939 • FST : 39

A FULL SYLLABUS
ERIES-2024-25

2-Mar.-2025

MARKS : 720

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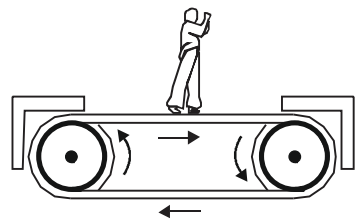
GATIVE MARKING

1. **Figure shows a man of mass 55 kg standing stationary with respect to a horizontal conveyor belt that is accelerating with 1 ms^{-2}. The net force acting on the man is :**



(1) 35 N

(2) 45 N

(3) 55 N

(4) 65 N

2. **Consider the quantities, pressure, power, energy, impulse, gravitational potential, electrical charge, temperature, area. Out of these, the only vector quantities are**

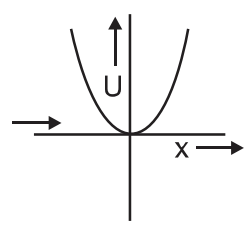
(1) impulse, pressure and area

(2) impulse and area

(3) area and gravitational potential

(4) impulse and pressure

3. **The potential energy function for a particle executing linear simple harmonic motion is given by $U(x)=\frac{1}{2}kx^2$, where k is the force constant of the osicllator. For k = 0.5 Nm^{-1}, the graph U (x) versus x is shown in the figure given below.**



Find out position of a particle carrying total energy 1 J moving under this potential at which it must turn back to its orignal position.

(1) ± 0.5 m

(2) ± 1 m

(3) ± 2 m

(4) ± 3 m

4. The density of a non-uniform rod of lenght 1m is given by $\rho(x) = \alpha(1 + bx^2)$, where a and b are constants and $0 \le x \le 1$. The centre of mass of the rod will be at.

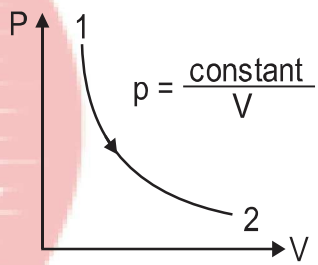
(1) $\frac{3(2+b)}{4(3+b)}$

(2) $\frac{4(2+b)}{3(3+b)}$

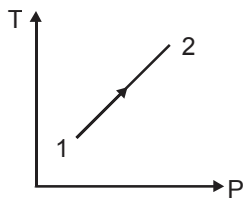
(3) $\frac{3(3+b)}{4(2+b)}$

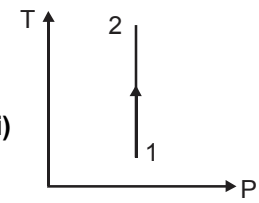
(4) $\frac{4(3+b)}{3(2+b)}$

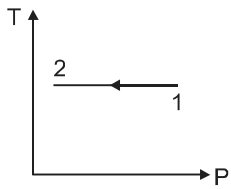
5. Consider p-V diagram for an ideal gas shown in figure.

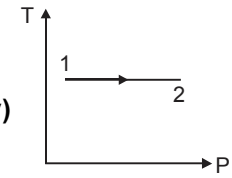


Out of the following diagrams, which figure represents the T-P diagram ?

(i)


(ii)


(iii)


(iv)


(1) (iv)

(2) (ii)

(3) (iii)

(4) (i)

6. Sound waves of wavelenght λ travelling in a medium with a speed of v ms^{-1} enter into another medium where its speed in 2v ms^{-1}. Wavelength of sound waves in the second medium is.

(1) λ

(2) $\frac{\lambda}{2}$

(3) 2λ

(4) 4λ

7. An infinite line charge produces a field of 9×10^4 N/C at a distance of 2cm. Calculate the linear charge density.

(1) 10^{-5} C/m

(2) 10^{-6} C/m

(3) 10^{-7} C/m

(4) 10^{-8} C/m

8. A circular coil of wire consisting of 100 turns, each of radius 8.0 cm carries a current of 0.40 A. What is the magnitude of the magnetif field B at the centre of the coil ?

(1) 4 T

(2) 3.1×10^{-4} T

(3) 2×10^{-3} T

(4) 10^{-4} T

9. A beam of light converges at a point P. Now a lens is placed in the path of the convergent beam 12 cm from P. At what point does the beam converge if the lens is a convex lens of focal lenght 20 cm :

(1) 7.5 cm from lens

(2) 8.5 cm from lens

(3) 9.5 cm from lens

(4) 6.5 cm from lens

10. A parallel beam of light of wavelenght 500 nm falls on a narrow slit and the resulting diffraction pattern is observed on a screen 1 m away. It is observed that the first minimun is at a distance of 2.5 mm from the centre of the screen. Find the width of the slit.

(1) 2 mm (2) 1mm

(3) 0.2 mm (4) 0.1 mm

11. **A particle is dropped from a height H. The de-Broglie wavelenght associated with particle is proportional to**

(1) H

(2) $H^{1/2}$

(3) H^{p}

(4) $H^{-1/2}$

12. **Taking Bohr radius, a_o = 53 pm, the radius of Li^{2+} ion in its ground state on the basis of Bohr model will be**

(1) 53 pm

(2) 27 pm

(3) 18 pm

(4) 13 pm

13. **When a forward bias is applied to a p-n juction. It :**

(1) raises the potential barrier

(2) reduces the majority carrier current to zero

(3) lowers teh potential barrier

(4) None of the above

14. **Speed of a longitudinal wave in a solid bar is given by(all the symbols have their usual meaning)**

(1) $v=\sqrt{\frac{Y}{\rho}}$

(2) $v=\sqrt{\frac{P}{\rho}}$

(3) $v=\sqrt{\frac{\gamma P}{\rho}}$

(4) $v=\sqrt{\frac{B}{\rho}}$

15. **The extension in an elastic wire duo to self weight is (all the symbols have their usual meaning) :**

(1) $\Delta L=\frac{MgL}{2AY}$ (2) $\Delta L=\frac{MgL}{AY}$

(3) $\Delta L=\frac{2MgL}{AY}$ (4) $\Delta L=\frac{2MgL}{3AY}$

16. **light of frequency1.5 times the threshold frequency is incident on a photosensitive material. what will be photo electric current if fre quency is halved and intensity is doubled :**

(1) 4 times

(2) 1/4 times

(3) zero

(4) 2 times

17. **Which one of the following is not correct for circular motion of a particle :**

(a) $\vec{v}=\vec{r}\times\vec{\omega}$

(b) net acceleration is $\frac{v^2}{r}$ **towards the center**

(1) only a

(2) only b

(3) none of a and b

(4) both of a and b.

