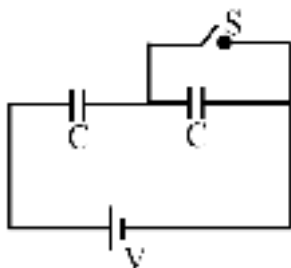


## PHYSICS

1) For given circuit initially switch S is open. If switch is closed, then work done by cell after switch



is closed, is :

- (1)  $CV^2$
- (2)  $\frac{CV^2}{2}$
- (3)  $\frac{CV^2}{4}$
- (4)  $2CV^2$

2) A parallel plate capacitor is made by stacking  $n$  equally spaced plates connected alternatively. If capacitance between any two adjacent plates is  $C$ , then the resultant capacitance is :-

- (1)  $C$
- (2)  $nC$
- (3)  $(n - 1)C$
- (4)  $(n + 1)C$

3)  $3\mu\text{F}$  and  $6\mu\text{F}$  capacitors are connected in series to a  $10\text{V}$  cell. The work done by cell to charge the capacitors is :-

- (1)  $50\mu\text{J}$
- (2)  $100\mu\text{J}$
- (3)  $200\mu\text{J}$
- (4)  $250\mu\text{J}$

4)  $n$  identical drops of Hg each have capacitance  $C$  merge to form a bigger drop. The capacitance of bigger drop is :-

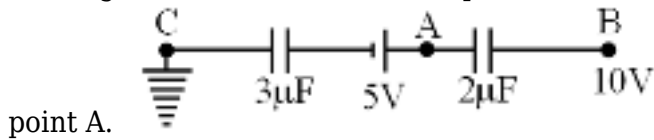
- (1)  $n^{\frac{2}{3}}C$
- (2)  $n^{\frac{1}{3}}C$
- (3)  $nC$
- (4)  $n^2C$

5) A capacitor of  $12\mu\text{F}$  is charged to  $50\text{V}$  and then connected to an uncharged capacitor of  $4\mu\text{F}$ .

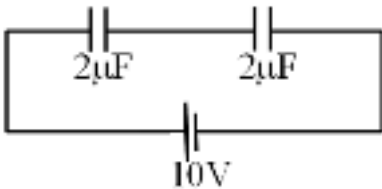
The final voltage across each capacitor is :-

- (1) 10 V
- (2) 25 V
- (3) 37.5 V
- (4) 15 V

6) For given branch of a circuit if point B is at 10 V and point C is earthed, then find potential of

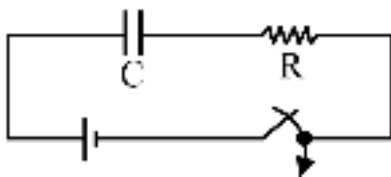


- (1) 5 V
- (2) 2 V
- (3) 7 V
- (4) 4 V



7) If a dielectric of dielectric constant  $K = 2$  is filled between plates of one capacitor, then percentage change in charge on it :-

- (1) 25%
- (2) 30%
- (3) 38.2%
- (4) 33.3%



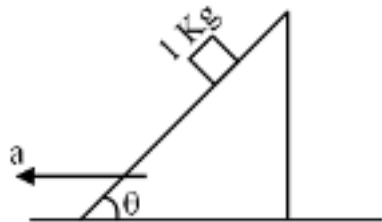
8) At  $t = 0$ , switch is closed. The time at which energy stored in capacitor becomes one fourth of its maximum value is :-

- (1)  $\frac{1}{RC}$
- (2)  $\frac{RC}{\ln 2}$
- (3)  $RC$
- (4)  $RC \ln 2$

9) **Statement-I** : The capacitance of a parallel plate capacitor increases on inserting a dielectric.  
**Statement-II** : Dielectric increases electric field between the plates.

- (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.

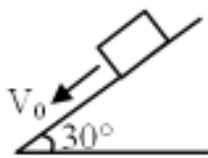
10) A block of mass, 1kg is at rest relative to a smooth wedge moving leftwards with constant acceleration  $a = 5 \text{ m/s}^2$ .



Let  $N$  be the normal reaction between the block and the wedge. Then, (take  $g = 10 \text{ m/s}^2$ )

- (1)  $N = 5\sqrt{5} \text{ N}$   
 (2)  $N = 15 \text{ N}$   
 $\tan \theta =$   
 (3)  $\frac{1}{3}$   
 (4)  $\tan \theta = 2$

11) A block of mass 'm' is given an initial downward velocity  $V_0$  and left on an inclined plane



(coefficient of friction = 0.6). The block will

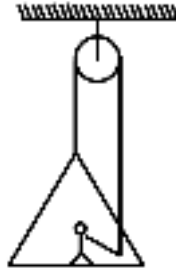
- (1) Continue to move down the plane with constant velocity  $V_0$   
 (2) accelerate downwards  
 (3) decelerate and come to rest  
 (4) First decelerate downward, then accelerate.

12) **Assertion (A)** : A block of weight 10N is pushed against a vertical wall by a force of 15 N. The coefficient of friction between the wall and the block is 0.6. Then, the magnitude of maximum frictional force is 9N.

**Reason (R)** : For given system, block will remain stationary.

- (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 correct explanation of A.

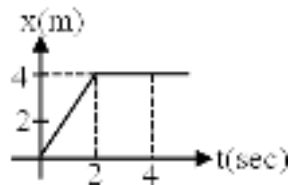
13) A man of weight 50 g stands on a frame of weight 30 g. He pulls on a light rope which passes over a pulley. The other end of the rope is attached to the frame. For the system to be in equilibrium.



What force man must exert on the rope ?

- (1) 40 g
- (2) 80 g
- (3) 30 g
- (4) 50 g

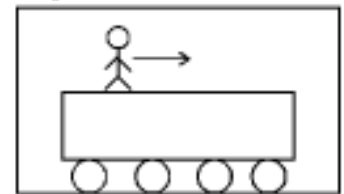
14) In the figure given below, the position - time, graph of a particle of mass 0.1 kg is shown. The



impulse at  $t = 2$  sec is .

- (1) 0.2 kg m/sec
- (2) - 0.2 kg m/sec
- (3) 0.1 kg m/sec
- (4) - 0.4 kg m/sec

15) A person 'A' is walking on a trolley with an acceleration of  $2\hat{i} \text{ m/s}^2$  w.r.t. trolley. The mass of the person is 50 kg. The trolley is being moved on a platform with velocity of  $-3\hat{i} \text{ m/s}$  w.r.t. platform and the platform is moving on ground with an acceleration of  $-5\hat{i} \text{ m/s}^2$ . Then the pseudo forces on



person when viewed from trolley, platform and ground are respectively :-

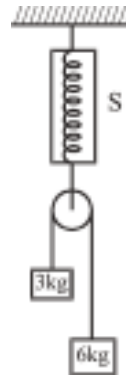
- (1)  $-100\hat{i}$ ,  $150\hat{i}$  &  $-250\hat{i}$
- (2)  $250\hat{i}$ ,  $250\hat{i}$  & zero
- (3)  $-100\hat{i}$ , zero &  $-250\hat{i}$
- (4)  $-250\hat{i}$ ,  $-250\hat{i}$  & zero

16) A train is moving with velocity 20m/sec. and on it dust is falling at the rate of 50 kg/min. The extra force required to move this train with constant velocity will be

- (1) 16.66 N
- (2) 1000 N
- (3) 166.6 N
- (4) 1200 N

17) A rocket with a lift-off mass  $3.5 \times 10^4 \text{ kg}$  is blasted upwards with an initial acceleration of  $10 \text{ m/s}^2$ . Then the initial thrust of blast is .

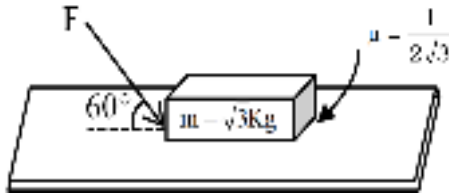
- (1)  $1.75 \times 10^5 \text{ N}$
- (2)  $3.5 \times 10^5 \text{ N}$
- (3)  $7.0 \times 10^5 \text{ N}$
- (4)  $14.0 \times 10^5 \text{ N}$ .



