NEET TEST -16 (2023 - 25)

Time: 200 Minutes. **Date: 07-04-2023** **Max. Marks: 720**

GENERAL INSTRUCTIONS

Topic:- **Full Length Test**

Important Instructions :

1. The question paper consists of '**200**' objective type questions. There are **'50'** questions each in Zoology, Botany, Physics and Chemistry respectively in **2 Sections (A) & (B)**. **Section 'A' contains 35 questions and all are mandatory. Section 'B' contains 15 questions, only '10' is to be attempted**.
2. On the Answer Sheet, fill in the particulars carefully with **blue/black** ball point pen only.
3. The test is of **3 hours** duration and this Test Booklet contains **200** questions. Each question carries **4** marks. For each correct response, the candidate will get **4** marks. For each incorrect response, **one mark** will be deducted from the total scores. The maximum marks are **720**.
4. Use **Blue/Black Ball Point Pen only** for writing particulars on this page/marking responses.
5. Rough work is to be done on the space provided for this purpose in the Test Booklet only.
6. **On completion of the test, the candidate must hand over the Answer Sheet to the Invigilator before leaving the Room/Hall. The candidates are allowed to take away this Test Booklet with them.**
7. The candidates should ensure that the Answer Sheet is not folded. Do not make any stray marks on the Answer Sheet. Do not write your Form No. anywhere else exception the specified space in the Test Booklet/ Answer Sheet.
8. Use of white fluid for correction is ***not*** permissible on the Answer Sheet.
9. If you want to attempt any question then circle should be properly darkened, otherwise leave blank.

NAME OF THE CANDIDATE: .....
ROLL NO. : .....

I have read alltheinstructions shall abidebythem

I have verified the identity, name and roll number and of thecandidate.

- -
Signature oftheCandidate

- -
Signature of theInvigilator

DO NOT BREAK THE SEALS WITHOUT BEING INSTRUCTED TO DO SO BY THE

SECTION - A (PHYSICS)

1. The value of $\int_0^2 3x^2dx + \int_0^{\pi/2} \sin x dx$ is :-

(1) 9 (2) 7 (3) 8 (4) 13

2. A car is moving on a circular road of radius 100 m. At some instant its speed is 20 m/s and is increasing at the rate of 3 m/s^2. The magnitude of its acceleration is

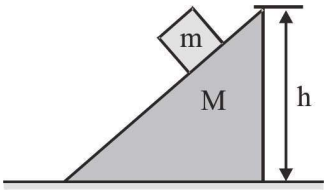
(1) 2 m/s^2

(2) 3 m/s^2

(3) 5 m/s^2

(4) 4 m/s^2

3. A mass m is at rest on an inclined plane of mass M which is further resting on a smooth horizontal plane. Now if the mass starts moving the position of center of mass of mass of system will :



(1) remain unchanged

(2) move along the horizontal

(3) move up in the vertical direction

(4) move down in the vertical direction

4. A ball of mass m approaches a wall of mass M(>> m) with speed 4 m/s along the normal to the wall. The speed of wall is 1 m/s towards the ball. The speed of the ball after an elastic collision with the wall is :-

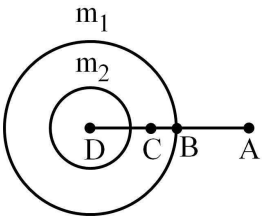
(1) 5 m/s away from the wall

(2) 9 m/s away from the wall

(3) 3 m/s away from the wall

(4) 6 m/s away from the wall

5. Figure shows two shells of masses m_1 and m_2. The shells are concentric. At which point, a particle of mass m shall experience zero force ?



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

6. Two planets of radii in the ratio 2 : 3 are made from the materials of density in the ratio 3 : 2. Then the ratio of acceleration due to gravity g_1/g_2 at the surface of these planets will be equal to:-

(1) 1 (2) 2.25 (3) 4/9 (4) 0.12

7. Infinite number of bodies, each of mass 1 kg are situated on x-axis at distance 1m, 2m, 4m, 8m,..., respectively, from the origin. The resulting gravitational potential due to this system at the origin will be :

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

8. ***Assertion (A):-*** In order to hit a target, a man should point his rifle at a point higher than the target.

Reason (R) :- The bullet suffers a vertically downward deflection due to gravity.

(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

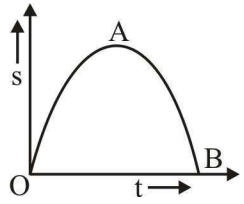
(4) Both (A) and (R) are correct and (R) is the correct explanation of (A)

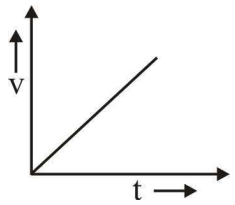
9. A particle moves for 20 seconds with velocity 3 m/s and then with velocity 4 m/s for another 20 seconds and finally moves with velocity 5 m/s for next 20 seconds. What is the average velocity of the particle ?

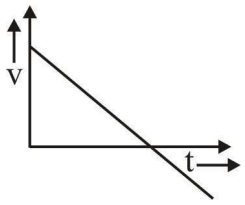
(1) 3 m/s (2) 4 m/s

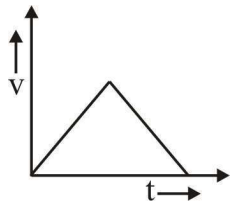
(3) 5 m/s (4) Zero

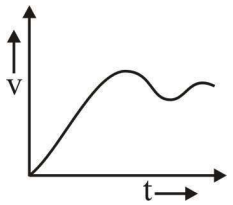
10. Velocity-time graph corresponding to displacement-time graph shown in fig.



(1) 

(2) 

(3) 

(4) 

11. Which of the following cases is / are NOT an action and reaction pair?

(a) Gravitational force acted by Earth on you and the gravitational force acted by you on Earth.

(b) When hitting a baseball with a bat, the impulsive force acted on the ball by the bat and the impulsive force acted on the bat by the ball.

(c) When you are standing on the ground. Your weight and the normal force on you.

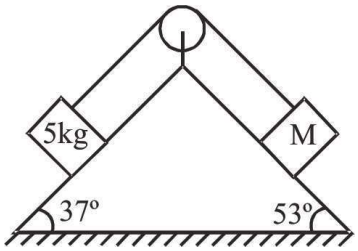
(1) (a) only

(2) (b) only

(3) (c) only

(4) (b) and (c) only

12. For what value of M will the masses be in equilibrium ?



(1) 5 kg (2) 4 kg (3) 3.75 kg (4) 3 kg

13. A wire of area of cross-section $10^{-6}m^2$ is increased in length by 0.1%. The tension produced is 1000 N. The Young's modulus of wire is

(1) 10^{12} N/m^2 (2) 10^{11} N/m^2

(3) 10^{10} N/m^2 (4) 10^{9} N/m^2

14. A piston of cross sectional area 100 cm^2 is used in a hydraulic press to exert a force of 10^7 dyne on the water. The cross sectional area of the other piston which supports an object having a mass 2000 kg is:-

(1) 100 cm^2 (2) 10^9 cm^2

(3) 2×10^4 cm^2 (4) 2×10^{10} cm^2

15. The water rises in the glass capilary to a height of 10 cm. If radius of capilary is 0.015 cm, density of water is 10^3 kg/m^3 and g = 9.8 m/s^2 find surface tension of water :

(1) 7.35×10^{-1} N/m

(2) 7.35×10^{-2} N/m

(3) 147×10^{-2} N/m

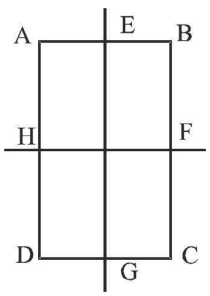
(4) 147×10^{-3} N/m

16. The flow speed of air on lower and upper surface of the wing of an aeroplane are $\sqrt{5}V$ and $\sqrt{8}V$ respectively . The density of air is ρ and surface area of wing is A. The dynamic lift on the wing is :-

(1) $\frac{3}{2}\rho V^2 A$ (2) $\frac{1}{2}\rho V^2 A$

(3) $\rho V^2 A$ (4) $\frac{2}{3}\rho V^2 A$

17. In a rectangle ABCD (BC = 2AB) the moment of inertia along which axis will be minimum ?



(1) BC (2) BD (3) HF (4) EG

18. Two wheels A and B are placed co-axially. Wheel A has moment of inertia I and angular velocity ω while B is stationary with moment of inertia 2I. Then calculate angular velocity when they move jointly.