18. **Degree of freedom for an ideal gas is n and ratio of molar specific heat at constant pressure and constant volumeis γ then**

(1) $n=\frac{\gamma}{2}$ (2) $(\gamma-1)n=2$

(3) $n+2=\gamma$ (4) $(\gamma-1)+n=2$

19. **Point charge q moves in a circle of radius r at constant speed v. What will be the current associated with this uniform circular motion.**

(1) qv/πr

(2) 2qv/πr

(3) qv/2πr

(4) 4qv/πr.

20. **Two capacitors C_1 and C_2 are charged to 120 V and 200 V respectively. It is found that connecting them together the potential on each one can be made zero. Then :**

(1) $5c_1 = 3c_2$

(2) $3c_1 = 5c_2$

(3) $3c_1 + 5c_2 = 0$

(4) $9c_1 = 4c_2$

21. A body of mass 0.5 kg travels in a straight line with velocity $v = kx^{3/2}$ where $k = 5\ m^{-1/2}\ s^{-1}$. The work done by the net force during its displacement from x = 0 to x = 2 m is:

(1) 1.5 J

(2) 50 J

(3) 10 J

(4) 100 J

22. At what temperature is the root mean square speed of an atom in an argon gas cylinder equal to the rms speed of a helium gas atom at 20°C:(Atomic mass of Ar = 39 u and He = 4 u)

(1) 2.85×10^3 K

(2) 2.52×10^2 K

(3) 4.03×10^3 K

(4) 4.03×10^2 K

23. Two conductors are made of the same material and have the same length conductor A is a solid wire of diameter D conductor B is a hollow tube of outer diameter 2D and inner diameter D. The ratio of resistances of A and B :

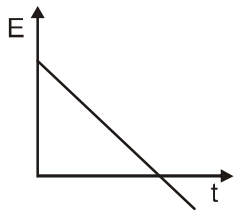
(1) 3 : 1

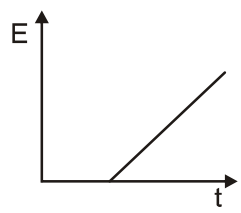
(2) 1 : 2

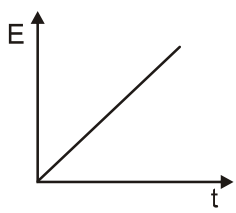
(3) 1 : 4

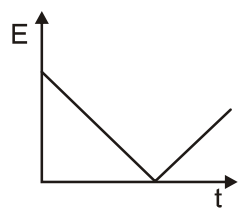
(4) 1 : 1

24. The flux through a loop varies with time according to the relation 0.1 $(t^2 - 6t)$ T-m^2 where t is in seconds. The induced emf in the loop varies with time according to the graph :

(1) 

(2) 

(3) 

(4) 

25. The amount of work done in increasing the voltage across the plates of a capacitor from 5V to 10V is W. The work done in increasing it from 10V to 15V will be :

(1) 0.6 W

(2) W

(3) 1.25 W

(4) 1.67W

26. A charged particle is moving in a uniform magnetic field in a circular path. Radius of circular path is R. When energy of particle is doubled, then new radius will be :

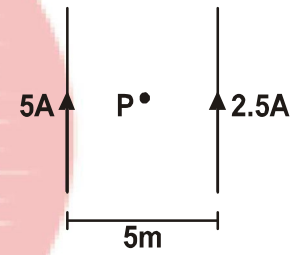
(1) 3R

(2) 2R

(3) $R\sqrt{2}$

(4) $R\sqrt{3}$

27. The magnetic field at centre, P will be :



(1) $\frac{\mu_0}{4\pi}$

(2) $\frac{\mu_0}{\pi}$

(3) $\frac{\mu_0}{2\pi}$

(4) $4\mu_0\pi$

28. In a thermodyamic process of a fixed mass of a gas is changed in such a manner that the gas releases 20 joules of heat and 8 joules of work was done on the gas. If the initial internal energy of the gas was 30 joules, then the final internal energy will be :

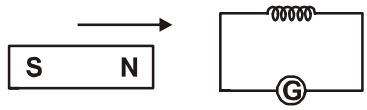
(1) 2 J

(2) 42 J

(3) 18 J

(4) 58 J

29. As shown in the figure, a magnet is moved with a fast speed towards a coil at rest. Due to this induced electromotive force, induced current and induced charge in the coil is E, I and Q respectively. If the speed of the magnet is doubled, the incorrect statement is :



(1) E increases

(2) I increases

(3) Q remains same

(4) Q increases.

30. A truck of mass 1400 kg is moving with a velocity of 15 m/s. A resistive force of 250N and an accelerating force 600 N act on it. The distance travelled by the truck in 10 seconds will be :

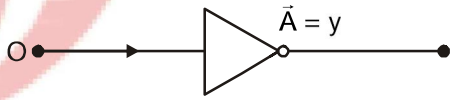
(1) 16.25 m

(2) 162.5 m

(3) 1.625 m

(4) zero.

31. The following logic symbol is for :



(1) OR gate

(2) AND gate

(3) NOT gate

(4) NAND gate

32. On a two-lane raod, car A is travelling with a speed of 36 kmh^{-1}. Two cars B and C approach car A in opposite directions with a speed of 54 kmh^{-1} each At a certain instant, when the distance AB is equal to AC, both being 1 km, B decides to overtake A before C does. What minimum acceleration of car B is required to avoid an accident ?

(1) 2 ms^{-2}

(2) 5 ms^{-2}

(3) 1 ms^{-2}

(4) 10 ms^{-2}

33. Consider the following satements :

Statement I : A particle moving along straight line travels 10 m in third seconds.

Statement II : When a nucleus is formed some energy is released that is known as binding energy.

Statement III : Alternating voltage works with transformer but DC voltage does not:

In the light of above statements choose one correct option from below:

(1) Statement III is wrong

(2) Statement I is correct if particle starts from rest with constant acceleration 4 m/s^2

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

(4) Statement I is not possible in any case

34. It is earier to pull a lawn mower than to push it because

(1) pulling is more comfortable than pushing

(2) one gets extra energy in pulling

(3) pulling makes the lawn mower lights

(4) pulling reduces friction of the surface

35. A body is falling freely under the action of gravity alone in vacuum. Which of the following quantities remain constant during the fall ?

(1) Kinetic energy

(2) Potential energy

(3) Total mechanical energy

(4) Total linear momentum

36. Which one of the following is not the expression for quality factor for resonance in series RLC ac circuit :

(1) $\frac{\omega_0 L}{R}$

(2) $\frac{1}{\omega_0 RC}$

(3) $\frac{V_L}{V_R}$

(4) $\frac{V_L}{V_C}$

37. The potential energy of a simple harmonic oscillator when the particle is half way to its end point is :

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

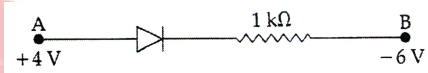
(2) $\frac{1}{8}E$

(3) $\frac{1}{4}E$

(4) $\frac{1}{2}E$

(where E is the total energy)

38. Consider the junction diode as ideal. The value of current flowing through AB is



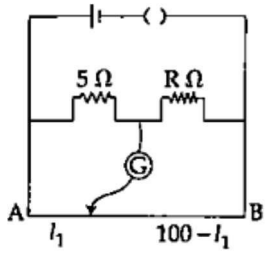
(1) 0 A

(2) 10^{-2}A

(3) 10^{-1} A

(4) 10^{-3} A.