18) Find the reading of spring balance(S) for given diagram :

- (1) 4 kgf
- (2) 8 kgf
- (3) 80 kgf
- (4) 40 kgf

19) What is maximum value of force  $F$  such that the block shown in the arrangement, does not move

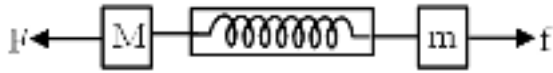


- (1) 20 N
- (2) 10 N
- (3) 12 N
- (4) 15 N

20) A balloon with mass  $m$  is descending down with an acceleration  $a$  (where  $a < g$ ). How much mass should be removed from it, so that it start moving up with an acceleration  $a$ ?

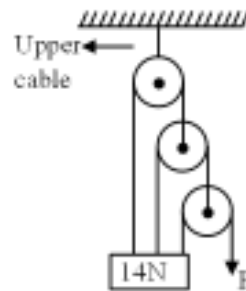
- (1)  $\frac{2ma}{g + a}$
- (2)  $\frac{2ma}{g - a}$
- (3)  $\frac{ma}{g + a}$
- (4)  $\frac{ma}{g - a}$

21) A dynamometer D is attached to two bodies of masses  $M = 6 \text{ Kg}$  and  $m = 4 \text{ Kg}$ . Forces  $F = 20 \text{ N}$  and  $f = 10 \text{ N}$  are applied to the masses as shown. The dynamometer reads.



- (1) 10 N
- (2) 20 N
- (3) 6 N
- (4) 14 N

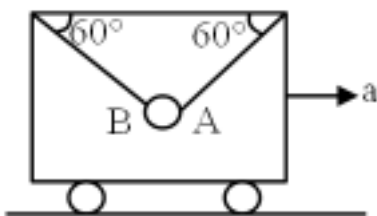
22) The pull  $P$  is just sufficient to keep the  $14\text{N}$  block in equilibrium as shown, Pulleys are ideal. Find



the tension (in N) in the cable connected with ceiling.

- (1) 2 N
- (2) 16 N
- (3) 14 N
- (4) 7 N

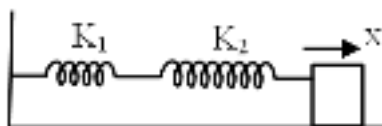
23) A steel ball is suspended from the ceiling of an accelerating carriage by means of two strings A and B. Determine the acceleration  $a$  of the carriage which will cause the tension in A be twice that in



B.

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

24) The block in figure can slide on a frictionless surface . The mass is pulled out by a distance  $x$ . The spring constant are  $K_1$  and  $K_2$  respectively. Find the force on the wall. (Extension in  $K_1$  is  $x_1$  and



in  $K_2$  is  $x_2$ ) :

(1)  $\frac{K_1 K_2 x}{K_1 + K_2} (-\hat{i})$

(2)  $\frac{K_1 K_2 x^2}{K_1 + K_2} (\hat{i})$

(3)  $K_1 x_1 (\hat{i})$

(4)  $K_2 x_1 (\hat{i})$

25) In order to raise a mass of 100 kg a man of 60 kg fastens a rope to it passed the rope over a smooth pulley. He climbs the rope with acceleration  $\frac{5}{4}g$  relative to rope . The tension in the rope is :  
( $g = 10\text{m/s}^2$ )

(1) 928 N

(2) 1218 N

(3) 1432 N

(4) 642 N

26) A heavy block of mass M hangs in equilibrium at the end of a rope of mass m and length  $\ell$  connected to a ceiling. Determine the tension in the rope at a distance x from the ceiling.

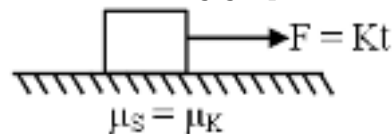
(1)  $T = Mg$

(2)  $T = Mg + mg$   
 $\left(\frac{\ell - x}{\ell}\right)$

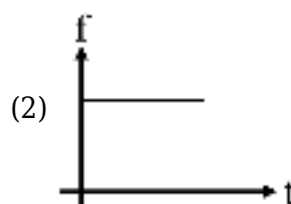
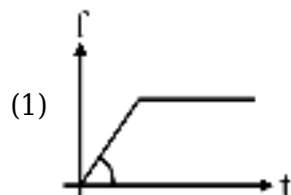
(3)  $T = Mg + mg$   
 $\left(\frac{x}{\ell}\right)$

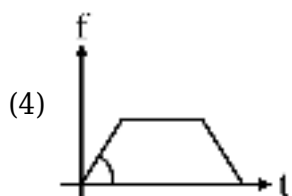
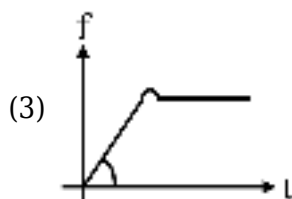
(4) None of these

27) A force  $F = Kt$  is applied to a block A as shown in figure where 't' is time in second. The force is applied at  $t = 0$ , when the system was at rest. Which of the following graphs correctly gives the

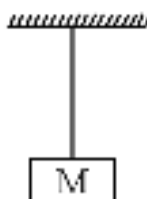


frictional force on the block A as a function of time ?





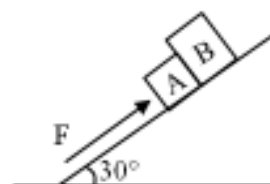
28) Consider a block suspended from a light string as shown in the figure . Which of the following



pairs of forces constitute Newton's third law pair ?

- (1) Force with which string pulls on the ceiling and the force with which string pulls on block.
- (2) Force with which string pulls on the block and weight of the block.
- (3) Force acting on block due to earth and force the block exerts on the earth.
- (4) Force with which block pulls on string and force the block exerts on the earth.

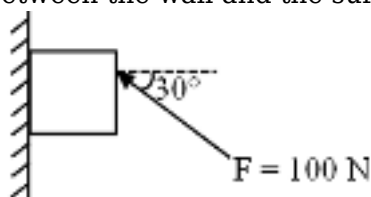
29) Two blocks A and B of mass 2 Kg and 4 Kg respectively are placed on a smooth inclined plane and 2 Kg block is pushed by a force  $F$  acting parallel to the plane as shown. If  $N$  be the magnitude



of contact force applied on B by A. Which of the following is correct ?

- (1) If  $F = 0$ ,  $N = 10$  N
- (2) If  $F = 15$  N,  $N = 10$  N
- (3) If  $F = 2$  N,  $N = 100$  N
- (4) If  $F = 1$  N,  $N = 50$  N

30) A force of 100 N is applied on a block of mass 3 kg as shown in fig. The coefficient of friction between the wall and the surface of the block is  $\frac{1}{4}$ . Calculate frictional force acting on the block.

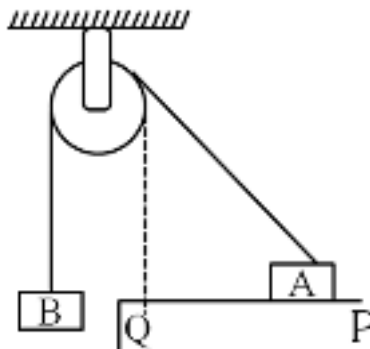


- (1) 30 N
- (2) 15 N



- (3) 45 N  
(4) 20 N

31) Two small identical blocks are connected to the ends of the string passing over pulley as shown,

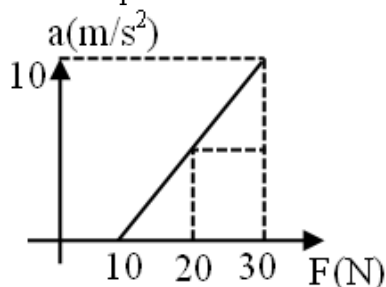


when the system is released from rest.

- (1) block A and B do not move  
(2) block A leaves contact at P and move towards pulley along the string.  
(3) block A does not leave contact with table till it reaches to the edge Q of the table.  
(4) A does not move but B accelerate downwards.

32) A block placed on a rough horizontal surface is pushed with a force  $F$  acting horizontally on the block. The magnitude  $F$  is increased and acceleration produced is plotted in the graph shown.