(1) $\frac{\omega}{4}$ (2) $\frac{\omega}{2}$ (3) $\frac{\omega}{3}$ (4) $\frac{2\omega}{3}$

19. A vernier callipers has 20 divisions on the vernier scale which coincide with 19 divisions on the main scale. The least count of the instrument is 0.1 mm. The main scale divisions are of :

(1) 0.5 mm (2) 1 mm

(3) 2 mm (4) 1/4 mm

20. An experiment measures quantities a, b & c and X is calculated from the formula :

$X = \frac{ab^2}{c^3}$

If the percentage errors in a, b & c are ±1%, ±3%, ±2% respectively, the percentage error in X can be :-

(1) ±13% (2) ±7% (3) ±4% (4) ±1%

21. Find out the dimension of A and B, where F = force, V= velocity, t = time

$V = FA + Bt^2$

(1) $M^{-1}T^{1}, L^{1}T^{-2}$

(2) $M^{-1}T^{1}, L^{1}T^{-3}$

(3) $M^{-2}L^{3}, L^{1}T^{-2}$

(4) $M^{1}L^{1}, L^{1}T^{-3}$

22. The angle between the vectors $\vec{A}$ and $\vec{B}$ is θ. Then value of $\vec{A} \cdot \left(\vec{B} \times \vec{A}\right)$ is :-

(1) A^2B (2) Zero

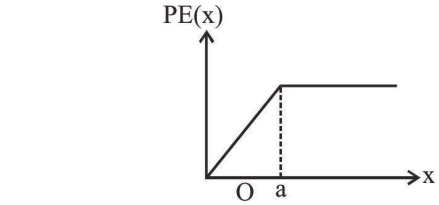
(3) $A^2B\sin\theta$ (4) $A^2B\cos\theta$

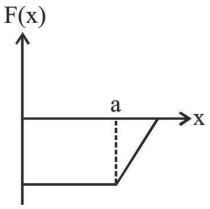
23. A weight lifter lifts 300 kg from the ground to a height of 2 meter in 3 second. The average power generated by him is :-

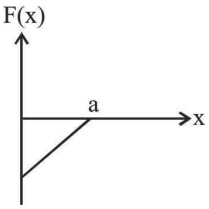
(1) 5880 W (2) 4410 W

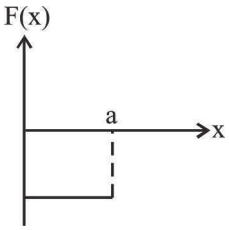
(3) 2205 W (4) 1960 W

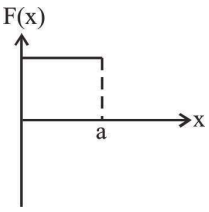
24. The potential energy of a system is represented in the first figure. The force acting on the system will be represented by :



(1) 

(2) 

(3) 

(4) 

25. Which of the following does **not** hold in SHM ?

(1) Work done in one complete oscillation is zero

(2) Energy is converted continuously from PE to KE and vice versa

(3) Acceleration is maximum at the mean position

(4) Velocity is maximum at mean position

26. How long after the beginning of motion is the displacement of a harmonically oscillating particle equal to one half its amplitude, if the period is 24s and particle starts from rest ?

(1) 12 s (2) 2 s (3) 4 s (4) 6 s

27. Find the minimum phase difference between the two S.H.M given below :-

$y_1 = \frac{1}{2}\sin\omega t + \frac{\sqrt{3}}{2}\cos\omega t$

$y_2 = \sin\omega t + \cos\omega t$

(1) $\frac{\pi}{6}$ (2) $\frac{-\pi}{6}$ (3) $\frac{\pi}{12}$ (4) $\frac{7\pi}{12}$

28. Two moles of oxygen is mixed with eight moles of helium. The effective specific heat of the mixture at constant volume is :-

(1) 1.3 R (2) 1.4 R (3) 1.7 R (4) 1.9 R

29. 10 gm ice at 0°C is mixed with 2 gm steam at 100°C, then final temperature of mixture will be :-

(1) 40°C (2) 60°C

(3) 100°C (4) None of these

30. A body cools from 80°C to 60°C in 2 minutes. The time it takes to cool from 60°C to 40°C, when the temperature of the surroundings is 10°C, will be :

(1) 4 min (2) 3 min

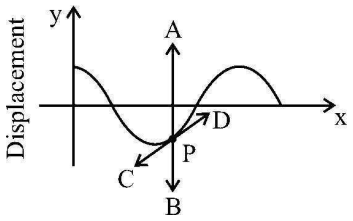
(3) 6 min (4) 2 min

31. Select the incorrect relation. (Where symbols have their usual meanings) :-

(1) $C_P = \frac{\gamma R}{\gamma - 1}$ (2) $C_P - C_V = R$

(3) $\Delta U = \frac{P_f V_f - P_i V_i}{1 - \gamma}$ (4) $C_V = \frac{R}{\gamma - 1}$

32. The figure below shows a snap photograph of a simple harmonic progressive wave, progressing in the negative X-axis, at a given instant. The direction of the velocity of the particle at the stage P on the figure is best represented by the arrow :



(1) $\overrightarrow{PA}$ (2) $\overrightarrow{PB}$ (3) $\overrightarrow{PC}$ (4) $\overrightarrow{PD}$

33. The fundamental frequency of a sonometre wire is n hertz. If its radius is doubled and its tension becomes half but, the material of the wire remains same, the new fundamental frequency (in Hz) will be :

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

34. We can't hear more than ..... beat/min.

(1) 600 (2) 10 (3) 300 (4) 5

35. A tuning fork A of frequency 512 Hz produces 5 beats per second when sounded with another tuning fork B of unknown frequency. If B is loaded with wax the number of beats is again 5 per second. The frequency of the tuning fork B before it was loaded is :-

(1) 502 Hz (2) 507 Hz

(3) 517 Hz (4) 522 Hz

SECTION - B (PHYSICS)

36. A weightless thread can support tension upto 30 N. A stone of mass 0.5 kg is tied to it and is revolved in a circular path of radius 2m in a vertical plane. If $g = 10\ ms^{-2}$, then the maximum angular velocity of the stone will be :-

(1) 5 rad/s (2) $\sqrt{30}$ rad/s

(3) $\sqrt{60}$ rad/s (4) 10 rad/s

37. What is the minimum energy required to launch a satellite of mass m from the surface of the earth of mass M and radius R in a circular orbit at an altitude of 2R.