39. The resisitances in the two arms of the meter bridge are 5Ω and RΩ, respectively. When the resistance R is shunted with an equal resistance the new balance point is at 1.6 l_1 . The resistance 'R' , is :



(1) 10 Ω

(2) 15 Ω

(3) 20 Ω

(4) 25 Ω

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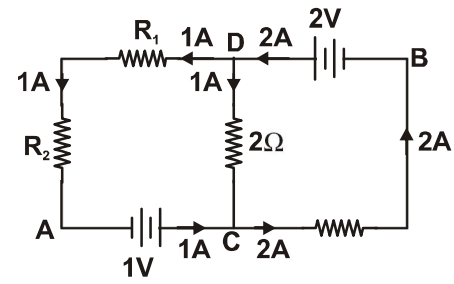
40. In the circuit shown in the figure, if the potential at point A is taken to be zero, the potential at point B is :



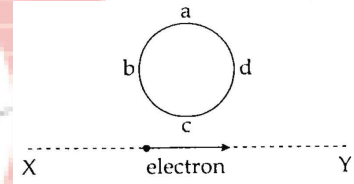
(1) +1V

(2) –1V

(3) +2V

(4) –2V

41. An electron moves on a straight line path XY as shown. The abcd is a coil adjacent to the path of electron. What will be the direction of current, if any, induced in the coil :



(1) The current will reverse its direction as the electrons goes past the coil

(2) No current induced

(3) abcd

(4) adcb.

42. The refractive index of the material of a prism is $\sqrt{2}$ and the angle of the prism is 30°. One of the two refracting surfaces of the prism is made a mirror inwards, by silver coating. A beam of monochromatic light entering the prism from the other face will retrace its path (after reflection from the silvered surface) if angle of incidence on the prism is :

(1) zero

(2) 60°

(3) 30°

(4) 45°.

43. The ratio of kinetic energy to the total energy of an electron in a Bohr orbit of the hydrogen atom, is:

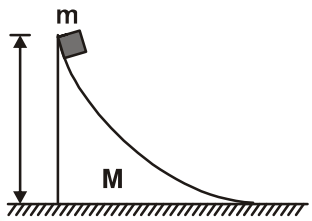
(1) 1 : – 2

(2) 1 : 1

(3) 2 : –1

(4) 1 : –1

44. A mass m is placed at a height on the wedge of mass M shown in the figure. The ground is smooth. When the mass m reaches the ground, velocity of the wedge is (assume all smooth surfaces) :



(1) $\frac{m\sqrt{2gh}}{M}$

(2) $\frac{M}{m}\sqrt{\frac{2mgh}{M+m}}$

(3) $\frac{m}{M}\sqrt{\frac{2mgh}{M+m}}$

(4) $\frac{m}{M}\sqrt{\frac{2Mgh}{M+m}}$

45. Match the columns a series LCR circuit:

Column I	Column II
i. Impedance	A. $\omega L-\frac{1}{\omega C}$
ii. Reactance	B. $\frac{1}{\omega CR}$
iii. Power factor	C. $\sqrt{R^2+\left(\omega L-\frac{1}{\omega C}\right)^2}$
iv. Q-factor	D. $\frac{R}{\sqrt{R^2+\left(\omega L-\frac{1}{\omega C}\right)^2}}$

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

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

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

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

O=16, Na=23, Mg=24, P=31, S=32, Cl=35.5, Ag=108, I=127, Ba=137, Au=197, Pb=207

46. In a compound, C-40% and H-6.66% are present, what is the empirical formula of the compound :

(1) CH_2O

(2) C_4HO_4

(3) CHO

(4) CH_2O_2

47. Ambidentate ligand among the following is :

(1) H_2O

(2) en

(3) NH_3

(4) CN^-

48. Half-life of a first order reaction with rate constant of $0.02s^{-1}$ will be nearly :

(1) 69.3 s

(2) 34.65 s

(3) 100 s

(4) 50 s

49. Sec-butyl alcohol on reaction with I_2 and NaOH majorly gives :

(1) CH_2I_2 and CH_3COONa

(2) CHI_3 and CH_3CH_2COONa

(3) CH_2I and $CH_3CH_3CH_2CH_2$–OH

(4) CI_4 and CH_3CH_2COONa

50. Correct order of ionic radii of the given species is

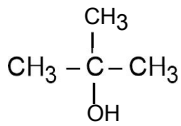
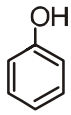
(1) $Nd^{3+} > Tb^{3+} > Tm^{3+}$

(2) $Tm^{3+} > Tb^{3+} > Nd^{3+}$

(3) $Tb^{3+} > Nd^{3+} > Tm^{2+}$

(4) $Tb^{3+} > Tm^{3+} > Nd^{3+}$

51. Match the compounds given in list-I with their characteristic reactions in list-II and choose the correct answer.

List-I (Compounds)	List-II (Reactions)
a. 	i. Gives red colouration in victor Meyer's test
b 	ii. Produces immediate turbidity with Luca's reagent
C CH_3CH_2CHO	iii. Forms white precipitate with bromine water
d $C_6H_5CH_2OH$	iv. Forms silver mirror on reaction with ammoniacal $AgNO_3$ solution.

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

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

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

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

52. Catalyst used in the given reaction is

$$CO + 2H_2 \xrightarrow[200-300\ atm,\ 573-673\ K]{Catalyst} CH_3OH$$

(1) Pd

(2) Mo_2O_3

(3) $CuCl_2$

(4) $ZnO–Cr_2O_3$

53. Which of the following is correct w.r.t. acidic character :

(1) $CH_3COOH > C_6H_5OH > EtOH$

(2) $C_6H_5OH > CH_3COOH > EtOH$

(3) $EtOH > CH_3COOH > C_6H_5OH$

(4) $EtOH > C_6H_5OH > CH_3COOH$

54. Basic amino acid among the following is :

(1) Lysine

(2) Glutamicacid

(3) Isoleucine

(4) Alanine

55. In DNA, C joins with ..... base by ..... hydrogen bonds.

(1) A, 2

(2) G, 3

(3) T, 2

(4) U, 3

56. What is the E_{cell} of the following adjustment ? (log 13 = 1.119)

$$Ag\ (s)\ |Ag^+\ (0.0001M)\ ||\ Mg^{2+}\ (0.13M)|\ Mg(s);$$

$$E^\circ_{cell} = 3.17\ V$$

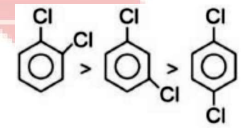
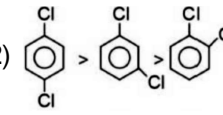
(1) 3.38 V