Correct option is :



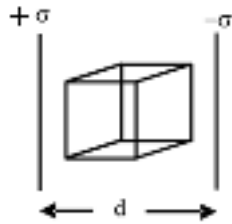
- (A) mass of block is 2 Kg  
(B) Coefficient of friction between block and surface is 0.5.  
(C) Limiting friction between block and surface is 10 N.  
(D) When  $F = 8$  N, friction between block and surface is 10 N.

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

33) A capacitor of capacitance  $C_1 = 1\mu\text{F}$  can withstand maximum voltage  $V_1 = 6$  kV (kilo-volt) and another capacitor of capacitance  $C_2 = 3\mu\text{F}$  can withstand maximum voltage  $V_2 = 4$  kV. When the two capacitors are connected in series, the combined system can withstand a maximum voltage of :-

- (1) 4 kV  
(2) 6 kV  
(3) 8 kV  
(4) 10 kV

34) A cube of side "a" is placed between the plates of parallel plate capacitor. Find electric energy



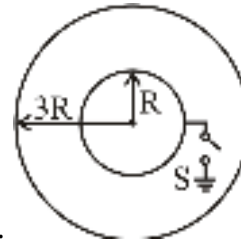
stored inside cube.

- (1)  $\frac{\sigma a^3}{2\epsilon_0}$
- (2)  $\frac{\sigma^2 a^3}{2\epsilon_0}$
- (3) Zero
- (4)  $\frac{6\sigma}{2\epsilon_0}$

35) Two thin conducting shells of Radii R and 3R are shown in the figure. The outer shell carries a charge +Q and the inner shell is neutral. The inner shell can be earthed with the help of switch S then :-

- (A) With the switch S open, the potential of the inner shell is equal to that of the outer.
- (B) When the switch S is closed, the potential of inner shell becomes zero.

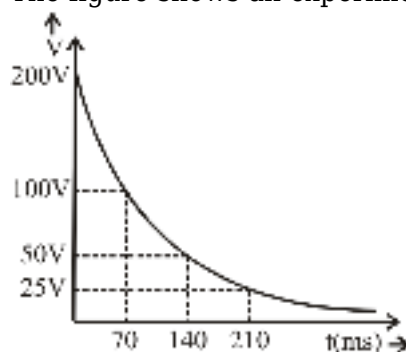
(C) With the switch S closed, the charge attained by the inner shell is  $\left(-\frac{Q}{3}\right)$ .



(D) By closing the switch the capacitance of the system increases.

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

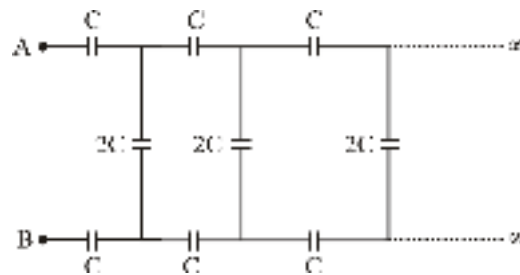
36) A capacitor of capacitance  $2\mu\text{F}$  is firstly charge by connecting across a 200 V battery then it is allowed to get discharged through a resistor R. The figure shows an experimental plot of discharging



of a capacitor. The value of R is ( $\log_e 2 = 0.7$ ) :-

- (1)  $25 \text{ k}\Omega$

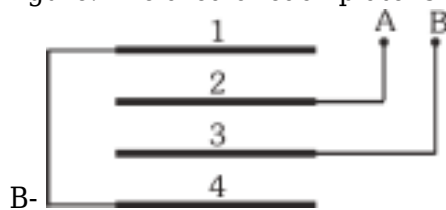
- (2)  $50 \text{ k}\Omega$   
 (3)  $100 \text{ k}\Omega$   
 (4)  $200 \text{ k}\Omega$



37) Find equivalent capacitance between A & B.

- (1)  $(\sqrt{3} - 1) C$   
 (2)  $(\sqrt{2} - 1) C$   
 (3)  $(\sqrt{3} + 1) C$   
 (4)  $(\sqrt{2} + 1) C$

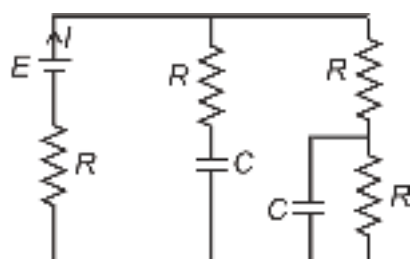
38) Four identical metal plates are located in air at equal distance  $d$  from one another as shown in figure. The area of each plate is equal to  $A$ . Find the capacitance of the system between points A and B.



- (1)  $2 \frac{\epsilon_0 A}{d}$   
 (2)  $\frac{2 \epsilon_0 A}{3 d}$   
 (3)  $3 \frac{\epsilon_0 A}{d}$   
 (4)  $\frac{3 \epsilon_0 A}{2 d}$

39)

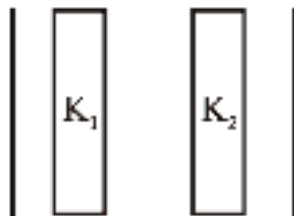
In the given R-C circuit, the current  $I$  at  $t = 0$  is



- (1)  $\frac{2E}{3R}$

- (2)  $\frac{E}{3R}$   
 (3)  $\frac{3E}{2R}$   
 (4)  $\frac{3E}{4R}$

40) A parallel plate capacitor is given. Choose most appropriate graph of potential of it. ( $K_1 > K_2$ )



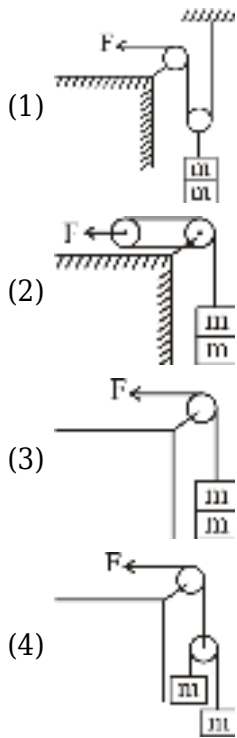
(Where K represent dielectric constant)

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

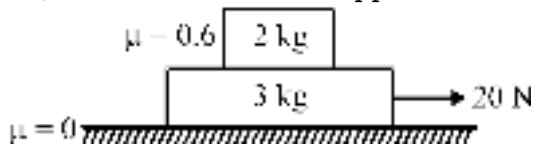
41) A  $3 \mu\text{F}$  capacitor is charged to a potential of 300 V and a  $2 \mu\text{F}$  capacitor is charged to 200 V. The capacitors are then connected in parallel with plates of opposite polarity joined together. What amount of charge will flow when the plates are so connected -

- (1)  $250 \mu\text{C}$   
 (2)  $600 \mu\text{C}$   
 (3)  $700 \mu\text{C}$   
 (4)  $1300 \mu\text{C}$

42) A man thinks about 4 arrangements as shown to raise two small bricks each having mass  $m$ . Which of the arrangement would take minimum time ?



43) Find acceleration of upper block if static & kinetic friction have same value. ( $g = 10 \text{ m/s}^2$ ) :-

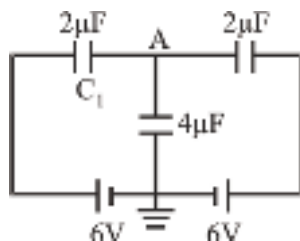


- (1)  $6 \text{ m/s}^2$
- (2)  $4 \text{ m/s}^2$
- (3)  $10 \text{ m/s}^2$
- (4) None of these

44) A parallel plate capacitor with air between the plates has a capacitance of  $9 \text{ pF}$ . The separation between its plates is ' $d$ '. The space between the plates is now filled with two dielectrics. One of the dielectrics has dielectric constant  $K_1 = 3$  and thickness  $\frac{d}{3}$  while the other one has dielectric constant  $K_2 = 6$  and thickness  $\frac{2d}{3}$ . Capacitance of the capacitor is now:-

- (1)  $1.8 \text{ pF}$
- (2)  $45 \text{ pF}$
- (3)  $40.5 \text{ pF}$
- (4)  $20.25 \text{ pF}$

45) Three capacitors are connected as shown in fig. Then the charge on capacitor  $C_1$  is :-



- (1)  $6\mu\text{C}$
- (2)  $12\mu\text{C}$
- (3)  $18\mu\text{C}$
- (4)  $24\mu\text{C}$

## CHEMISTRY

1) Molecule like  $\text{BrF}_5$  &  $\text{XeOF}_4$  are square pyramidal, then hybridisation is ?

