species of
 (1) Triticum (2) Brassica
 (3) Citrus (4) Gossypium.
164. Perisperm is found in
 (1) Black pepper (2) Wheat
 (3) Maize (4) Groundnut.
165. Nonalbuminous seed occurs in
 (1) Castor (2) Wheat
 (3) Pea (4) Maize.
166. Which occurs after double fertilization
 (1) Pollen grain germinates over stigma
 (2) Pollen tube enters the embryo sac
 (3) Two male gametes are discharged into embryo sac
 (4) PEN develops into endosperm
167. Which one of the following is incorrect match:
 (1) Germ pore - Embryo sac
 (2) Pollen grain - Liquid nitrogen
 (3) Funicle - Gynoecium
 (4) Micropyle - Ovule
168. In flowering plant for the formation of 800 male gamete. How many pollen mother cell, pollen grains, and number of meiotic division are required respectively:
 (1) 100, 400, 100 (2) 100, 200, 100
 (3) 100, 100, 100 (4) 200, 100, 200
169. A dioecious flowering plant prevents both:
 (1) Autogamy and geitonogamy
 (2) Geltonogamy and xenogamy
 (3) Cleistogamy and xenogamy
 (4) Autogamy and xenogamy
170. Which one of the following is incorrect match:
 (1) Unisexual flowers - Emasculation
 (2) Unisexual flowers - Bagging
 (3) Bisexual flowers - Bagging
 (4) Bisexual flowers - Emasculation
171. What is the number of synergids and antipodal cells respectively in embryo sac:
 (1) 3, 2 (2) 3, 3
 (3) 2, 3 (4) 1, 3
172. Which part of stamen is attached to thalamus or petal:
 (1) Pollen grains
 (2) Proximal end of anther
 (3) Distal end of stamen filament
 (4) Proximal end of stamen filament
173. Which one of the following statement is correct:
 (1) The number of stamens is variable in flowers of different species
 (2) The length of stamen is constant in flowers of different species
 (3) In angiosperm anther is always Bilobed
 (4) Anther and funicle are the two parts of a stamen
174. Which one of the following statement is incorrect:
 (1) Tapetum is the innermost wall layer of Anther
 (2) Tapetum helps in dehiscence and release of pollen
 (3) Cells of tapetum possess dense cytoplasm
 (4) Cells of tapetum generally have more than one nucleus
175. Which one of the following statements. Incorrect:
 a. Outer thin layer of pollen grain is made up of cellulose and pectin
 b. Inner layer of pollen is called sporopollenin
 c. Pollen grains are rich in nutrients
 d. Pollen consumption is claimed to increase performance of athletes and race horses
 (1) a, c (2) a, b, d
 (3) Only b (4) a and b
176. How many matching are correct with reference to double fertilisation
 a. Syngamy - Fusion of male gamete and central cell
 b. Triple fusion - Fusion of two male gamete and one central cell
 c. PEC - Triploid
 d. Double fertilization - Gymnosperm, Angiosperm
 e. Endosperm - Post fertilisation structure
 (1) Two (2) Four
 (3) One (4) Three
177. In which type of pollination; genetically different type of pollen grains are brought to stigma:

- (1) Autogamy (2) Geitonogamy
(3) Xenogamy (4) All of these

178. In Amorphophallus flower the animal is rewarded by flower in providing

- (1) Atmospheric nitrogen
(2) Oxygen
(3) Place for laying eggs
(4) Water content

179. Micropyle remains in the seed coat and performs the function of

- (a) Entry of food during germination
(b) Entry of water during germination
(c) Entry of oxygen during germination
(d) Entry of nitrogen during germination
(1) All of these (2) a,b,c
(3) b,c,d (4) band c

180. Which of the following fruits contain large number of seeds

- (1) Orchid (2) Orobanchae
(3) Striga (4) All of these