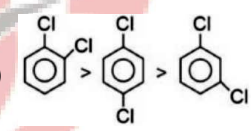
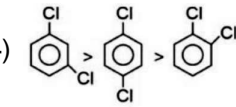
(2) 2.97 V

(3) 3.17 V

(4) 2.75 V

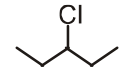
57. Correct order of boiling points for the given compounds is

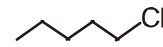
(1)  (2) 

(3)  (4) 

58. Which of the following compounds is most reactive towards S_N2 reaction.

(1) $CH_3–Cl$

(2) 

(3) 

(4) 

59. If the mass of an electron is 9.11×10^{-31} kg, and uncertainty in position is 10^{-8} m, the uncertainty in velocity would be:

(1) $5.8\times10^{-3}\ ms^{-1}$

(2) $5.8\times10^{3}\ ms^{-1}$

(3) $5.8\times10^{-8}\ ms^{-1}$

(4) $5.8\times10^{8}\ ms^{-1}$

60. **The CFSE for octahedral $[CoCl_6]^+$ is corresponding to 18,000 (w.r.t wave number cm^{-1}). The CFSE for tetrahedral $[CoCl_4]^{2-}$ will be:**

(1) 18000 cm^{-1}

(2) 16000 cm^{-1}

(3) 8000 cm^{-1}

(4) 20000 cm^{-1}

61. **Which of the following statements (s) is/are true :**

a. Molarity is the number of moles of solute dissolved per litre of solution.

b. Molarity is temperature independent concentration term.

c. Molality of a solution is defined as the number of moles of solute dissolved in 1000 g of solution

d. The ratio of mole fractions of solute and solvent is in the ratio of their respective moles.

(1) a and c only

(2) a and d only

(3) b and c only

(4) a only

62. **For any H like species, the ratio of radii of 1st, 2nd and 3rd orbits is**

(1) 1 : 4 : 9 (2) $1:\frac{1}{4}:\frac{1}{9}$

(3) 1 : 2 : 3 (4) 1 : 1 : 1

63. **Given below are two statements.**

Statement-I: Negative electron gain enthalpy of fluorine is greater than chlorine.

Statement-II: Ionisation enthalpy of fluorine is less than chlorine.

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

(1) Both statement I and statement II are correct

(2) Both statement I and statement II are incorrect

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

(4) Statement I is incorrect but statement II is correct.

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64. **For the equillibrium, $C(s)+CO_2(g) \rightleftharpoons 2CO(g)$**

k_p = 60 atm at 1000K. If at equillibrium $P_{co} = 10P_{co2}$, then the total pressure at equillibrium is

(1) 6.1 atm

(2) 6.6 atm

(3) 0.6 atm

(4) 66.6 atm

65. **Assertion(A):** PbI_4 is a stable compound.

Reason(R): Iodide stabilises higher oxidation state.

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

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

(3) (A) is correct but (R) is not correct

(4) Both the (A) and (R) are not correct.

66. **Assertion(A) :** Nitrogen exhibits +5 oxidation state

Reason(R) : Nitrogen does not form pentahalide

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

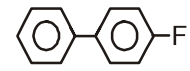
(2) Both (A) and (R) are correct but (R) is not the correct explanation of (A)

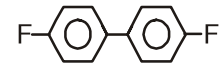
(3) (A) is correct but (R) is not correct

(4) Both the (A) and (R) are not correct.

67. $PhNH_2 \xrightarrow{HNO_2/0^\circ C} A \xrightarrow{HBF_4} B \xrightarrow{\Delta} C$ **; C is:**

(1) $PhN^+ \equiv N(BF_4)^-$

(2) 

(3) 

(4) PhF

68. **Out of the following 0.1 molal aqueous solutions which will have maximum freezing point?**

(1) Glucose

(2) Potassium chloride

(3) Sodium sulphate

(4) Aluminum sulphate

69. A solution containing 20 g per dm^3 urea is isotonic with a 10% (W/V) solution of a non-volatile solute 'B'. The molar mass of the solute 'B' is.

(1) 100 g/mol

(2) 200 g/mol

(3) 300 g/mol

(4) 600 g/mols

70. If Λ_m^o of NaCl, HCl and CH_3COONa are x, y and z S cm^2 mol^{-1} respectively then Λ_m^o of CH_3COOH will be.

(1) z + y + x

(2) x - z - y

(3) z + y - x

(4) z - y - x

71 The following mechanism has been proposed for the reaction of NO with Br_2 to form NOBr

$$NO(g) + Br_2(g) \rightarrow NOBr_2(g)$$

$$NOBr_2(g) + NO(g) \rightarrow 2NOBr(g)$$

If the second step is the rate determining step, the order of reaction w.r.t NO(g) is:

(1) 0

(2) 1

(3) 2

(4) 3

72. Activation energy of a chemical reaction can be determined by:

(1) determining the rate constant at standard temperature.

(2) determining the rate constants at two temperatures.

(3) determining probability of collisions.

(4) using catalyst.

73 Using molecular orbital theory, predict which of the following species has the shortest bond length?

(1) O_2^+

(2) O_2^-

(3) O_2^{2-}

(4) O_2

74. Which of the following molecules has the maximum dipole moment ?

(1) NH_3

(2) NF_3

(3) CO_2

(4) CH_4

75. Which of the following compounds can be best prepared by Wurtz reaction?

(1) n-pentane

(2) Isopentane

(3) Isobutane

(4) n-butane

76. The bond energies for A – A, B – B and A – B are a, b and c kj respectively. The $\Delta_r H$ for the reaction $\frac{1}{2}A_2 + \frac{1}{2}B_2 \rightarrow AB$ will be :

(1) a + b – c

(2) $c - \frac{a}{2} - \frac{b}{2}$

(3) c – a – b

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

77. Which among the following elements is unable to form a compound in +3 oxidatition state?

(1) Al

(2) Tl

(3) Ga

(4) In

78. The equivalent weight of $Cr_2(SO_4)_3$ [mol, wt = M] in the following reaction is

$$Cr_2(SO_4)_3 + H_2O_2 + NaH \rightarrow Na_2CrO_4 + Na_2SO_4 + H_2O$$

(1) M/3

(2) M/4

(3) M

(4) M/6

79. Which of the following electrolytes will give a linear relationship between molar conductivity Λ_m and square root of concentration?