(1) $\frac{5GmM}{6R}$ (2) $\frac{2GmM}{3R}$

(3) $\frac{GmM}{2R}$ (4) $\frac{GmM}{3R}$

38. Two cars A and B are moving in same direction with velocities 30 m/s and 20 m/s. When car A is at a distance d behind the car B, the driver of the car A applies brakes producing uniform retardation of $2\ m/s^2$. There will be no collision when :-

(1) $d < 2.5$ m

(2) $d > 20$ m

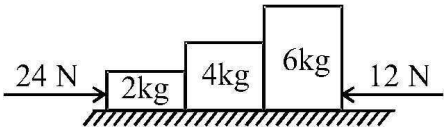
(3) $d > 25$ m

(4) $d < 125$ m

39. Two balls are dropped from same height at 1 second interval of time. The separation between the two balls after 3 second of the drop of the 1st ball is :-

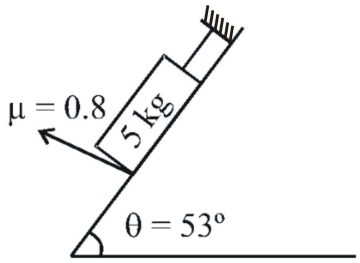
(1) 50 m (2) 25 m (3) 35 m (4) 40 m

40. If contact force between 2 kg and 4 kg block is f_1 and between 4 kg and 6kg block is f_2, then ratio $f_1 : f_2$ is



(1) 9 : 11 (2) 5 : 11 (3) 11 : 9 (4) 11 : 3

41. In the arrangement shown in the diagram, tension in the string is ($g=10\ ms^{-2}$) :



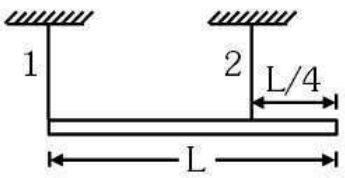
(1) 40 N (2) 30 N (3) 16 N (4) 24 N

42. A log of wood of mass 120 kg floats in water. The weight that can be put on the raft to make it just sink, should be ($\rho_{wood} = 600\ kg/m^3$) :-

(1) 80 kg (2) 50 kg

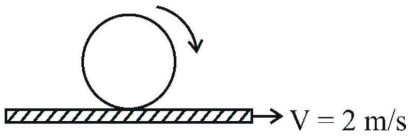
(3) 60 kg (4) 30 kg

43. A uniform rod of length L and weight w is suspended horizontally by two vertical ropes as shown. The first rope is attached to the left end of the rod while the second rope is attached at a distance $\frac{L}{4}$ from the right end. the tension in the second rope is :-



(1) $\frac{w}{2}$ (2) $\frac{w}{4}$ (3) $\frac{w}{3}$ (4) $\frac{2w}{3}$

44. A uniform disc of radius 20 cm is performing pure rolling on a moving surface. If it's angular velocity is 5 rad/s then find velocity of it's centre of mass :-



(1) 1 m/s (2) 2 m/s

(3) 3 m/s (4) None of these

45. A bullet moving with a velocity of 200 cm/s penetrates a wooden block and comes to rest after traversing 4 cm inside it. What velocity is needed for travelling of 9 cm in same block

(1) 100 cm/s (2) 136.2 cm/s

(3) 300 cm/s (4) 250 cm/s

46. A particle is executing SHM. The displacement, at which its P.E. becomes equal to half of its KE, is :-

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

47. Match the following columns and select the correct option :-

	Column I		Column II
(A)	Conversion of a liquid into solid is	(p)	Regelation
(B)	Conversion of a liquid into vapour is	(q)	Sublimation
(C)	Conversion of solid into vapour directly	(r)	Freezing
(D)	Melting of ice caused by pressure is	(s)	Vaporisation

(1) A - r, B - s, C - p, D - q

(2) A - r, B - s, C - q, D - p

(3) A - q, B - p, C - s, D - r

(4) A - p, B - q, C - r, D - s

48. A geyser heats water flowing at the rate of 3.0 litre per minute from 27° C to 77°C. If the geyser operates on a gas burner and its heat of combustion is 4.0×10^4 J/g, then what is the rate of combustion of fuel (approx.) ?

(1) 24 g/min

(2) 12 g/min

(3) 32 g/min

(4) 16 g/min

49. A vessel has 6 g of hydrogen at pressure P and temperature 500 K. A small hole is made in it so that hydrogen leaks out. How much hydrogen leaks out, if the final pressure is $\frac{P}{2}$ and temperature falls to 300 K ?

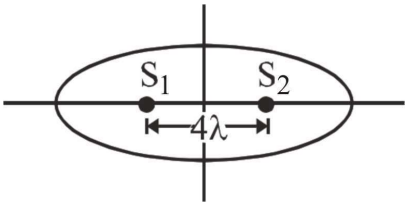
(1) 2 g

(2) 3 g

(3) 4 g

(4) 1 g

50. S_1, S_2 are two coherent sources of sound located along x-axis separated by 4λ, where λ is wavelength of sound emitted by them. Number of maximum located on the elliptical boundary around them will be :-



(1) 16

(2) 12

(3) 8

(4) 4

SECTION-A (CHEMISTRY)

51. Which of the following group of molecules have 2 ½ bond order:-

(1) N_2^{-2}, O_2^{-2}, CO

(2) N_2^{+}, O_2^{+}, NO

(3) C_2^{-2}, BN, O_2

(4) CN^{-}, NO^{+}, O_2^{+2}

52. Correct electronic configuration of atomic number 115 :-

(1) $[Rn]\ 4f^{14}\ 5d^{10}\ 7s^2\ 7p^3$

(2) $[Rn]\ 5f^{14}\ 6d^{10}\ 7s^2\ 7p^3$

(3) $[Rn]\ 5f^{14}\ 6d^{10}\ 7s^2\ 7p^6$

(4) $[Rn]\ 5f^{14}\ 6d^{10}\ 6s^2\ 6p^3$

53. Match the column :

	Column I (Molecule)		**Column II (Shape)**
(i)	XeO_2F_2	(a)	Sea-saw
(ii)	XeF_5^-	(b)	Bent
(iii)	IF_7	(c)	Pentagonal bipyramidal
(iv)	NH_2^-	(d)	Pentagonal planar

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

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

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

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

54. According to slater's rule incorrect order of Z_{eff} on valence shell electron is :-

(1) $Fe > Fe^{+2} > Fe^{+3}$

(2) $N^{-3} < O^{-2} < F^{-}$

(3) $Na^{+} < Mg^{+2} < Al^{+3}$

(4) $Cl^{-} < Cl < Cl^{+}$

55. The correct order of increasing bond angles in the following triatomic species is:-

(1) $NO_2^+ < NO_2 < NO_2^-$

(2) $NO_2^+ < NO_2^- < NO_2$

(3) $NO_2^- < NO_2^+ < NO_2$

(4) $NO_2^- < NO_2 < NO_2^+$

56. Variable covalency is exhibited by:-

(1) P and S (2) N and O

(3) N and P (4) F and Cl

57. The hydrogen bond is strongest in:-

(1) O – H - - - S (2) S – H - - - O

(3) F – H - - - F (4) O – H - - - O

58. The pair of amphoteric hydroxide is

(1) $Al(OH)_3$, LiOH (2) $Be(OH)_2$, $Mg(OH)_2$

(3) $B(OH)_3$, $Be(OH)_2$ (4) $Be(OH)_2$, $Zn(OH)_2$

59. Which is correct order of IP_1 :-

(1) Na > Al (2) Mg > Al

(3) Ga > Ca (4) Mg > Be

60. Which of the following is not isoelectronic series :-

(1) Cl^-, P^{3-}, Ar (2) N^{3-}, Ne, Mg^{2+}

(3) B^{3+}, He, Li^+ (4) F^-, S^{2-}, N^{3-}

61. ***Assertion*** :- Al_2Cl_6 exists but B_2Cl_6 does not exist.

Reason :- Due to smaller size of B and larger size of halogen, there is more steric repulsion in B_2Cl_6.

(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.