- (1)  $\text{dsp}^3$
- (2)  $\text{dsp}^2$
- (3)  $\text{sp}^3\text{d}$
- (4)  $\text{sp}^3\text{d}^2$

2) The shape of  $\text{XeF}_3^+$  is :-

- (1) Trigonal planar
- (2) Pyramidal
- (3) T shape
- (4) See saw

3) The formal charges on the three O-atoms in  $\text{O}_3$  molecule are :-

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

4) Which of the following statement is not correct ?

- (1) Bond order of  $\text{SO}_4^{2-}$  &  $\text{O}_2^-$  are similar.
- (2) Number of  $\text{p}\pi - \text{p}\pi$  bonds in  $\text{SO}_2$  &  $\text{SO}_3$  are similar.
- (3) Elements  $[\text{Ar}]4\text{s}^23\text{d}^5$  &  $[\text{Xe}]6\text{s}^2$  represent main group elements of the periodic table.
- (4) Molecules  $\text{CO}_2$  &  $\text{NO}_2^+$  show's diagonal hybridisation.

5)

The correct order for O-O bond length in given molecule is

I.  $\text{H}_2\text{O}_2$       II.  $\text{O}_2$       III.  $\text{O}_3$

- (1)  $\text{I} < \text{II} < \text{III}$
- (2)  $\text{II} < \text{I} < \text{III}$
- (3)  $\text{II} < \text{III} < \text{I}$
- (4)  $\text{III} < \text{I} < \text{II}$

6) Due to inter molecular H-bond generally :-

- (1) Solubility increases
- (2) Boiling point increases
- (3) Viscosity increases
- (4) All of these

7) In the reaction  $\text{BF}_3 + \text{NH}_3 \rightarrow \text{F}_3\text{B} \cdot \text{NH}_3$

- (1) Bond angle  $\text{F} - \text{B} - \text{F}$  increase
- (2)  $\text{H}\text{N}\text{H}$  bond angle decrease
- (3) regular geometry of  $\text{BF}_3$  changed
- (4) Electronic geometry of  $\text{NH}_3$  changed.

8) Which of the following has been arranged in order of decreasing dipole moment ?



- (1)  $\text{CH}_3\text{Cl} > \text{CH}_3\text{F} > \text{CH}_3\text{Br} > \text{CH}_3\text{I}$
- (2)  $\text{CH}_3\text{F} > \text{CH}_3\text{Cl} > \text{CH}_3\text{Br} > \text{CH}_3\text{I}$
- (3)  $\text{CH}_3\text{Cl} > \text{CH}_3\text{Br} > \text{CH}_3\text{I} > \text{CH}_3\text{F}$
- (4)  $\text{CH}_3\text{F} > \text{CH}_3\text{Cl} > \text{CH}_3\text{I} > \text{CH}_3\text{Br}$



9)

Which of the following has minimum vapour pressure :-

- (1)  $\text{NH}_3$
- (2)  $\text{PH}_3$
- (3)  $\text{SbH}_3$
- (4)  $\text{AsH}_3$

10) Match the orbital overlap figures shown in List-I with the description given in List-II and select the correct answer using the code given below in the lists.

	List-I		List-II
(P)		(1)	p - d ( $\pi$ antibonding)
(Q)		(2)	d - d ( $\sigma$ bonding)

(R)		(3)	p - d ( $\pi$ bonding)
(S)		(4)	s - s ( $\sigma$ antibonding)

**Code :**

	P	Q	R	S
(1)	2	1	3	4
(2)	4	3	1	2
(3)	2	3	1	4
(4)	4	1	3	2

(1) 1

(2) 2

(3) 3

(4) 4

11) How many of the following are planar ?

$\text{XeF}_2$ ,  $\text{ClF}_3$ ,  $\text{H}_2\text{O}$ ,  $[\text{XeF}_5]^-$ ,  $\text{I}_3^-$ ,  $\text{BCl}_3$ ,  $\text{XeF}_4$ ,  $\text{SF}_4$ ,  $\text{PCl}_5$ ,  $\text{SF}_6$ ,  $\text{IF}_7$ .

(1) 6

(2) 7

(3) 5

(4) 4

12) Which among the following is not an exception of Lewis octet rule ?

(1)  $\text{PCl}_5$

(2)  $\text{AlCl}_3$

(3)  $\text{NaCl}$

(4)  $\text{ClO}_2$

13) Covalency of N in  $\text{HNO}_3$  is :-

(1) 1

(2) 2

(3) 4

(4) 5

14) Correct order of lattice energy :-

(1)  $\text{Na}_2\text{O} > \text{MgO}$

(2)  $\text{KBr} > \text{LiF}$

(3)  $\text{NaCl} > \text{Na}_2\text{O}$



(4)  $\text{KF} > \text{RbF}$

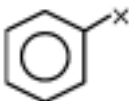
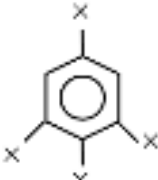
15) Which of the following is hypovalent.

(1)  $\text{CO}_2$

(2)  $\text{SO}_2$

(3)  $\text{SF}_6$

(4)  $\text{BCl}_3$

16) Dipole moment of  is 1.5D predict the dipole moment of 

(1) 3 D

(2) 2.35 D

(3) 1.5 D

(4) 1 D

17)

Which given order of Boiling point is wrong :-

(1)  $\text{HF} > \text{HI} > \text{HBr} > \text{HCl}$

(2)  $\text{SbH}_3 > \text{NH}_3 > \text{AsH}_3 > \text{PH}_3$

(3)  $\text{H}_2\text{O} > \text{H}_2\text{Te} > \text{H}_2\text{Se} > \text{H}_2\text{S}$

(4)  $\text{CH}_4 > \text{SiH}_4 > \text{GeH}_4 > \text{SnH}_4$


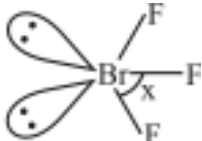
18) Intramolecular H-bonding is present in :

(1) Ortho-Nitrophenol

(2) Salicylaldehyde

(3) Para-Nitrophenol

(4) Both (1) and (2)

19) Compare bond angle the following molecules  

(1)  $x > y$

(2)  $x < y$

(3)  $x = y$

(4) None

20)

Consider the following molecules ;

I.  $\text{NH}_3$  II.  $\text{PH}_3$  III.  $\text{AsH}_3$  IV.  $\text{SbH}_3$

Arrange these molecules in increasing order of bond angles.

- (1)  $\text{I} < \text{II} < \text{III} < \text{IV}$
- (2)  $\text{IV} < \text{III} < \text{II} < \text{I}$
- (3)  $\text{I} < \text{II} < \text{IV} < \text{III}$
- (4)  $\text{II} < \text{IV} < \text{III} < \text{I}$

21) **Assertion (A) :-** p-hydroxy benzoic acid has a lower boiling point than o-hydroxy benzoic acid.

**Reason (R) :-** o-hydroxybenzoic acid has intramolecular hydrogen bonding.

- (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 incorrect but **(R)** is correct
- (4) Both **(A)** and **(R)** are correct and **(R)** is the correct explanation of **(A)**

22) Match the steric number and type of hybridisation with distribution of hybrid orbitals in space based on Valence bond theory.

	Steric number and type of hybridisation		Distribution of hybrid orbitals in space
(a)	4, $\text{sp}^3$	(i)	trigonal bipyramidal
(b)	3, $\text{sp}^2$	(ii)	octahedral
(c)	5, $\text{sp}^3\text{d}$	(iii)	tetrahedral
(d)	6, $\text{sp}^3\text{d}^2$	(iv)	trigonal planar

Select the correct option :

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

23) Match the following

	Column-I (Species)		Column-II (Bond order)
a	$\text{H}_2^+$	p	0
b	$\text{He}_2$	q	1.5
c	$\text{N}_2^+$	r	0.5
d	$\text{O}_2^-$	s	2.5

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

(3) a - r, b - p, c - q, d - s

(4) a - p, b - r, c - q, d - s

24) **Assertion (A)** : Like  $O_2$  molecule,  $S_2$  molecule also shows paramagnetic behaviour.