(1) CH_3COOH (2) KCl

(3) HCOOH (4) NH_4OH

80. **Match list-I with list-II and choose the correct option.**

List-I(Compound)	List-II (isomerism)
(a) $[Co(NH_3)_6][Cr(CN)_6]$	i. Optical isomerism
(b) $[Fe(H_2O)_5 Cl]Br$	ii. Coordination isomerism
(c) $[PtCl_2 (NH_3)_2]$	iii. Ionisation isomerism
(d) $K_3[Co (OX)_3]$	iv. Geometrical isomerism

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

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

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

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

81. **Statement -I:** Rate of reaction for end endothermic reaction increases with increases in temperature.

Statement-II: Rate of reaction for exothermic reaction decreases with increase in temperature.

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

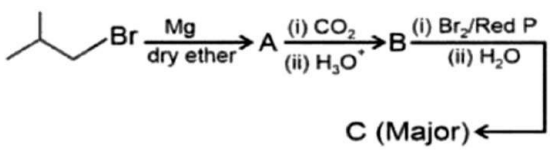
(1) Statement I is correct but statement II is incorrect

(2) Statement I is incorrect but statement II is correct

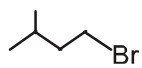
(3) Both statement I and statement II are incorrect

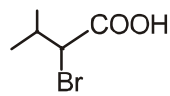
(4) Both statement I and statement II are correct

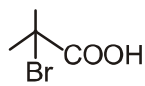
82. **Consider the following reaction sequence**

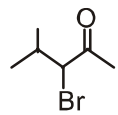


Product C is

(1) 

(2) 

(3) 

(4) 

83. **Maximum number of electrons in a subshell having l= 2 and n = 3 is**

(1) 2 (2) 6

(3) 10 (4) 14

84. **Strongest acid among the following is**

(1) HCOOH

(2) C_6H_5COOH

(3) CH_3COOH

(4) CH_2CH_2COOH

85. **Match list-I with list-II and choose the correct answer.**

List -I (Group attached in benzene)	List-II (Effect shown by the group)
a. $-NO_2$	(i) –R effect and –I effect
b. $-O^-$	(ii) +R effect and –I effect
c. $-O-CH_3$	(iii)+R effect and +I effect
d. $-CH_3$	(iv) +I effect and no resonance

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

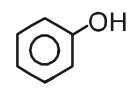
(2) a(i), b(ii), c(iii), d(iv)

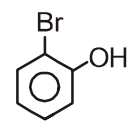
(3) a(iv), b(iii), c(ii), d(i)

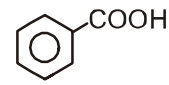
(4) a(i), b(iv), c(iii), d(ii)

86.

(1) 

(2) 

(3) 

(4) 

87. **An organic compound (X) on reaction with ethanoic anhydride gives N-phenyl ethanamide. Correct statements about the compound (X) are**

I. **X on reaction with chloroform and ethanolic potassium hydroxide forms isocyanide**

II. **X on reaction with nitrous acid at low temperature forms benzene diazonium salt**

III. **X is more basic than pyridine**

(1) I and III only

(2) I and II only

(3) II and III only

(4) All I, II and III

88. **Which branched chain isomer of hydrocarbon with molecular mass 72 u gives only one mono substituted alkyl halide**

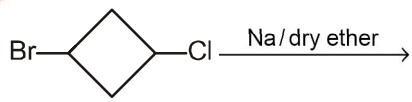
(1) Isopentane

(2) Neopentane

(3) hexane

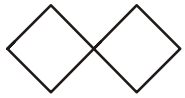
(4) Neohexene

89. **The major product of the following reaction is**



(1) 

(2) 

(3) 

(4) 

90. **Which among the following is not true for a cyclic process :**

(1) $W = 0$

(2) $\Delta U = 0$

(3) $\Delta H = 0$

(4) $\Delta S = 0$

91. **Given below are two statements**

Statement I:

During the chemical reaction the number of carbon atom and functional group are changed in enzyme molecule.

Statement II :

In all enzymes A non protein constituents called cofactors are bound to the enzyme to make the enzyme catalytically active.

Choose the correct answer from the option given below:

(1) Both Statement I and Statement II are incorrect

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

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

(4) Both Statement I and Statement II are correct

92 **Non-membranous nucleoplasmic structures in nucleus are the site for active synthesis of**

(1) protein synthesis

(2) mRNA

(3) rRNA

(4) tRNA

93. **Which of the following nucleic acids is present in an organism having 70 S ribosomes only?**

(1) Single stranded DNA with protein coat

(2) Double stranded circular naked DNA

(3) Double stranded DNA enclosed in nuclear membrane

(4) Double stranded circular DNA with histone proteins

94 **After meiosis I, the resultant daughter cells have**

(1) same amount of DNA as in the parent cell in S

(2) twice the amount of DNA in comparison to haploid gametes

(3) same amount of DNA in comparison to haploid gamete

(4) four times the amount of DNA in comparison to haploid gamete

95. Which of the following organic compounds is the main constituent of Lecithin?

(1) Arachidonic acid

(2) Phospholipid

(3) Cholesterol

(4) Phosphoprotein

96. The main difference between active and passive transport across cell membrane is :

(1) passive transport is non-selective whereas active transport is selective

(2) passive transport requires a concentration gradient across a biological membrane whereas active transport requires energy to move solutes.

(3) No any difference between them

(4) active transport requires more ATP while passive transport requires less ATP to move solutes

97. Select the correct sequence of events.

(1) Gametogenesis → Gamete transfer → Syngamy → Zygote→ Cell division (Cleavage)→ Cell differentiation → Organogenesis

(2) Gametogenesis → Gamete transfer → Syngamy → Zygote→ Cell division (Cleavage)→ Organogenesis→ Cell differentiation

(3) Gametogenesis → Syngamy→ Gamete transfer → Zygote → Cell division (Cleavage)→ Cell differentiation → Organogenesis

(4) Gametogenesis→ Gamete transfer→ Syngamy → Zygote → Cell differentiation → Cell division (Cleavage) → Organogenesis

98. No new follicles develop in the luteal phase of the menstrual cycle because :

(1) Follicles do not remain in the ovary after

(2) FSH levels are high in the luteal phase

(3) LH levels are high in the luteal phase

(4) Both FSH and LH levels are low in the luteal phase

99. What will be the sequence of mRNA produced by the following stretch of DNA?

3' ATGCATGCATGCATG 5' TEMPLATE STRAND

5' TACGTACGTACGTAC 3' CODING STRAND

(1) 3' AUGCAUGCAUGCAUG 5'

(2) 5' UACGUACGUACGUAC 3'

(3) 3' UACGUACGUACGUAC 5'

(4) 5' AUGCAUGCAUGCAUG 3

100. Select the correct match

(1) Flatworms – Network of trachea

(2) Sponges – Book lungs

(3) Aquatic arthropods – Gills

(4) Coelenterates – Lungs

101. The two antibiotic resistance genes on vector pBR 322 are for

(1) Ampicillin and Tetracycline

(2) Ampicillin and Chloramphenicol

(3) Chloramphenicol and Tetracycline

(4) Tetracycline and Kanamycin

102. Exploitation of bioresources of a nation by multinational companies without authorization from the concerned country is referred to as

(1) Bioweapon

(2) Biopiracy

(3) Bioethics

(4) Biowar

103. In a marriage between male with blood group A and female with blood group B, the progeny had either blood group AB or B. What could be the possible genotype of parents?