62. The IUPAC name of the compound 

is -

(1) 1-chloro-2-bromocylohexane

(2) 2, 2-bromochlorocyclohexane

(3) 4-bromo-3-chlorocyclohexane

(4) 1-bromo-2-chlorocyclohexane

63. How many structural isomers for the formula C_4H_9OH are possible (only alcohols) ?

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

64. Which of the following compound will show Geometrical isomerism ?

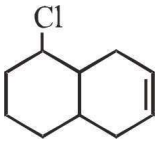
(1) 1-Bromo-1-chloro ethene

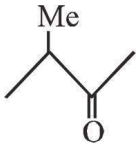
(2) 1-Chloro but-2-ene

(3) 2-Bromo prop-1-ene

(4) 3-Phenyl but-1-ene

65. Find out number of chiral carbon in the given compounds :-





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

66. Which of the following is most acidic ?

(1) Picric acid

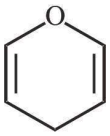
(2) Formic acid

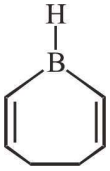
(3) Benzoic acid

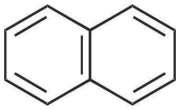
(4) Acetic acid

67. Which is aromatic among the following :

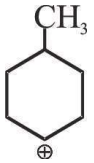
(1) 

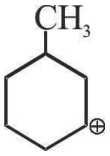
(2) 

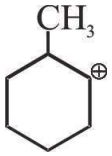
(3) 

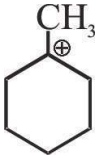
(4) 

68. Which of the following is the most stable carbocation :-

(1) 

(2) 

(3) 

(4) 

69. Mesomeric effect is due to :-

(1) Delocalisation of σ electrons

(2) Delocalisation of π electrons

(3) Migration of H–atom

(4) Migration of proton

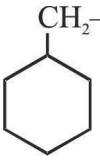
70. Which of the following is most reactive for electrophilic addition reaction ?

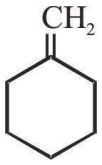
(1) $CH_3-C\equiv CH$

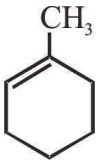
(2) $CH_3-CH=CH_2$

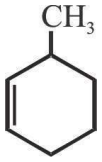
(3) 

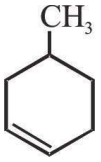
(4) $CH\equiv CH$

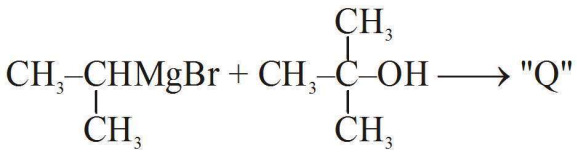
71.  on dehydration with conc. H_2SO_4 predominantly forms

(1) 

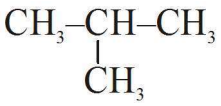
(2) 

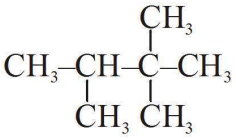
(3) 

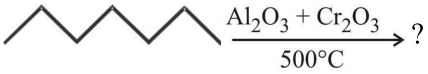
(4) 

72. 

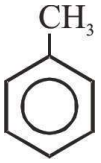
What is "Q" ?

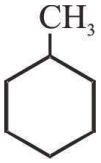
(1) $CH_3-CH_2-CH_3$ (2) 

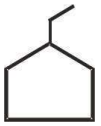
(3)  (4) All of these

73. 

Major product is

(1) 

(2) 

(3) 

(4) 

74. For the configuration  which rule is violated :-

(1) Aufbau Rule (2) Pauli's Rule

(3) Hund's Rule (4) All of these

75. Find ratio of radius of 2nd orbit of Li^{2+} to 3rd orbit of He^{+} :-

(1) 2 : 3 (2) 6 : 1

(3) 8 : 27 (4) 27 : 8

76. For the reversible reaction,
$N_2(g) + 3H_2(g) \rightleftharpoons 2NH_3(g) + Heat$
the equilibrium shifts in forward direction :-

(1) By increasing the concentration of $NH_3(g)$

(2) By decreasing the pressure

(3) By decreasing the concentrations of $N_2(g)$ and $H_2(g)$

(4) By increasing pressure and decreasing temperature

77. For the reaction $N_{2(g)} + 3H_{2(g)} \rightleftharpoons 2NH_{3(g)}$, $\frac{K_P}{K_C}$ is :-

(1) $\sqrt{RT}$ (2) $\frac{1}{\sqrt{RT}}$

(3) $\left(\frac{1}{RT}\right)^2$ (4) $\frac{1}{RT}$

78. Which will suppress (decrease) the ionization of HCN ?

(1) NaCN (2) KCN

(3) HCl (4) All

79. A buffer that is a mixture of acetic acid ($K_a = 2 \times 10^{-5}$) and potassium acetate has pH = 5.18. The $\frac{[CH_3COO^-]}{[CH_3COOH]}$ ratio in this buffer is approx :-

(1) 1 : 1 (2) 3 : 1

(3) 5 : 1 (4) 1 : 3

80. Which of the following salt undergoes hydrolysis?

(1) KCl

(2) K_2SO_4

(3) $NaNO_3$

(4) $K_2C_2O_4$

81. Which of the following is not correctly matched :

(1) CrO_5 ; oxidation number of Cr = +10

(2) Fe_3O_4 ; oxidation state of Fe = $-\frac{8}{3}$

(3) Na-Hg ; oxidation number of Na is = +1

(4) All of the above

82. Which of the following does not represent bond dissociation energy ?

(1) $H_{2(g)} \longrightarrow 2H_{(g)}$

(2) $Cl_{2(g)} \longrightarrow 2Cl_{(g)}$

(3) $H_2O_{(g)} \longrightarrow 2H_{(g)} + O_{(g)}$

(4) $O_{2(g)} \longrightarrow 2O_{(g)}$

83. Which of the following represents only intensive properties :-

(1) EMF, enthalpy, pH

(2) Pressure, density, molarity

(3) Heat capacity, temperature

(4) Entropy, Boiling point

84. 10 mol SO_2 and 15 mol O_2 were allowed to react, the remaining mole of SO_2 is:

$2SO_{2\,(g)} + O_{2\,(g)} \longrightarrow 2SO_{3\,(g)}$

(1) 0 mol (2) 2 mol

(3) 4 mol (4) 8 mol

85. 4.4 g of an unknown gas occupies 2.24 L of volume at STP. The gas may be :-

(1) N_2O (2) CO

(3) CO_2 (4) 1 & 3 both

SECTION-B (CHEMISTRY)

86. Which of the following statement is incorrect for an atom having electronic configuration 2, 8, 7 :

(1) It forms diatomic molecules

(2) It is a non metal element

(3) Its valency is 1

(4) It forms basic oxide

87. Which one of the following species has plane triangular shape ?

(1) N_3^- (2) NO_3^-

(3) NO_2^- (4) CO_2

88. Nitrogen forms N_2 but phosphorus do not forms P_2, but it exists as P_4 the reason for this is :

(1) Triple bond is present between phosphorus atoms

(2) $p\pi$ - $p\pi$ bonding is strong

(3) $p\pi$ - $p\pi$ bonding is weak

(4) Multiple bond is formed easily

89. Correct increasing order of energy of subshell for 5^{th} period :-

(1) 5s, 4f, 4d, 5p (2) 5s, 5p, 5d, 5f

(3) 5s, 4d, 5p (4) 5s, 4p, 5p

90. **Statement-1 :-** Ionic bonds will be formed more easily between elements with comparatively low ionization enthalpies and elements with comparatively high negative value of electron gain enthalpy

Statement-2 :- NH_4^+ ion forms the cation in a number of ionic compounds.

(1) Statement-1 and statement-2 both are correct

(2) Statement-1 and statement-2 both are incorrect

(3) Statement-1 is correct but statement-2 is incorrect

(4) Statement-1 is incorrect but statement-2 is correct

91. In homologous series :

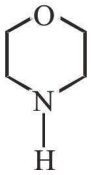
(1) Molecular formula is same

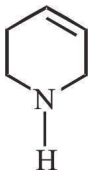
(2) Structural formula is same

(3) Physical properties are same

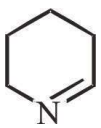
(4) General formula is same

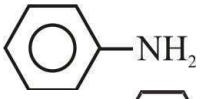
92. Which of the following compounds has delocalised lone pair?