**Reason (R)** : In vapour state sulphur as  $S_2$  molecule has 2 unpaired  $e^-$  in  $\pi^*$  orbitals.

Choose correct option given below :-

(1) (A) is correct but (R) is incorrect

(2) (A) is incorrect but (R) is correct

(3) Both (A) and (R) are correct, and (R) is correct explanation of (A)

(4) Both (A) and (R) are correct, and (R) is not correct explanation of (A)

25) **Assertion** :  $C_2$  molecule has only  $\pi$ -bond.

**Reason** : If s-p mixing is supposed to be absent in  $C_2$  then it will be paramagnetic.

(1) Both **Assertion** and **Reason** are true but **Reason** is NOT the correct explanation of **Assertion**.

(2) **Assertion** is true but **Reason** is false.

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

(4) Both **Assertion** and **Reason** are true and **Reason** is the correct explanation of **Assertion**.

26) **Statement-I** :- Bond dissociation energy of  $F_2$  is greater than  $Cl_2$ .

**Statement-II** :- Electronegativity of Cl is greater than F.

(1) Both statement-I and statement-II are true.

(2) Statement-I is true but statement-II is false.

(3) Statement-I is false but statement-II is true.

(4) Both statement-I and statement-II are false.

27) **Assertion (A)** :- Order of IP in 13<sup>th</sup> group is

$B > Tl > Ga > In > Al$ .

**Reason (R)** :- Irregular trend in I.E. is due to Transition contraction & Lanthanoid contraction is present in 13<sup>th</sup> group.

(1) A is correct & R is correct, R is correct explanation of A

(2) A is correct, R is incorrect

(3) A is incorrect, R is correct

(4) Both A & R incorrect

28) **Assertion** : Highest negative electron gain enthalpy of element in periodic table is Cl.

**Reason** : Cl is the most electronegative element in periodic table.

(1) Both Assertion & Reason are True & the Reason is a correct explanation of the Assertion.

(2) Both Assertion & Reason are True but Reason is not a correct explanation of the Assertion.

(3) Assertion is True but the Reason is False.

(4) Both Assertion & Reason are False.

29) **Assertion :-**  $\text{H}_2\text{Se}$  is more acidic than  $\text{H}_2\text{S}$ .

**Reason :-** S is more electronegative than Se.

- (1) Both Assertion and reason are correct and reason is correct explanation for assertion.
- (2) Both Assertion and reason are correct and reason is not the correct explanation for assertion.
- (3) Assertion is correct but Reason is incorrect.
- (4) Assertion is incorrect but Reason is correct.

30) **Assertion :** The elements having  $1s^2 2s^2 2p^6 3s^2$  and  $1s^2 2s^2$  configurations belong to the same group.

**Reason :** Both have same number of electrons in the valence shell.

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

31) Match the following Column-I (Element) to Column-II (Electronic configuration).

	Column-I		Column-II
(A)	3 <sup>rd</sup> Alkali metal	(P)	$1s^2 2s^2 2p^6 3s^2 3p^6 3d^2 4s^2$
(B)	2 <sup>nd</sup> Transition element	(Q)	$1s^2 2s^2 2p^6 3s^2 3p^5$
(C)	2 <sup>nd</sup> Noble gas	(R)	$1s^2 2s^2 2p^6 3s^2 3p^6 4s^1$
(D)	2 <sup>nd</sup> Halogen element	(S)	$1s^2 2s^2 2p^6$

- (1) (A)-(S); (B)-(R); (C)-(Q); (D)-(P)
- (2) (A)-(S); (B)-(P); (C)-(R); (D)-(Q)
- (3) (A)-(R); (B)-(Q); (C)-(P); (D)-(S)
- (4) (A)-(R); (B)-(P); (C)-(S); (D)-(Q)

32) Select the correct statement from the following:-

- (a)  $\text{IE}_2 > \text{IE}_1$  is always true for neutral atom.
- (b)  $\text{IE}_1$  of He is maximum.
- (c)  $\Delta_{\text{eg}}\text{H}$  of  $\text{C}\square$  is maximum negative.
- (d) Cs is the most electronegative element.

Choose the correct answers from the following options :-

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

33)

Boron shows diagonal relationship with element having atomic number :-

- (1) 10
- (2) 12
- (3) 14
- (4) 13

34) Recently discovered elements with atomic number 115 is :-

- (1) Uun
- (2) Uub
- (3) Uup
- (4) Uus

35) The element having electronic configuration  $1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 3d^{10}, 4s^2, 4p^6, 4d^{10}, 5s^2, 5p^5$  will belong to which of the group of the periodic table:

- (1) 5<sup>th</sup>
- (2) 17<sup>th</sup>
- (3) 12<sup>th</sup>
- (4) 15<sup>th</sup>

36) Match the column :-

	Column I		Column II
(A)	Natural transuranic element	(P)	Na, Mg
(B)	d-block element	(Q)	Be, Al
(C)	Diagonally related elements	(R)	Fe, Co
(D)	Typical elements	(S)	Np, Pu

Correct Code is :-

- |     | <b>A</b> | <b>B</b> | <b>C</b> | <b>D</b> |
|-----|----------|----------|----------|----------|
| (1) | R        | P        | S        | Q        |
| (2) | S        | R        | Q        | P        |
| (3) | S        | R        | P        | Q        |
| (4) | R        | S        | Q        | P        |
- (1) 1
  - (2) 2
  - (3) 3
  - (4) 4

37) Which of the following radius order is not due to lanthanoid contraction ?

- (1)  $\text{Ag} \cong \text{Au}$

(2)  $Al \simeq Ga$

(3)  $Ru \cong Os$

(4)  $Zr \simeq Hf$

38) Which of the following represents a correct sequence of electronegativity values ?

(1)  $F > N > O > C$

(2)  $F > N < O > C$

(3)  $F > N > C > O$

(4)  $F < N < O < C$

39)  $I^+$ ,  $I^-$ ,  $I$  in order of decreasing size :-

(1)  $I^+$ ,  $I^-$ ,  $I$

(2)  $I^+$ ,  $I$ ,  $I^-$

(3)  $I^-$ ,  $I$ ,  $I^+$

(4)  $I$ ,  $I^+$ ,  $I^-$

40) Which of the following order of atomic radii is not correct

(1)  $Fe < Co < Ni$

(2)  $Ni < Pd \approx Pt$

(3)  $B < Al \approx Ga$

(4)  $Sc < Y < La$

41) Which of the following species represent maximum ionisation energy ?

(1)  $Li^{\oplus}$

(2)  $He^-$

(3)  $He$

(4)  $Be^{2+}$

42) For which of the following reaction  $\Delta H_{IE}$  represent to the first ionization energy of Ca is :

(1)  $Ca^+(g) \rightarrow Ca^{2+}(g) + e^-$

(2)  $Ca(g) \rightarrow Ca^+(g) + e^-$

(3)  $Ca(s) \rightarrow Ca^+(g) + e^-$

(4)  $Ca(g) \rightarrow Ca^{2+}(g) + 2e^-$

43) Which has maximum first ionization potential :-

(1) C

(2) N

(3) B

(4) O

44) IE values for Li and K are 5.4 and 4.3 eV respectively. IE of Na will be :

- (1) 9.7 eV
- (2) 1.1 eV
- (3) 4.9 eV
- (4) 6.2 eV

45) The successive ionization energies for an unknown element are.

$IP_1 = 899 \text{ kJ/mole}$        $IP_2 = 1757 \text{ kJ/mole}$

$IP_3 = 14847 \text{ kJ/mole}$      $IP_4 = 17948 \text{ kJ/mole}$  To which group in the periodic table does the unknown element most likely belong.

- (1) IA
- (2) IIA
- (3) IVA
- (4) VIA

## BIOLOGY

1) Which one is false about monocot stem ?