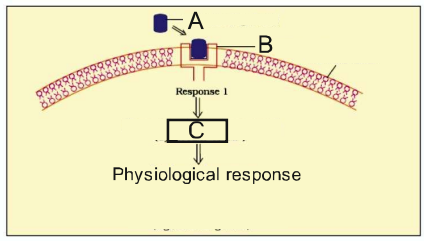
(1) I^A i (Male) ; I^B I^B (Female)

(2) I^A I^A (Male) ; I^B I^B (Female)

(3) I^A I^A (Male) ; I^B i (Female)

(4) I^A i (Male) ; I^B i(Female)

104. Identify A, B and C in the diagrammatic representation of the mechanism of hormone action.



Select the correct option from the following:

(1) A = Steroid Hormone; B = Hormone receptor Complex; C = Protein

(2) A = Protein Hormone; B = Receptor; C = Cyclic AMP

(3) A = Steroid Hormone; B = Receptor; C = Second Messenger

(4) A = Protein Hormone; B = Cyclic AMP; C = Hormone-receptor Complex

105. Humans have acquired immune system that produces antibodies to neutralize pathogens. Still innate immune system is present at the time of birth because it

(1) is very specific and uses different macrophages

(2) produces memory cells for mounting fast secondary response.

(3) has natural killer cells which can phagocytose and destroy microbes

(4) provides passive immunity.

106. Which of the following diseases is an auto-immune disorder?

(1) Myasthenia gravis

(2) Arthritis

(3) Osteoporosis

(4) Gout

107. Select the correct match

A.	Microsporum	I.	Fungi
B.	Entamoeba histolytica	II.	Protozoa
C.	Wuchereria malayi	III.	Animal
D.	Streptococcus pneumoniae	IV.	Bacteria

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

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

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

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

108. Which of the following conditions will stimulate parathyroid gland to release parathyroid hormone

(1) Fall in active Vitamin D levels

(2) Fall in blood Ca^{+2} levels

(3) Fall in bone Ca^{+2} levels

(4) Rise in blood Ca^{+2} levels

109. Which of the following is a correct statement?

(1) IUDs once inserted need not be replaced.

(2) IUDs are generally inserted by the user herself.

(3) IUDs increase phagocytosis of sperms in the uterus.

(4) IUDs suppress gametogenesis.

110. Which of the following sexually transmitted diseases do not specifically affect reproductive organs ?

(1) Genital warts and Hepatitis-B

(2) Syphilis and Genital herpes

(3) AIDS and Hepatitis B

(4) Chlamydiasis and AIDS

111. Match the following genera with their respective phylum :

(a)	Ophiura	(i)	Mollusca
(b)	Physalia	(ii)	Platyhelminthes
(c)	Pinctada	(iii)	Echinodermata
(d)	Planaria	(iv)	Coelenterata

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

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

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

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

112. Which of the following animals are true coelomates with bilateral symmetry ?

(1) Adult Echinoderms

(2) Aschelminthes

(3) Platyhelminthes

(4) Annelids

113. Match the following cell structure with its characteristic feature :

(a)	Tight junctions	(i)	Cement neighbouring cells together to form sheet
(b)	Adhering junctions	(ii)	Transmit information through chemical to another cells
(c)	Gap junctions	(iii)	Establish a barrier to prevent leakage of fluid across epithelial cells
(d)	Synaptic junctions	(iv)	Cytoplasmic channels to facilitate communication between adjacent cells

Select correct option from the following :

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

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

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

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

114. The maximum volume of air a person can breathe in after a forced expiration is known as :

(1) Expiratory Capacity

(2) Vital Capacity

(3) Inspiratory Capacity

(4) Total Lung Capacity

115. All the components of the nodal tissue are autoexcitable. Why does the SA node act as the normal pacemaker ?

(1) SA node has the lowest rate of depolarisation

(2) SA node is the only component to generate the threshold potential.

(3) Only SA node can convey the action potential to the other

(4) SA node has the highest rate of depolarisation

116. A specialised nodal tissue embedded in the lower corner of the right atrium, close to Atrio-ventricular septum, delays the spreading of impulses to heart apex for about 0.1 sec.

This delay allows -

(1) blood to enter aorta.

(2) the ventricles to empty completely.

(3) blood to enter pulmonary arteries.

(4) the atria to empty completely

117. Mad cow disease in cattle is caused by an agent which has :

(1) Inert crystal

(2) Abnormally folded protein

(3) Free RNA without protein coat

(4) Free DNA without protein coat

118. Which of the following shows whorled phyllotaxy?

(1) Mustard

(2) China rose

(3) Alstonia

(4) Calotropis

119. Bicarpellary, Syncarpous ovary with obliquely placed septum is seen in :

(1) Brassica

(2) Gulmohar

(3) Soyabean

(4) Sesbania

120. Which of the following is most common type of embryo sac in angiosperms?

(1) Tetrasporic with one mitotic stage of divisions

(2) Monosporic with three sequential mitotic divisions

(3) Monosporic with two sequential mitotic divisions

(4) Bisporic with two sequential mitotic divisions

121. From the following, identify the correct combination of salient features of Genetic Code

(1) Universal, Non-ambiguous,Overlapping

(2) Degenerate, Overlapping, Commaless

(3) Universal, Ambiguous, Degenerate

(4) Degenerate, Non-overlapping, Non ambiguous

122. Which scientist experimentally proved that DNA is the sole genetic material in bacteriophage ?

(1) Beadle and Tatum

(2) Messelson and Stahl

(3) Hershey and Chase

(4) Jacob and Monod

123. In the process of transcription in Eukaryotes, the RNA polymerase I transcribes -

(1) mRNA with additional processing, capping and tailing

(2) tRNA, 5 S rRNA and snRNAs

(3) rRNAs - 28 S, 18 S and 5.8 S

(4) Precursor of mRNA, hnRNA

124. In which genetic condition, each cell in the affected person, has three sex chromosomes XXY?

(1) Thalassemia

(2) Klinefelter's Syndrome

(3) Phenylketonuria

(4) Turner's Syndrome

125. Select the correct match for population interactions

(1) Predator and prey = + and +

(2) Liver fluke and human = + and –

(3) Cuckoo and crow = + and +

(4) Sea anemone and clown Fish = – and 0

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

Assertion (A): Potato and sweet potato is an example of analogy.