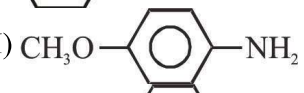
(1) 

(2) 

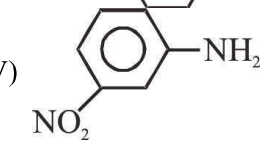
(3) 

(4) 

93. (I) 

(II) 

(III) 

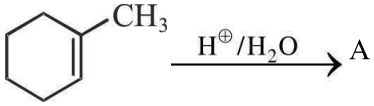
(IV) 

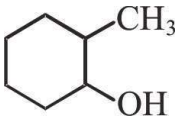
The correct order of decreasing basicity of the above compounds is :-

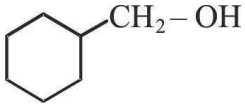
(1) I > II > III > IV (2) II > I > IV > III

(3) III > IV > II > I (4) II > I > III > IV

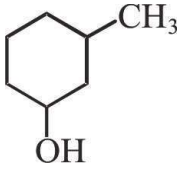
94. What is the major product of the following reaction?



(1) 

(2) 

(3) 

(4) 

95. If the difference in boiling points of two liquid is very less then which distillation method is used -

(1) Fractional distillation

(2) Steam distillation

(3) Distillation under reduced pressure

(4) Simple distillation

96. **Assertion** :- There are two radial nodes in 3s-orbital.

Reason :- There is no angular node in 3s-orbital.

(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.

97. What volume of 0.1M solution of $KMnO_4$ is required to completely oxidise one mole of ferrous oxalate in acidic medium :-

(1) 3L (2) 2L (3) 6L (4) 1L

98. Heat of formation of CO and CO_2 is x and y respectively. Then heat of combustion of CO will be :-

(1) $x - y$ (2) $y - x$

(3) $\left(x - \frac{y}{2}\right)$ (4) $\left(\frac{x}{2} - y\right)$

99. For a gaseous reaction,

$A(g) + 3B(g) \longrightarrow 3C(g) + 3D(g)$

ΔE is 17 kcal at 27°C assuming $R = 2$ cal K^{-1} mol^{-1}, the value of ΔH for the above reaction is :

(1) 15.8 kcal

(2) 18.2 kcal

(3) 20.0 kcal

(4) 16.4 kcal

100. Match List-I with List-II for the reaction

$C_3H_{8(g)} + 5O_{2(g)} \longrightarrow 3CO_{2(g)} + 4H_2O_{(g)}$

	List-I		List-II
(a)	8 moles H_2O produces from ____ $C_3H_8(g)$ at STP	(i)	72g
(b)	88g $C_3H_8(g)$ reacts with ____ O_2	(ii)	3 mole
(c)	44g C_3H_8 produces ____ CO_2	(iii)	44.8L
(d)	1 mole C_3H_8 on reaction with 10 moles O_2 produces _____ H_2O	(iv)	320 g

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

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

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

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

SECTION - A (BOTANY)

101. *Lycopodium* is included in ?

(1) Bryophyta (2) Gymnosperm

(3) Pteridophyta (4) Thallophyta

102. Read the following statements and select the correct statement :-

(1) Fungi grow at cool & dry conditions, so we keep the food in refrigerator

(2) Fungi reproduce vegetatively by conidia & asexually by fragmentation

(3) Plasmogamy is not immediately followed by karyogamy (delayed) in truffles and puff balls

(4) Asexual reproduction by basidiospore is normally found in basidiomycetes while vegetative reproduction is not found

103. In 1971, T.O. Diener discovered a new infectious agent. It is :-

(1) Prion (2) Slime mould

(3) Viroids (4) Virion

104. Female gametophyte in Gymnosperm are found in.

(1) Ovule (2) Pollen grain

(3) Male gametes (4) All of these

105. Oogamous type of fusion is found in :-

(1) *Spirogyra* (2) *Volvox*

(3) *Ulothrix* (4) *Eudorina*

106. Choose the incorrect statement.

(1) Female gametophyte of gymnosperm has two or more archegonia

(2) In *Pinus* male and female cones borne on the same tree but in *Cycas* male cones and mega sporophylls are borne on different trees

(3) Pollination in gymnosperms is carried by wind

(4) In gymnosperms male and female gametophytes have independent free living existence.

107. Match the column A with B regarding Algae :-

	Column-A		Column-B
a.	Chlorophyceae	i	Laminarin
b.	Phaeophyceae	ii	Starch
c.	Rhodophyceae	iii	Floridean starch

Select the correct answer :-

(1) a-ii, b-i, c-iii (2) a-i, b-ii, c-iii

(3) a-iii, b-ii, c-i (4) a-iii, b-i, c-ii

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

Assertion : Gymnosperms seeds are naked.

Reason : In Gymnosperm ovules are not enclosed by any ovary wall and remain exposed both before and after fertilization.

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

(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.

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

Assertion (A) : Zygote do not undergo reduction division immediately in bryophytes.

Reason (R) : In bryophytes the dominant phase in the life cycle is the gametophytic plant body.

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

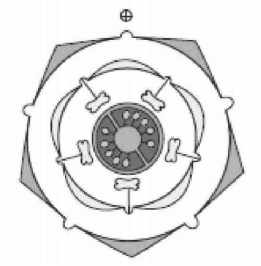
(1) Both (A) and (R) are correct but (R) is not the correct explanation of (A)

(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)

110. Following floral diagram is of which plant :-



(1) *Sesbania* (2) *Lupin*

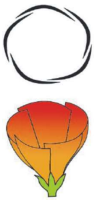
(3) *Ashwagandha* (4) *Asparagus*

111. In which of the following plant, root is not modified for storage of food ?

(1) Sweet potato (2) *Asparagus*

(3) Potato (4) Radish

112. Match the following aestivation of petals with related plants :-

(A)		(i)	*Cassia*
(B)		(ii)	Pea
(C)		(iii)	*Calotropis*
(D)		(iv)	Cotton

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

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

113. $\% \male K_{(5)}C_{1+2+(2)}A_{(9)+1}G_1$

Select the correct option in respect of given floral formula :-

(1) Posterior petals are fused

(2) Found in flower of Tulip plant

(3) Diadelpheus condition

(4) Epipetalous stamens

114. In angiosperm, phloem :

(1) Both the sieve tube elements and companion cells have nuclei

(2) Sieve tube elements have nuclei but companion cells do not

(3) Companion cells have nuclei but the sieve tube elements do not

(4) Neither the companion cells nor sieve tube elements have nuclei

115. In the roots of flowering plants, innermost layer of cortex is known as

(1) Endodermis

(2) Hypodermis

(3) Pith

(4) Cork cambium

116. **Assertion :** Both apical and intercalary meristems are primary meristems.

Reason : Both appear early in the life of a plant and contribute to the formation of the primary plant body.

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

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

(3) Assertion is True but Reason is False.

(4) Both Assertion & Reason are False.

117. (I) Occur as layers or patches

(II) Cell wall – Unevenly thickened due to pectocellulosic deposition

(III) Often has chloroplast

(IV) Living mechanical tissue

(V) Occurs in hypodermis of young dicot stem and petiole

The characteristics are shown by which of the following tissues ?

(1) Paranchyma (2) Collenchyma

(3) Sclerenchyma (4) Vascular tissue

118. An elaborate network of proteinaceous filamentous structures present in cytoplasm, is collectively referred to as :-

(1) Desmotubules (2) Cytoskeleton

(3) Desmosome (4) Plasmodesmata

119. **Assertion:** If initial amount of DNA is denoted as 2C then it increases to 4C in S phase.