- (i) Vascular bundles are conjoint, scattered and surrounded by parenchymatous bundle sheath
- (ii) Hypodermis is sclerenchymatous
- (iii) Ground tissue remain undifferentiated into cortex, endodermis and pith
- (iv) Peripheral vascular bundles are large and less in number as compare central part
- (v) Water cavity absent within vascular bundles.

- (1) i, iii, v
- (2) i, ii, iv
- (3) i, iv and v
- (4) iv & v

2) **Assertion (A)** : All tissues except epidermis and vascular bundles constitute the ground tissue.

**Reason (R)** : The xylem and phloem together constitute vascular bundles.

- (1) Both Assertion & Reason are True & the Reason is a correct explanation of the Assertion.
- (2) Both Assertion & Reason are True but Reason is not a correct explanation of the Assertion.
- (3) Assertion is True but the Reason is False.
- (4) Both Assertion & Reason are False.

3) **Statement-I** : In sunflower root, parenchymatous cells which lie between the xylem and the phloem are called conjunctive tissue.

**Statement-II** : In dicotyledous stem hypodermis consist of a few layers of sclerenchymatous cells.

- (1) Statement I and II both are correct.
- (2) Statement I and II both are incorrect.
- (3) Only Statement I is correct.

(4) Only Statement II is correct.

4) Match the column-I with column-II and select the correct option :-

	Column-I		Column-II
a.	Starch sheath	(i)	Monocot stem
b.	Sclerenchymatous hypodermis	(ii)	Dicot leaf
c.	Polyarch xylem bundles	(iii)	Dicot stem
d.	Palisade and spongy parenchyma	(iv)	Monocot root

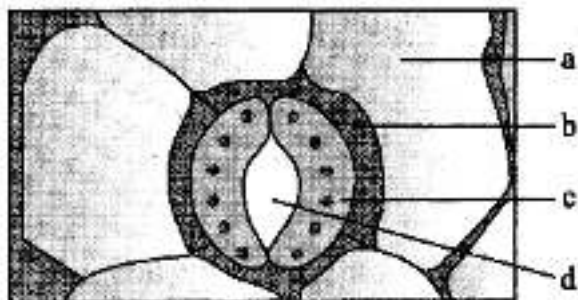
(1) a-(iii), b-(i), c-(ii), d-(iv)

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

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

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

5) Recognise the figure and find out the correct matching.



(1) a-subsidiary cell; b-guard cell;  
c-epidermal cell; d-stomatal pore

(2) b-subsidiary cell; a-guard cell;  
c-epidermal cell; d-stomatal pore

(3) b-subsidiary cell; c-guard cell;  
a-epidermal cell; d-stomatal pore

(4) a-subsidiary cell; d-guard cell;  
b-epidermal cell; c-stomatal pore

6) **Statement-I :-** Cuticle is absent in roots.

**Statement-II :-** Root hair are always unicellular.

Chose correct statement :-

(1) Statement-I correct and statement-II incorrect

(2) Statement-I and statement-II both are correct

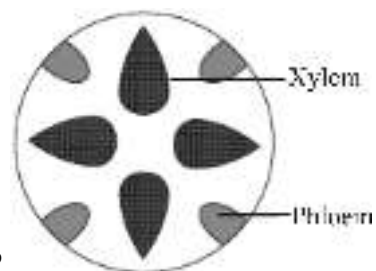
(3) Statement-I incorrect and statement-II correct

(4) Statement-I and II both are wrong

7) Which of the following is not a part of the ground tissue system ?

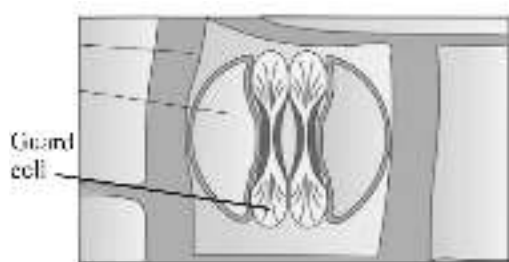


- (1) General cortex
- (2) Endodermis
- (3) Xylem
- (4) Pericycle



8) Which type of vascular bundle are shown in given diagram ?

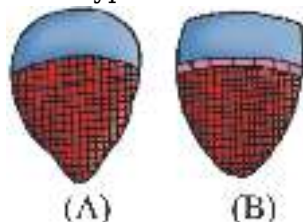
- (1) Conjoint, open
- (2) Conjoint, close
- (3) Radial
- (4) Conjoint, bicolleateral



9) Identify the given figure.

- (1) Stomata of dicot plant leaf
- (2) Stomata of grass leaf
- (3) Stomata of pteridophyte leaf
- (4) Stomata of gymnosperm leaf

10) Represented below are the types of vascular bundles. Which of the following option could be



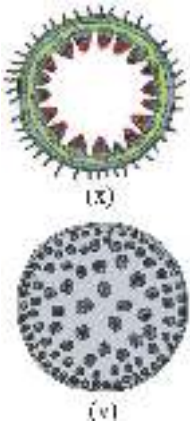
correct regarding them ?

	A	B
(1)	Radial	Conjoint, open
(2)	Conjoint, open	Conjoint, closed
(3)	Conjoint, closed	Conjoint, open
(4)	Conjoint, closed	Radial

(1) 1

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

11) Figures 'x' and 'y' represent the transverse sections of \_\_\_\_\_ and \_\_\_\_\_ respectively.



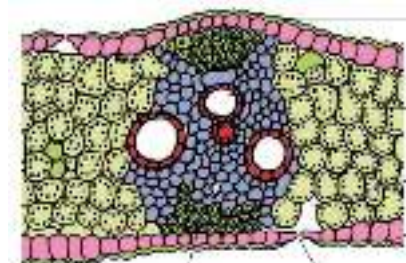
	<b>x</b>	<b>y</b>
(1)	Dicot root	Dicot stem
(2)	Monocot Root	Monocot stem
(3)	Dicot stem	Monocot stem
(4)	Monocot stem	Dicot stem

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

12)

Select the mismatched pair :-

- (1) Root hair - Unicellular
- (2) Stem hair - Multicellular
- (3) Trichomes - Responsible for water loss
- (4) Bulliform cells - Grasses



13) Which of the following structure is shown in given figure?

- (1) Maize Leaf
- (2) Sunflower leaf
- (3) Gram leaf
- (4) Maize Stem

14) Monocot root differ from dicot root in having :

- (1) Polyarch xylem bundles
- (2) Large and well developed pith
- (3) Both (1) and (2)
- (4) Radial vascular bundle

15) The stomatal pore, guard cells and surrounding subsidiary cells are together called \_\_\_\_\_ .

- (1) Stomata
- (2) Epidermis
- (3) Stomatal apparatus
- (4) Trichomes

16) Mesophyll is not differentiated into palisade and spongy parenchyma in :-

- (1) Isobilateral leaf
- (2) Monocot leaf
- (3) Dorsiventral leaf
- (4) (1) and (2) both

17) Water impermeable structure present in endodermis is

- (1) Pericycle
- (2) Casparian strips
- (3) Vascular cambium
- (4) Cuticle

18) Scattered vascular bundle can be seen in which plant stem :

- (1) Mustard stem
- (2) Gram stem
- (3) Sunflower stem
- (4) Maize stem

19) Choose **correct** order of cells from outside to inside in a sunflower root :-

- (1) Epidermis → endodermis → cortex → pericycle
- (2) Epiblema → cortex → endodermis → pericycle
- (3) Epiblema → cortex → pericycle → endodermis
- (4) Epidermis → endodermis → pericycle → cortex

20) All the tissue in dicot root present on the innerside of the endodermis is called as

- (1) Stele
- (2) Conjunctive tissue

- (3) Cortex
- (4) Casparian strips

21) In isobilateral leaf :

- (1) Stomata present on both surface
- (2) Stomata present on lower surface
- (3) Stomata present on upper surface
- (4) Stomata are found only on apex of leaf

22) Which of the following are the features of a typical dorsiventral leaf ?

- (a) Mesophyll differentiated into palisade parenchyma and spongy parenchyma.
- (b) Presence of parenchymatous bundle sheath.
- (c) The abaxial epidermis generally bears more stomata than the adaxial epidermis.
- (d) Vascular bundles are open type.