Reason(R): Potato is modification of stem while sweet potato is modification of root but they perform similar function (storage of food).

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

(1) (A) is correct but (R) is not correct

(2) (A) is not correct but (R) is correct

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

(4) Both (A) and (R) are correct but (R) is not the correct explanation od (A)

127. Prosthetic groups differ from co-enzymes in that

(1) they require metal ions for their activity

(2) they (prosthetic groups) are tightly bound to apoenzymes.

(3) their association with apoenzymes is transient.

(4) they can serve as co-factors in a number of enzyme catalyzed reactions.

128. Crossing over takes place between which chromatids and in which stage of the cell cycle?

(1) Non-sister chromatids of non-homologous chromosomes at Zygotene stage of prophase I.

(2) Non-sister chromatids of homologous chromosomes at Pachytene stage of prophase I.

(3) Non-sister chromatids of homologous chromosomes at Zygotene stage of prophase I.

(4) Non-sister chromatids of non-homologous chromosomes at Pachytene stage of prophase I.

129. Where is the respiratory electron transport system (ETS) located in plants?

(1) Mitochondrial matrix

(2) Outer mitochondrial membrane

(3) Inner mitochondrial membrane

(4) Intermembrane space

130. In Hatch and Slack pathway, the primary CO_2 acceptor is-

(1) Oxaloacetic acid

(2) Phosphoglyceric acid

(3) Phosphoenol pyruvate

(4) RuBisCO

131. One scientist cultured Cladophora in a suspension of Azotobacter and illuminated the culture by splitting light through a prism. He observed that bacteria accumulated mainly in the region of :

(1) Violet and green light

(2) Indigo and green light

(3) Orange and yellow light

(4) Blue and red light

132. In order to increase the yield of sugarcane crop, which of the following plant growth regulators should be sprayed ?

(1) Ethylene

(2) Auxins

(3) Gibberellins

(4) Cytokinins

133. What type of pollination takes place in Vallisneria

(1) Pollination occurs in submerged condition by water.

(2) Flowers emerge above surface of Water and pollination occurs by insects.

(3) Flowers emerge above water surface and pollen is carried by wind.

(4) Male flowers are carried by water currents to female flowers at surface of water.

134. In which one of the following, both autogamy and geitonogamy are prevented?

(1) Wheat

(2) Papaya

(3) Castor

(4) Maize

135. Western Ghats have a large number of plant and animal species that are not found anywhere else. Which of the following terms will you use to notify such species ?

(1) Endemic

(2) Vulnerable

(3) Threatened

(4) Keystone

136. Between which among the following, the relationship is not an example of commensalism?

(1) Orchid and the tree on which it grows

(2) Cattle Egret and grazing cattle

(3) Sea Anemone and Clown fish

(4) Female wasp and fig species

137. Coca alkaloid or cocaine is obtained from

(1) Papaver somniferum

(2) Atropa belladona

(3) Erythroxylum coca

(4) Datura

138. Among the following pairs of microbes, which pair has both the microbes that can be used as biofertilizers ?

(1) Aspergillus and Rhizopus

(2) Rhizobium and Rhizopus

(3) Cyanobacteria and Rhizobium

(4) Aspergillus and Cyanobacteria

139. An enzyme catalysing the removal of nucleotides from DNA is :

(1) DNA ligase

(2) Endonuclease

(3) Chitinase

(4) Protease

140. In RNAi, the genes are silenced using :

(1) dsRNA

(2) ssDNA

(3) ssRNA

(4) dsDNA

141. Match the following and choose the correct options

	Column-I		**Column-II**
A.	Trophoblast	i.	Embedding of blastocyst in the endometrium
B.	Cleavage	ii.	Group of cells that would differentiate as embryo
C.	Inner cell mass	iii.	Outer layer of blastocyst attached to the endometrium
D.	Implantation	iv.	Mitotic division of zygote

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

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

142. Significance of 'heat shock' method in bacterial transformation is to facilitate

(1) Binding of DNA to the cell wall

(2) Uptake of DNA through membrane transport proteins

(3) Uptake of DNA through transient pores in the bacterial cell wall

(d) Expression of antibiotic resistance gene

143. Which of the following organism is not a source of restriction endonuclease ?

(1) Haemophilus influenzae

(2) Escherichia coli

(3) Entamoeba coli

(4) Bacillus amyloliquefaciens

144. Pathophysiology is the

(1) Study of physiology of pathogen

(2) Study of normal physiology of host

(3) Study of altered physiology of host

(4) None of the above

145. If a population of 50 Paramecium present in a pool increases to 150 after an hour, what would be the growth rate of population?

(1) 50 per hour

(2) 200 per hour

(3) 5 per hour

(4) 100 per hour

146. What is common to the techniques (i) in vitro fertilisation, (ii) Cryopreservation and (iii) Tissue culture ?

(1) All are In-situ conservation methods

(2) All are Ex-situ conservation methods

(3) All require ultra modern equipment and large space

(4) All are methods of conservation of extinct organisms

147. Which of the following statements is correct ?

(1) Parthenium is an endemic species of our country

(2) African cat fish is not a threat to indigenous cat fishes

(3) Steller's sea cow is an extinct animal

(4) Lantana is popularly known as carrot grass

148. Select the correct match

A. TMV – RNA is infectious

B. Bacteriophage – DNA is infectious

C. Viroids – RNA is infectious

D. Lichen – Two types of organism involved

(1) Only A, B, D

(2) Only B, C, D

(3) Only A, C, D

(4) All

149. Match the following and choose the correct option from below

	Column I		Column II
A.	Cuticle	i.	Guard cells
B.	Bulliform cells	ii.	Single layer
C.	Stomata	iii.	Waxy layer
D.	Epidermis	iv.	Empty colourless cell

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

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

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

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

150. Cells of this tissue are living and show angular wall thickening. They also provide mechanical suport. The tissue is

(1) Xylem

(2) Sclerenchyma

(3) Collenchyma

(4) Epidermis

151. How many shoot apical meristems are likely to be present in a twig of a plant possessing 4 branches and 26 leaves

(1) 26

(2) 1

(3) 5

(4) 30

152. Which one of the following statements is true for cockroach ?

(1) The number of ovarioles in each ovary are ten

(2) The larval stage is called caterpillar

(3) Anal styles are absent in females

(4) They are ureotelic

153. Match the following with reference to cockroach and choose the correct option

	Column I		Column II
A.	Phallomere	i.	Chain of developing ova
B.	Gonopore	ii.	Bundles of sperm
C.	Spermatophore	iii.	Opening of the ejaculatory duct
D.	Ovarioles	iv.	The external genitalia