Reason: S or synthesis phase marks the period during which DNA synthesis or replication take place.

(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.

120. Read the following statements –

Statement-I : Bivalent or tetrad are formed in zygotene stage.

Statement-II : Zygotene is also known as bouquet stage.

Select the correct option :-

(1) Statement-I & Statement-II both are correct.

(2) Statement-I is correct & Statement-II is incorrect.

(3) Statement-I is incorrect & Statement-II is correct.

(4) Both Statement-I & Statement-II is incorrect.

121. Match the following columns and find out correctly matched option :-

	Column-I		Column-II
(a)	Crossing over	(i)	Exchange of genetic material between two homologous chromosomes.
(b)	Tetrad	(ii)	the complex formed by a pair of synapsed homologous chromosomes.
(c)	Chiasmata	(iii)	Homologous chromosome separate from each other except at the site of cross over and form X-shaped structure.
(d)	Synapsis	(iv)	Pairing of homologous chromosome during zygotene.

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

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

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

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

122. Cell theory which was given by Schleiden and Schwann, did not explain as to how the new cells are formed. Who modified the hypothesis of cell theory to give it a final shape ?

(1) R. Hooke (2) R. Virchow

(3) Mendel (4) C.P. Swanson

123. Which one of the following organelle is found in both Eukaryotic and prokaryotic cells?

(1) Centriole (2) Plastid

(3) Ribosome (4) Mitochondria

124. Besides the nucleus, the eukaryotic cells have other membrane bound distinct structure called?

(1) Centriole (2) Cell Organelle

(3) Nucleolus (4) Ribosome

125. Lipid are not strictly :-

(1) Micromolecule (2) Macromolecule

(3) Biomolecule (4) Water insoluble

126. Phosphotidyl choline is another name of :

(1) Sphingomyelin (2) Lecithin

(3) Cephaline (4) Spermaceti

127. Which of the following plants responds to increased CO_2 concentration and saturation beyond 450 μ/L^{-1} ?

(1) CAM plants (2) C_3 plants

(3) C_4 plants (4) Alpine herbs

128. Most crucial step of C_3 cycle is :-

(1) Carboxylation

(2) Reduction

(3) Regeneration

(4) Oxidation

129. How many molecules of ATP are produced per molecule of $FADH_2$ oxidised ?

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

130. An organic substance bound to an enzyme and essential for its activity is called

(1) Apoenzyme (2) Isoenzyme

(3) Coenzyme (4) Holoenzyme

131. Which of the following enzymes catalyse removal of group from substrate by mechanism other than hydrolysis?

(1) Isomerase

(2) Hydrolases

(3) Transferases

(4) Lyases

132.

Sugarcane, Maize, Sorghum, Tomato, Bell pepper, Tobacco

How many plants from above box fix their CO_2 through Calvin cycle?

(1) Six (2) Four (3) Three (4) Five

133. Select the **correct** set of function which is performed by phytohormone :-

	Auxin	**Cytokinin**	**Ethylene**
(1)	Selective weedicide	Root hair formation	Bolting
(2)	Apical dominance	Delay of senescence	Ripening of fruit
(3)	Apical dominance	Richmond lang-effect	Callus Induction
(4)	Fruit ripening	Epicotyl hook formation	Feminising effect

134. **Statement-I :** Growth is one of the most fundamental characteristic of a living being.
Statement-II : Generally growth is not accompanied by metabolic processes.

(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

135. Which of the following is incorrectly matched pair ?

(1) Ethylene – Cousins

(2) Kinetin – Skoog and Miller

(3) Gibberellic acid – F.W. Went

(4) Auxin – Darwin and Darwin

SECTION - B (BOTANY)

136. Which fungi is known as imperfect fungi ?

(1) Phycomycetes (2) Ascomycetes

(3) Deuteromycetes (4) Basidiomycetes

137. Outermost layer of bacterial cell envelope which provides protection and help in colony formation is :-

(1) Mesosome (2) glycocalyx

(3) Peptidoglycan (4) Pili

138. Select incorrect statement :-

(A) In most algal genera life cycle pattern is haplontic.

(B) Seeds are found in all vascular plants.

(C) In pteridophytes, prothallus is photosynthetic.

(D) Protonema stage is found in the life cycle of mosses which is a sporophytic generation.

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

139. Colchicine is obtained from a member of :-

(1) Solanaceae (2) Liliaceae

(3) Fabaceae (4) Brassicaceae

140. Select the incorrect match :-

(1) Thorn - *Bougainvillea*

(2) Stem tendril - Pea

(3) Rhizome - Turmeric

(4) Phylloclade - *Opuntia*

141. All are lateral meristem, except:

(1) fascicular/vascular cambium

(2) interfascicular cambium

(3) apical and intercalary meristem

(4) phellogen (cork cambium)

142. The first formed primary xylem elements are called protoxylem & the later formed primary xylem is called metaxylem, which of the following is correct regarding their position?

(1) In stem protoxylem lies towards the centre & metaxylem lies towards the periphery of the organ.

(2) In roots the protoxylem lies towards periphery & metaxylem towards the centre.

(3) Both 1 and 2

(4) In roots protoxylem is present towards centre while metaxylem is present towards periphery

143. Unicellular organism were first studied by :-

(1) Robert Brown (2) Joseph Priestley

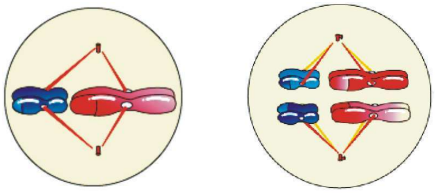
(3) Robert Hooke (4) Leeuwenhoek

144. (a) Granular structure
(b) First observed under the electron microscope as dense particles by George Palade
(c) Composed of RNA and proteins
(d) Not surrounded by any membrane
Above given all statements are true for which cell organelle?

(1) Nucleolus (2) Ribosomes

(3) Cristae (4) Chloroplast

145. Identify figure a and b respectively and choose the correct match :



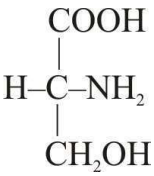
(a) (b)