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

23) **Statement-I** :  $\underline{G}_{(2)}$  condition represent hypogynous flower and Bicarpellary syncarpus inferior ovary.

**Statement-II** :  $\bar{G}_{(2)}$  condition represent Epigynous Bicarpellary syncarpus superior ovary.

- (1) Statement-I and statement-II both are correct.
- (2) Statement I and statement-II both are incorrect.
- (3) Statement-I is correct and statement -II is incorrect.
- (4) Statement-I is incorrect and statement-II is correct.

24) Parietal placentation with false septum is found in -

- (1) *Dianthus, Primrose*
- (2) Mustard, *Argemone*
- (3) Tomato, Chinrose
- (4) Sunflower, wheat

25) If the margins of sepals or petals overlap one another but not in any particular direction is called-

- (1) Valvate
- (2) Twisted
- (3) Vexillary
- (4) Imbricate

26) Stem tendrils found in-

- (1) Potato, Zaminkand
- (2) Cucumber, watermelon
- (3) Opuntia, *Eichhornia*
- (4) Banana, *Chrysanthemum*

27) Which statement not correct for stem thorn?

- (1) Develop from axillary buds of stems.
- (2) Straight, woody and pointed structure.
- (3) They protect plants from browsing animals.
- (4) Found in opuntia and *Euphorbia*.

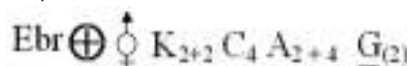
28) Which statement is not incorrect regarding parthenocarpic fruit?

- (1) No need of floral part for developing fruit.
- (2) After fertilization ovary develops into fruit.
- (3) Fruit is formed without fertilisation of the ovary.
- (4) In pome- granate plant parthenocarpic is very useful.

29) The outer covering of endosperm separates the embryo by a proteinous layer is called-

- (1) Scutellum
- (2) Aleurone layer
- (3) Coleoptile
- (4) Coleorhiza

30) Given floral formula not represent :-



- (1) Flower is bracteate
- (2) Flower is bisexual
- (3) Tetramerous Flower
- (4) Ovary superior

31) In which plants endosperm is not present in mature seeds?

- (1) Bean
- (2) Gram
- (3) Pea
- (4) All of these

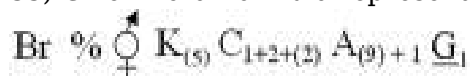
32) In given following example how many plant show superior ovary with swollen placenta ?

Mustard, Turnip, Radish, Tomato, Brinjal, Rose, Guava, Cucumber, Potato, chilli, *Petunia*, Tobacco, *Lupin*, Muliathi, *Indigofera*, Arhar

- (1) Ten

- (2) Six
- (3) Fifteen
- (4) Eleven

33) Given floral formula represent :-



- (1) Corolla represent twisted aestivation.
- (2) Racemose inflorescence.
- (3) Stamen ten diadelphous, ovary superior.
- (4) Gynoecium unilocular with many ovules.

34) Match the column-I with column-II regarding their examples -

	Column-I		Column-II
(A)	Epiphyllous stamens	(i)	Chinarose
(B)	Apocarpous Gynoecium	(ii)	Rose
(C)	Tetramerous flower	(iii)	Lily
(D)	Monadelphous stamens	(iv)	Mustard

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

35) In which plant the leaves are small and short lived than petiole expand become green and synthesis food?

- (1) Onion
- (2) Garlic
- (3) *Australian acacia*
- (4) *Alstonia*

36) Read all statement carefully and select incorrect statement regarding to solanaceae family

- (1) Stem branched , Solid or hollow, hairy or glabrous
- (2) Persistent calyx, Valvate aestivation.
- (3) Epipetalous stamens, Ovary superior
- (4) Placenta swollen with two ovules and non-endospermic seed.

37) In given following example how many plant show trimerous condition and axile placentation ?  
Wheat, Maize, Tomato, Petunia, Brinjal, Tulip, Gloriosa, Aloe, Asparagus, Belladonna, Lupin

- (1) Four

- (2) Five
- (3) Six
- (4) Seven

38) Papilionaceous corolla characteristic feature of :-

- (1) Lupin
- (2) *Tulip*
- (3) Sweet pea
- (4) Both (1) and (3)

39) **Statement-I** : Leaf is a lateral out growth of stem developed exogeneously at the node.

**Statement-II** : The floral characteristics form the basis of classification and identification of flowering plant.

- (1) Statement-I and II both are correct.
- (2) Statement I and II both are incorrect.
- (3) Statement I is correct and statement II is incorrect.
- (4) Statement-I is incorrect and statement-II is correct.

40) In which plant leaf base expands into a sheath covering the stem partially or wholly -

- (1) Neem
- (2) Gram
- (3) Wheat
- (4) Mustard

41) **Statement-I** : The flower is a modified shoot where the shoot apical meristem changes to floral meristem.

**Statement-II** : When a shoot tip transforms into flower, it is always solitary.

- (1) Statement-I and II both are correct.
- (2) Statement I and II both are incorrect.
- (3) Statement I is correct and statement II is incorrect.
- (4) Statement I is incorrect and statement II is correct.

42) Read all statement carefully and select correct statement given in option:- (A) A sterile stamen is called staminate.

(B) Citrus example of polyadelphous condition.

(C) A fruit is formed after fertilisation of the ovary is called a parthenocarpic fruit.

(D) A flower having either only stamen or only carpels is bisexual.

(E) In Lily plant , the calyx and corolla are not distinct.

- (1) Statement A, B, D and E corrects only.
- (2) Statement B, E correct only
- (3) Statement A, C, D correct only

(4) Statement A, B, C correct only

43) In which family ovary superior, monocarpellary, unilocular with many ovules, style single condition is present :-

- (1) Cruciferae family
- (2) Fabaceae family
- (3) Solanoceae family
- (4) Liliaceae family

44) In cactus (cacti) plant leaves modified in to spines for :-

- (1) Climbing
- (2) Support
- (3) Defence
- (4) Photosynthesis

45) How many statement correct for cymose inflorescence :-

- (a) The main axis terminates in a flower.
- (b) The main axis show limited growth.
- (c) The flowers are borne laterally in an acropetal succession.
- (d) The flower's are born in a basipetal order.
- (e) Found in member's of solanaceae family.

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

46) Body of frog is divisible into:

- (1) Head & Tail
- (2) Head, Thorax & Abdomen
- (3) Head & Trunk
- (4) Head, Neck, Trunk

47) **Statement-I** : Frogs have constant body temperature so they called poikilotherms.

**Statement-II** : Frogs can live both on land & in marine water.

- (1) Both statement are correct.
- (2) Both statement are incorrect
- (3) Only statement I is correct.
- (4) Only statement II is correct.

48) Select the incorrect statement about frog.

- (1) Frogs are cold blooded.



- (2) Their skin is smooth due to oil gland.
- (3) Frog exhibit sexual dimorphism.
- (4) One pair tympanum is present.

49) Which of the following is sexual dimorphic character of frog.

- (1) Salivary gland
- (2) Tympanum
- (3) Vocal sacs
- (4) Nictitating membrane

50) During hibernation frog respire through:

- (1) Gills
- (2) Lungs
- (3) Skin
- (4) Both 1 & 3

51) **Statement-I** : Hepatic portal & Renal portal system are present in frog.

**Statement-II** : Due to Enucleated R.B.C in frog R.B.C doesn't helps in transportation of gases.

- (1) Both statement are correct.
- (2) Both statement are incorrect
- (3) Only statement I is correct.
- (4) Only statement II is correct.

52) The \_\_\_\_\_ walled urinary bladder of frog is present \_\_\_\_\_ to the rectum.

- (1) Thin, Dorsal
- (2) Thick, Ventral
- (3) Thick, Dorsal
- (4) Thin, Ventral

53) Find out incorrect statement for frog.

- (1) Urinogenital duct present in male frog only
- (2) Female frog can lay 2500-3000 ova at time
- (3) Fertilisation is internal & takes place in water.
- (4) 10-12 vasa efferentia are present in male frog.

54) Find out incorrect match:-

- (1) Simple cuboidal epithelium - Ducts of glands
- (2) Squamous epithelium - Walls of blood vessels
- (3) Brush border columnar epithelium - PCT of nephron
- (4) Ciliated epithelium - Fallopian tube

55) How many of the followings are example of compound epithelium.