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

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

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

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

154. Select the correct statement about G_1 phase

(1) Cell is metabolically inactive

(2) DNa in the cell does not replicate

(3) It is not a phase of synthesis of macromolecules

(4) Cell stops growing

155. Which range of wavelength (in nm) is called photosynthetically active radiation (PAR) ?

(1) 100 – 390

(2) 390 – 430

(3) 400 – 700

(4) 760 – 1000

156. Match the following

A.	2,4–D	i.	Herring sperm DNA
B.	ABA	ii.	Bolting
C.	Ethylene	iii.	Stomatal closure
D.	GA	iv.	Weed - free lawns
E.	Cytokinins	v.	Ripening of fruits

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

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

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

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

157. Which of the following statements is correct ?

(1) ADH – prevents conversion of angiotensinogen in blood to angiotensin

(2) Aldosterone – Facilitates water reabsorption

(3) ANF – enhances sodium reabsorption

(4) Renin – causes vasodilation

158. Dialysing unit (artificial kidney) contains a fluid which is almost same as plasma except that it has

(1) High glucose

(2) High urea

(3) No urea

(4) High uric acid

159. Potential difference across resting membrane is negative. This is due to differential distribution of the following ions

(1) Na^+ and K^+

(2) CO_3^{++} and Cl^-

(3) Ca^{++} and Mg^{++}

(4) Ca^{++} and Cl^-

160. Select the correct match

(A)	Resting potential	i.	Chemicals involved in the transmission of impulses at synapses
(B)	Nerve impulse	ii.	Gap between the pre synaptic and post synaptic neurons
(C)	Synaptic cleft	iii.	Electrical potential difference across the resting neural membrane
(D)	Neurotransmitters	iv.	An electrical wave like response of a neuron to a stimulation

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

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

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

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

161. For the MN-blood group system, the frequencies of M and N alleles are 0.7 and 0.3, respectively. The expected frequency of MN-blood group bearing organisms is likely to be

(1) 42%

(2) 49%

(3) 9%

(4) 58%

162. Match the scientists listed under column 'I' with ideas listed column 'II'

	Column I		Column II
A.	Darwin	i.	Origin of life through chemical evolution
B.	Oparin	ii.	Use and disuse of organs
C.	Lamarck	iii.	Mutation theory
D.	Hugo devries	iv.	Evolution by natural selection

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

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

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

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

163. Select the correct statement for supar class pisces

a. In chondrichthyes claspers are present in male

b. Air bladder regulates buoyancy in osteichtyes

c. Heart is usually two chambered but three chambered in frog

d. Members of pisces are called true fish

(1) a, b, d (2) Only a, b

(3) a, b, c (4) All

164. Select the correct statement for sunflower

a. It is the member of asteraceae family

b. The placenta develops at the base of ovary and a single ovule is attached to it

c. A single leaf arise at each node in alternate manner

d. Ovary inferior

(1) All (2) Only a, b, c

(3) Only b, c, d (4) Only a, c, d

165. Select the correct match

	Class	Phylum/Division
A.	Mammalia	Arthropoda
B.	Insecta	Angiospermae
C.	Dicotyledonae	Angiospermae
D.	Monocotyledonae	Gymnosperm

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

166. Select the correct match

	Amino acid	R group
A.	Glycine	Hydrogen
B.	Alanine	A methyl group
C.	Serine	Hydroxymethyl group
D.	Alanine	Isopropyl group

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

167. Select the incorrect match for colourblindness

(1) X^CY – colourblind man
(2) X^CX – carrier man
(3) X^CX^C – colourblind women
(4) XY – normal man

168. Select the correct match

A. Haemophilia – Sex linked recessive
B. Thalassemia – Genetic disorder
C. Cystic fibrosis – Mendelian disorder
D. Turner syndrome – Mendelian disorder

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

169. Select the correct match for mendel experiment

	Dominant	Recessive
A.	Terminal	Axial
B.	Round	Wrinkled
C.	Tall	Dwarf
D.	Green colour of pod	Yellow colour of pod

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

170. Select the correct statements regarding mechanism of muscle contraction :

A. It is initiated by a signal sent by CNS via sensory neuron.
B. Neurotransmitter generates action potential in the sarcolemma.
C. Increased Ca^{++} level leads to the binding of calcium with troponin on actin filaments.
D. Masking of active site for actin is activated.
E. Utilising the energy from ATP hydrolysis to form cross bridge.

Choose the most appropriate answer from the options given below :

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

171. What is incorrect statement about ecosystem? :

(1) It can vary from small sized pond to large sized sea
(2) It may be anthropogenic in origin
(3) It may be temporary or Permanent
(4) It involves the function of flow of energy but not recycling of nutrients

172. Match List-I with List-II:

	List-I		List-II
A.	Tertiary consumer	I.	Grass
B.	Secondary consumer	II.	Lion
C.	Primary consumer	III.	Wolf
D.	Primary producer	IV.	Goat

Choose the correct answer form the options given below:

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

173. Select the Incorrect match

(1) Dihydroxyacetone Phosphate - Glycolysis
(2) Fumaric Acid - Glycolysis
(3) OAA - Krebs cycle
(4) 3-Phosphoglyceric Acid - Glycolysis

174. Select the Incorrect match:

(1) Physical barrier - Mucus coating of the epithelium lining Respiratory tract
(2) Physiological barrier - Saliva in the mouth
(3) Cellular barrier - Leucocytes
(4) Cytokine barrier - Macrophage in tissues

175. Select the correct statements for Replication:

(1) Any mistake during replication would result into mutations.
(2) The DNA dependent DNA polymerases catalyse polymerisation only in one direction, that is 5' $\rightarrow$ 3'
(3) The replication of DNA and cell division cycle should be highly co-ordinated.
(4) All

176. Given below are two statements

Statement I:

For plants the earliest systems of classification used only gross superficial morphological characters such as habit, colour, number and shape of leaves etc.

Statement II :

Natural classification systems were based on natural affinities among the organisms and consider, not only external features, but also internal features, like ultrastructure, anatomy, embryology and phytochemistry.

Choose the correct answer from the option given below:

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

177. Given below are two statements

Statement I:

In Sphagnum male and female gametophyte are independent free living existence.

Statement II :

In Pinus male and female gametophyte are not independent free living existence.

Choose the correct answer from the option given below:

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

178. Given below are two statements

Statement I:

Fruits is a mature or ripened ovary developed after fertilisation.

Statement II :

In all types of fruit pericarp is clearly differentiated into epicarp, mesocarp and endocarp.

Choose the correct answer from the option given below:

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

179. Given below are two statements

Statement I:

In case of plants or microbes the term morphology precisely means only the study of form or externally visible features.

Statement II :

The word anatomy conventionally is used for the study of morphology of internal organs in the animals.

Choose the correct answer from the option given below:

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

180. Given below are two statements

Statement I:

In cuboidal epithelium the cells are compactly packed with little intercellular matrix.

Statement II :

The salivary gland is secrete peptide hormone.

Choose the correct answer from the option given below:

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