(1) Prophase, Metaphase

(2) Prophase-I, Metaphase-II

(3) Metaphase-I, Metaphase-II

(4) Metaphase-II, Metaphase-I

146.  structure represent :-

(1) Glycine (2) Alanine (3) Serine (4) Valine

147. Which of the following group belongs to primary metabolite ?

(1) Amino acid, Alkaloid, Drugs, Fatty acid

(2) Sugar, Amino acids, Carotenoids, Morphins

(3) Sugars, Amino acids, Nitrogen bases, Nucleotide

(4) Rubber, Amino acid, Fats & oil, Sugar

148. All is related to the C_4 plants except :

(1) Kranz Anatomy

(2) Double CO_2 fixation

(3) Sugar synthesis in mesophyll cells

(4) Adapted to dry tropical conditions

149. Glycolysis give rise to

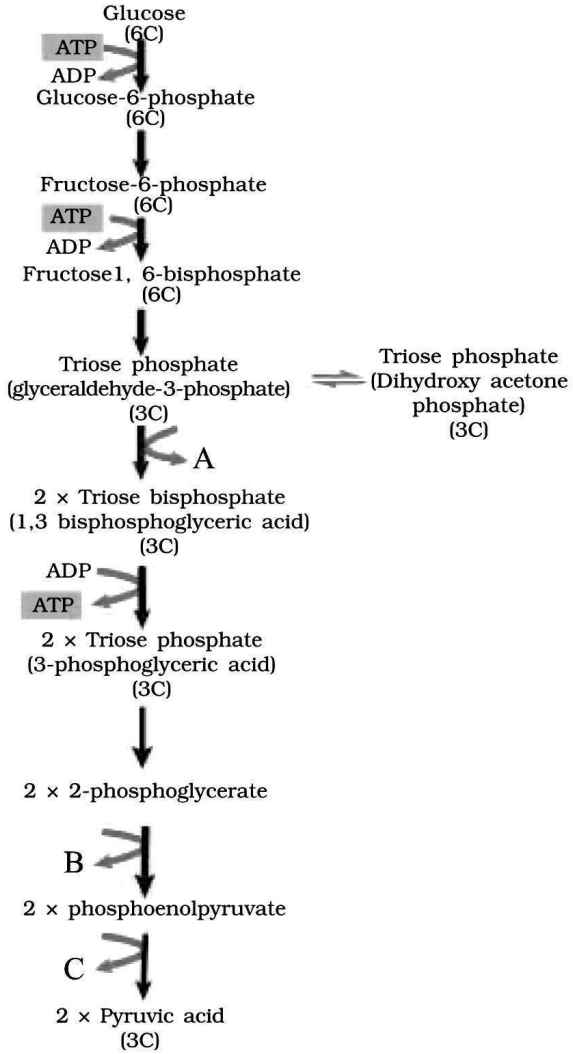
(1) 8ATP, 2NADH(H^+), 2 Pyruvate

(2) 2ATP, 2CoA, 2NADH(H^+)

(3) 2ATP, 2NADH(H^+), 2 Pyruvate

(4) 2ATP, 2 acetate, 2NADH(H^+)

150. Identify A, B and C in the given diagram of glycolysis :-



	A	B	C
1	ATP	ATP	H_2O
2	$NADH+H^+$	H_2O	ATP
3	$NADH+H^+$	ATP	ATP
4	H_2O	ATP	ATP

SECTION - A (ZOOLOGY)

151. "Limbless amphibians" is called as :-

(1) *Rana* (2) *Hyla*

(3) *Bufo* (4) Ichthyophis

152. Most common mode of respiration found in amphibia is :-

(1) Pulmonary (2) Gills (branchial)

(3) Cutaneous (4) Bucco-pharyngial

153. Which is correct for reptiles ?

(1) Dry cornified glandular, thick, skin

(2) Tympanum represents ear

(3) Lizards and snakes shed their scales

(4) Both 2 and 3

154. Which one of the following statements about body cavity in certain animal groups are correct?

(1) Molluscs are acoelomates

(2) Insects are pseudocoelomates

(3) Flatworms are coelomates

(4) Roundworms are pseudocoelomates

155. In porifera :-

(1) Fertilisation is internal and development is direct

(2) Fertilisation is internal and development is indirect

(3) Fertilisation is external and development is direct

(4) Fertilisation is external and development is indirect

156. Few points are given below -
(a) Second largest phylum.
(b) Chitinous exoskeleton
(c) Solid, double, ventral nerve cord
(d) Bilateral symmetrical
(e) Open circulatory system
How many points are incorrect for Arthropoda phylum?

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

157. All of the following animals show metagenesis except :-

(1) *Obelia* (2) *Physalia*

(3) *Hydra* (4) Both (1) and (2)

158. Glands are formed by :

(1) Cuboidal epithelium

(2) Columnar epithelium

(3) Squamous epithelium

(4) Either (1) or (2)

159. Intervertebral disc is made up of :

(1) Calcified cartilage

(2) Hyaline cartilage

(3) White fibrous cartilage

(4) Elastic cartilage

160. Select the correct statement about a Adipose connective tissue :-

(1) It is a type of dense connective tissue

(2) Mostly found beneath the skin

(3) It forms a shock-absorbing cushion

(4) Both 2 & 3

161. Which of the following is an incorrect statement ?

(1) Cartilage is skeletal connective tissue

(2) Matrix of cartilage is made of mucoprotein

(3) Yellow elastic fibre cartilage is found in pinna

(4) Intercellular material of cartilage is solid and non-pliable.

162. Blood of cockroach contain corpuscles are known as:-

(1) Haemocytes (2) Plasmocytes

(3) Coagulocytes (4) Erythrocytes

163. Frog reproduces :-

(1) On trees (2) On land

(3) In sand (4) In water

164. During atrial systole :-

(1) Atrio-ventricular valve remains open

(2) Semi-lunar valve remains closed

(3) 30% blood transfered to ventricles

(4) All of these

165. Right & left atrium of a human heart are separated by:-

(1) Inter atrial septum

(2) Atrioventricular septa

(3) Interventricular septum

(4) All of the above

166. Find out the correct match in the following columns :-

Column-I		Column-II	
(A)	Fishes	I.	One atrium and one ventricle
(B)	Amphibians	II.	Two atria and two ventricles
(C)	Reptile	III.	Two atria and one ventricle
(D)	Mammal		

(1) A-I, B-II, C-II, D-III (2) A-III, B-II, C-II, D-I

(3) A-I, B-III, C-III, D-II (4) A-III, B-III, C-II, D-I

167. Oxyhaemoglobin dissociation curve shifts to the left when :-

(1) CO_2 concentration increase

(2) Temperature increase

(3) CO_2 concentration decrease

(4) pH decrease

168. In which part of lungs gaseous exchange takes place?

(1) Trachea & alveolar duct

(2) Trachea & Bronchi

(3) Alveolar duct & Alveoli

(4) Alveoli & Trachea

169. Match the columns and find out the correct combination:

Column-I (Component)	Column-II (Types)
(a) Amino acids	(i) 8
(b) Nitrogen bases	(ii) 5
(c) Purines	(iii) 3
(d) Pyrimidines	(iv) 20
	(v) 2

(1) (a) - (ii) (b)-(i) (c)-(iv) (d) - (v)

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

(3) (a) - (iv) (b)-(ii) (c)-(v) (d) - (iii)

(4) (a) - (iv) (b)-(ii) (c)-(i) (d) - (v)

170. Osmolarity of medullary interstitium not maintained by :-

(1) NaCl (2) Urea

(3) NaCl and Urea (4) Glucose

171. Consider the following parts of nephron in excretory system :-

(i) PCT
(ii) Glomerulus
(iii) DCT
(iv) Ascending limb of Henle's loop
(v) Collecting duct

Brush border cuboidal epithelium found in -

(1) only (ii) (2) only (v)

(3) only (iv) (4) only (i)

172. Which of the following is excitatory neurotransmitter?

(1) GABA (2) Dopamine

(3) Serotonin (4) Acetylcholine

173. A minimum changes in potential difference which is sufficiently significant for the generation of action potential is :-

(1) EPSP (2) Threshold stimulus

(3) IPSP (4) Peak potential

174. Read the following statements and identify the incorrect statements.

(i) The cerebral hemispheres are connected by a tract of nerve fibres called corpus callosum

(ii) The cerebral cortex have large region that are neither clearly sensory nor motor in function called as association area

(iii) Cerebrum wraps around a structure called as hypothalamus which is a major coordinating centre

(iv) Along with cerebellum, limbic system is involved in regulation of sexual behavior, expression of emotional reaction

(1) only (i), (iii) (2) only (ii), (iii)

(3) only (iii), (iv) (4) only (iv), (ii)

175. The main mineralocorticoid in our body is :-

(1) Cortisone

(2) Aldosterone

(3) Corticosterone

(4) Both cortisone and Aldosterone

176. Hormone that decrease calcium level in blood:-

(1) Thyroxine

(2) Parathormone

(3) Thyrocalcitonin

(4) Cortisol

177. GnRH release from which part of the body?

(1) Hypothalamus

(2) Pituitary gland

(3) Pineal gland

(4) Ovary

178. **Assertion :** Steroid hormone binds with receptors which are present within the cells and regulate gene expression.

Reason : Binding of hormones to its receptor leads to the formation of a hormone-receptor complex which stimulate activation of genetic material.