Alveoli, Pharynx, Bronchioles, Dry surface of skin, fallopian tube, moist surface of buccal cavity.

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

56) In which connective tissue fibres are absent.

- (1) Cartilage
- (2) Blood
- (3) Adipose
- (4) Areolar

57) **Statement-I** : Tendon & ligament are dense regular connective tissue.

**Statement-II** : Areolar & adipose tissues are present beneath the skin.

- (1) Both statement are wrong.
- (2) Both statement are correct.
- (3) Statement I is wrong.
- (4) Statement II is wrong.

58) Select the incorrect statement .

- (1) Intercellular material of cartilage is solid & pliable.
- (2) Bone marrow is the site of production of blood cells.
- (3) Most of the bones in vertebrates embryos are replaced by cartilage in adults.
- (4) Tip of nose, outer ear joints are example of cartilage.

59) Genital pouch of female cockroach is formed of :-

- (1) 7<sup>th</sup>, 8<sup>th</sup>, 9<sup>th</sup> Tergites
- (2) 7<sup>th</sup>, 8<sup>th</sup>, 9<sup>th</sup> Pleuron
- (3) 7<sup>th</sup>, 9<sup>th</sup>, 10<sup>th</sup> Tergites
- (4) 7<sup>th</sup>, 8<sup>th</sup>, 9<sup>th</sup> Sternite

60) Find out incorrect match :

- (1) Labium - lower lip
- (2) Labrum - upper lip
- (3) Mandible - Hypopharynx
- (4) Maxilla - 1 pair

61) **Statement-I** : Tegmina are opaque, leathery & are called forewings.

**Statement-II :** Anal cerci present on 10<sup>th</sup> segment in male cockroach only.

- (1) Both statement are correct.
- (2) Both statement are incorrect.
- (3) Only statement I is correct.
- (4) Only statement II is correct.

62) In cockroach digestive juice is secreted by :-

- (1) Proventriculus
- (2) Hepatic Caeca
- (3) Malpighian Tubule
- (4) Gizzard

63) Find out incorrect match about cockroach.

- (1) Cockroach blood is colourless & contains haemocytes.
- (2) Heart of cockroach is dorsal, tubular & 13 chambered.
- (3) Malpighian tubules helps in excretion
- (4) Haemolymph helps in transportation of food, gases & hormones.

64) Respiratory structure of cockroach is :-

- (1) Book gills
- (2) Tracheal tubes
- (3) Skin
- (4) Book lungs

65) **Assertion :** Sexual dimorphism is seen in cockroach.

**Reason :** Anal style present on 9<sup>th</sup> sternum in male.

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

66) Find out incorrect match about Cockroach.

- (1) Testes - 4<sup>th</sup> - 6<sup>th</sup> segment.
- (2) Mushroom gland - 7<sup>th</sup> - 8<sup>th</sup> segment.
- (3) Spermatheca - 6<sup>th</sup> segment.
- (4) Ovary - 2<sup>nd</sup> - 6<sup>th</sup> segment.

67) How many of the following are present in male cockroach.

Phallic gland, Spermatheca, Titillator, Anal style, Collateral gland, Vestibulum.

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

68) Find out incorrect statement about Cockroach.

- (1) Internal fertilisation takes place in genital chamber.
- (2) Seminal vesicles store sperm & small tubule provide nutrition to them.
- (3) Female ovaries can produce 16 ova at a time.
- (4) Wings located on meso & meta thorax

69) In mammals the presence of odontoid process is characteristic feature of

- (1) Atlas
- (2) Axis Vertebra
- (3) Thoracic Vertebra
- (4) Typical cervical vertebra

70) When a joint is such that allows movement of bone in all directions it is known as :

- (1) Ball and socket joint
- (2) Pivot joint
- (3) Hinge joint
- (4) Fibrous joint

71) Which type of joint between Ribs and sternum ?

- (1) Cartilagenous
- (2) Synovial
- (3) Hinge
- (4) Fibrous

72) The common features which are present in muscles & nerves.

- (A) Excitability
- (B) Conductivity
- (C) Contractability
- (D) Sensitivity

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

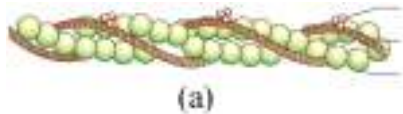
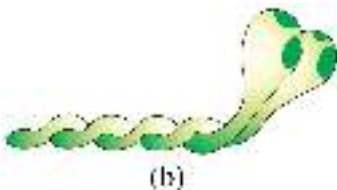
73) Which of the following is correct match of bones and number.

- (1) Metacarpals-8
- (2) Carpals-12
- (3) Phalanges-14
- (4) Tarsals-8

74) Obturator foramen present between.

- (1) Ischium and Pubis
- (2) Ilium and Ischium
- (3) Ilium and Pubis
- (4) Two occipital bone

75) Identify the following structure related with muscle shown below and select the correct. Option for together.

		
(1)	Thin Filament	Actin
(2)	Thick filament	Thin filament
(3)	Thin filament	Meromyosin
(4)	Light Meromyosin	Heavy Meromyosin

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

76) Each half of pectoral girdle consists of following bones.

- (a) Clavicle
- (b) Scapula
- (c) Ileum
- (d) Pubis

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

77) Functional unit of muscle contraction is :

- (1) Muscle fiber
- (2) Sarcomere
- (3) Myofibrils
- (4) Actin and Myosin

78) Inflammation of joints due to accumulation of uric acid cause which disease.

- (1) Osteoporosis
- (2) Muscular dystrophy
- (3) Myasthenia gravis
- (4) Gout

79) Which type of joints do not allow any movement.

- (1) Fibrous joints
- (2) Cartilagenous joint
- (3) Hing joints
- (4) Pivot joints

80) In given two statements choose correct option.

**Statement-I :** Muscles is mesodermal in origin.

**Statement-II :** Visceral muscles are located in inner wall of hollow visceral organ of body.

- (1) Statement I correct but statement II incorrect.
- (2) Statement I and Statement II both are correct.
- (3) Statement I incorrect but statement II correct.
- (4) Statement I and statement II both incorrect

81) Amoeboid movement is found in :

- (1) Limbs, Jaw
- (2) Macrophages, Leucocytes
- (3) Trachea, Fallopian tube
- (4) Tongue, Leucocytes

82) **Assertion :** Muscle contraction is initiated by a-signal send by the central nervous system via motor neuron.

**Reason :** A neural signal reaching the motor-end plate releases  $\text{Ca}^{++}$ .

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

83) In Skeletal muscle fibre  $\text{Ca}^{++}$  is stored in :

- (1) Sarcomere
- (2) Sarcolemma
- (3) Sarcoplasmic Reticulum
- (4) Sarcosome

84) How many bone are found in forelimbs ?

- (1) 60
- (2) 30
- (3) 15
- (4) 80

85) Examine the figure of pectoral girdle and forelimb and Identify the parts labelled as A, B, C and



D.

- (1) A-Clavicle, B-Humerus, C-Radius, D-Carpals
- (2) A-Scapula, B-Femur, C-Ulna, D-Tarsals
- (3) A-Clavicle, B-Femur, C-Radius, D-Carpals
- (4) A-Scapula, B-Humerus, C-Ulna, D-Tarsals

86) The Human cranium is made up of how many bones.

- (1) 14
- (2) 8
- (3) 10
- (4) 12

87) The change during contraction of muscles.

- (1) Actin filament slide over myosin
- (2) Actin filament slide over actin
- (3) Myosin filament slide over actin
- (4) Myosin filament slide over myosin

88) In human beings ciliary movement is found in :

- (1) macrophages and Leucocytes
- (2) Fallopian tube and Trachea

- (3) Small Intestine
- (4) Fallopian tube and Leucocytes

89) In the centre of I-band is an elastic fiber present that bisect it.

- (1) 'z' line
- (2) 'A' Band
- (3) 'M' line
- (4) 'H' Zone

90) The total number of Ribs in human body is

- (1) 24
- (2) 12
- (3) 10
- (4) 36