(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.

179. Match the source gland with its respective hormone as well as the function :-

	Source Gland	Hormone	Function
(1)	Anterior Pituitary	Oxytocin	Contraction of Uterus muscles
(2)	Corpus luteum	Estrogen	Support Pregnancy
(3)	Thyroid	Thymosin	Regulate Growth
(4)	C-cells	Thyro Calcitonin	Reduce Ca^{+2} in extra-cellular fluid

180. Which of following disease is age-related and characterised by decreased bone mass ?

(1) Tetany

(2) Gout

(3) Osteoporosis

(4) Osteoarthritis

181. Dark bands are :-

(1) A-band (2) B-band

(3) I-band (4) Z-line

182. During muscle contraction, in human :-

(1) Length of A-band remain same

(2) Sarcomere does not shorten

(3) Actin filaments length gets shortened

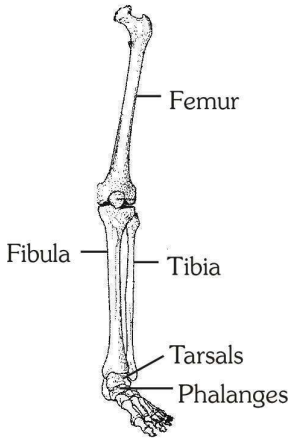
(4) A, H & I bands shorten

183. Acetabulum cavity is found in -

(1) Pelvic girdle (2) Humerus

(3) Pectoral girdle (4) Sternum

184. Given below is a diagram of the bones of the left human hindlimb as seen from front. It has certain mistakes in labeling. Two of the wrongly labelled bones are :-



(1) Tibia and tarsals

(2) Femur and fibula

(3) Fibula and phalanges

(4) Tarsals and femur

185. **Statement-I :** The posterior pituitary is under the direct neural regulation of the hypothalamus.

Statement-II : The hormones of hypothalamus reach the pituitary gland through portal circulatory system and regulate the functions of anterior pituitary.

(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.

SECTION - B (ZOOLOGY)

186. Mark the **incorrect** with reference to echinodermata-

(1) Circulation open type

(2) Fertilization internal and development indirect

(3) All are marine

(4) Do not have distinct head

187. Choose the incorrect pair :-

	Column-A	Column-B
(1)	Squamous epithelium	Flattened cells
(2)	Cuboidal epithelium	Cube-like cells
(3)	Columnar epithelium	Tall and Slender cells
(4)	Ciliated cuboidal epithelium	Tall and slender cells with cilia

188. In cockroach, O_2 is carried to various tissues by :

(1) Haemoglobin

(2) Plasma

(3) Tracheal tubes

(4) Through integument

189. How many pairs of cranial & spinal nerves found in frog?

(1) 10, 9 pair

(2) 12, 31 pair

(3) 10, 10 pair

(4) 12, 33 pair

190. Blood plasma constitutes nearly

(1) 30% of blood

(2) 55% of blood

(3) 90% of blood

(4) 70% of blood

191. **Assertion (A):-** Persons with AB blood group are universal recipients.

Reason (R):- Persons with AB blood group have no antibodies for A and B antigens in their blood plasma.

(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.

192. Read the following statements carefully and choose the correct option :-

Statement-1 :- A reduction in number of thromobocytes can lead to clotting disorders.

Statement-2 :- Megakaryocytes are fragments of thrombocytes which are involved in coagulation.

(1) Both the statement-1 and 2 are correct

(2) Statement-1 is correct but statement-2 is incorrect

(3) Statement-2 is correct but statement-1 is incorrect

(4) Both the statements-1 and 2 are incorrect

193. What happens in Hamburger shift?

(1) HCO_3^- ions move out from the RBC and Cl^- ions enters into RBC

(2) Cl^- ions move out from the RBC and HCO_3^- ions enters into RBC

(3) H^+ ions move out from the plasma and Cl^- ions enters into RBC

(4) HCO_3^- ions move out from the plasma and Cl^- ions enters into plasma

194. Maximum reabsorption of useful substances back into the blood from the filtrate in a nephron occurs in

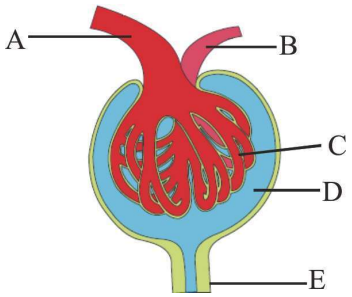
(1) Proximal convoluted tubule

(2) Loop of Henle

(3) Distal convoluted tubule

(4) Collecting duct

195. The part labelled as A, B, C, D and E of renal corpuscles represents :-



(1) A ⟶ Afferent Arteriole
B ⟶ Efferent Arteriole
C ⟶ Glomerulus
D ⟶ Bowmans capsule
E ⟶ DCT

(2) A ⟶ Efferent Arteriole
B ⟶ Afferent Arteriole
C ⟶ Glomerulus
E ⟶ PCT

(3) A ⟶ Afferent Arteriole
B ⟶ Efferent Arteriole
C ⟶ Glomerulus
D ⟶ Bowmans capsule
E ⟶ PCT

(4) A ⟶ Afferent Arteriole
B ⟶ Efferent Arteriole
D ⟶ Glomerulus
E ⟶ PCT

196. Functional and structural unit of nervous system is :

(1) Neuron (2) Alveoli

(3) Nephron (4) Airsac

197. The axoplasm contains high concentration of ___A___ and negatively charged proteins and low concentration of ___B___ :-

	A	B
(a)	$K^{\oplus}$ ions	HCO_3^- ions
(b)	$Na^{\oplus}$ ions	$K^{\oplus}$ ions
(c)	$K^{\oplus}$ ions	$Na^{\oplus}$ ions

(1) (a) (2) (b)

(3) (c) (4) All correct

198. The pituitary gland is anatomically divided into two parts adenohypophysis and neurohypophysis. Which of following hormones are secreted from adenohypophysis :-

(a) Melatonin

(b) Vasopresin

(c) Melanocyte stimulating hormone

(d) Testosterone

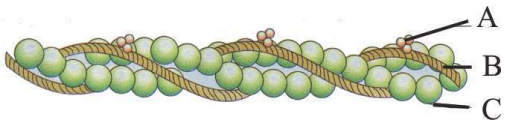
(e) Prolactin

(f) Luitenizing hormone

(1) a, b, e (2) b, c, f

(3) c, e, f (4) c, d, e, f

199. See the figure of actin (thin) filaments Identify A, B and C.



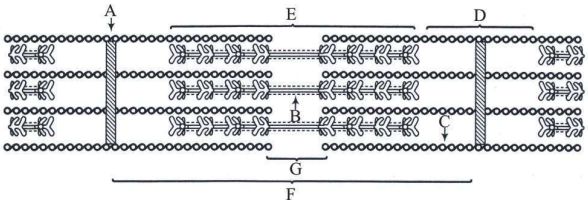
(1) A-Troponin, B-Tropomyosin, C- F-Actin

(2) A-Troponin, B-Tropomyosin, C-Myosin

(3) A-Troponin, B-Myosin, C- F-Tropomyosin

(4) A-Tropomyosin, B-Troponin, C- F-Actin

200. Identify A-G in the given diagram and choose the correct option with reference to the hints I-VII.



(I) A band (II) I band

(III) Sarcomere (IV) H zone

(V) Myosin

(VI) Actin, troponin and tropomyosin

(VII) Z line

The **correct** option is

(1) I–E, II–D, III–C, IV–G, V–B, VI–F, VII–A

(2) I–E, II–D, III–F, IV–G, V–B, VI–A, VII–C

(3) I–E, II–D, III–A, IV–B, V–C, VI–G, VII–F

(4) I–E, II–D, III–F, IV–G, V–B, VI–C, VII–A