PHOTONICS ACADEMY
Exclusively for IIT-JEE | NEET Aspirants

JEE | NEET (https://www.photonicsalem.org)
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Time: 3:20 hrs. **NEET (UG) - 2022** **Max. Marks : 720**

Important Instructions:

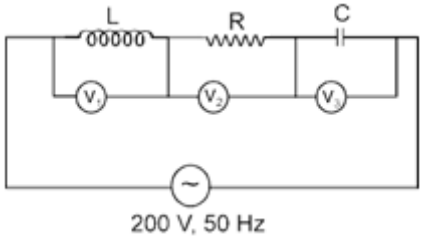
1. The test is of 3 hrs 20 min. duration and Test Booklet contains 200 multiple choice questions (Four options with a single correct answer). There are two sections in each subject, i.e. Section-A & Section-B. You have to attempt all 35 questions from Section-A & only 10 questions from Section-B out of 15. (Candidates are advised to read all 15 questions in each subject of Section-B before they start attempting the question paper. In the event of a candidate attempting more than ten questions, the first ten questions answered by the candidate shall be evaluated.)
2. Each question carries 4 marks. For each correct response, the candidate will get 4 marks. For every wrong response 1 mark shall be deducted from the total score. Unanswered / unattempted questions will be given no marks. The maximum marks are 720.
3. Use Blue / Black Ball point Pen only for writing particulars on this page/marking responses.
4. Rough work is to be done in the space provided for this purpose in the Test Booklet only.
5. On completion of the test, the candidate must handover the Answer Sheet to the Invigilator before leaving the Room / Hall. The candidates are allowed to take away this Test Booklet with them.
6. The CODE for this Booklet is PHO-01.
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 Roll No. anywhere else except in the specified space in the Test Booklet/ Answer Sheet. Use of whiste fluid for correction is NOT permissible on the Answer Sheet.
8. Each candidate must show on demand his/her Admission Card to the Invigilator.
9. No candidate, without special permission of the Superintendent or Invigilator, would leave his/her seat.
10. Use of Electronic/Manual Calculator is prohibited.
11. The candidates are governed by all Rules and Regulations of the examination with regard to their conduct in the Examination Hall. All cases of unfair means will be dealt with as per Rules and Regulations of this examination.
12. No part of the Test Booklet and Answer Sheet shall be detached under any circumstances.
13. The candidates will write the Correct Test Booklet Code as given in the Test Booklet / Answer Sheet in the Attendance Sheet.

Subject : Physics
SECTION-A
(Attempt All 35 questions)

1. The potential of the electric field produced by a point charge at any point (x, y, z) is givenby; $V = 3x^2 + 5$, where x, y, z are in metre and V is in volt. The intensity of the electric field at (-2,1,0) is :-

(A) $+17 Vm^{-1}$ (B) $-17 Vm^{-1}$ (C) $+12 Vm^{-1}$ (D) $-12 Vm^{-1}$

2. If the readings of v1 and v3 are 100 volt each then reading of v2 is :

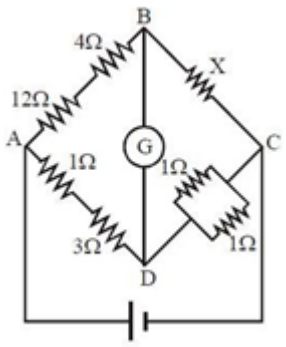


(A) 0 volt (B) 100 volt
(C) 200 volt (D) cannot be determined by given information.

3. An LR circuit has L = 1H and R = 1Ω. It is connected across an emf of 2V. The maximum rate at which energy is stored in the magnetic field is :

(A) 1 W (B) 2 W (C) 1/4 W (D) 4 W

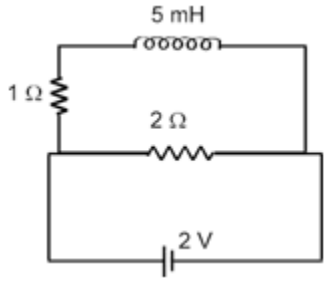
4. In the circuit shown in the adjoining figure, the current between B and D is zero, the unknown resistance is of



(A) 4Ω
(B) 2Ω
(C) 3Ω
(D) e.m.f. of a cell is required to find the value of X .

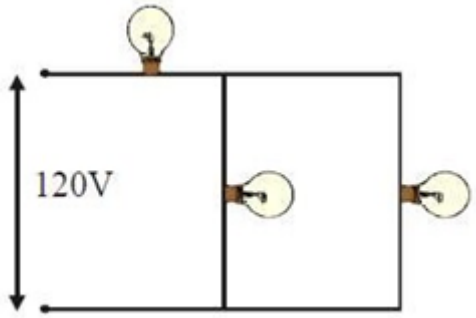
5. When induced emf in inductor coil is 50% of its maximum value then stored energy in

inductor coil in the given circuit will be : -



(A) 2.5 mJ (B) 5mJ (C) 15 mJ (D) 20 mJ

6. Three 60 W,120 V light bulbs are connected across a 120 V power source. If resistance of each bulb does not change with current then find out total power delivered to the three bulbs.



(A) 180 W (B) 20 W (C) 40 W (D) 60 W

7. A square of side 3cm is placed at a distance of 25cm from a concave mirror of focal length 10 cm. The centre of the square is at the axis of the mirror and the plane is normal to the axis. The area enclosed by the image of the wire is-

(A) 4 cm^2 (B) 6 cm^2 (C) 16 cm^2 (D) 36 cm^2

8. In Young's double slit experiment, the intensity of light at a point on the screen where the path difference is λ is I0. The intensity of light at a point where the path difference becomes $\frac{\lambda}{6}$ is:-

(A) I_0 (B) $\frac{3I_0}{4}$ (C) $\frac{I_0}{3}$ (D) $\frac{I_0}{2}$

9. Two springs of spring constants 1500 N / m and 3000 N / m respectively are stretched with the same force. They will have potential energy in the ratio-

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

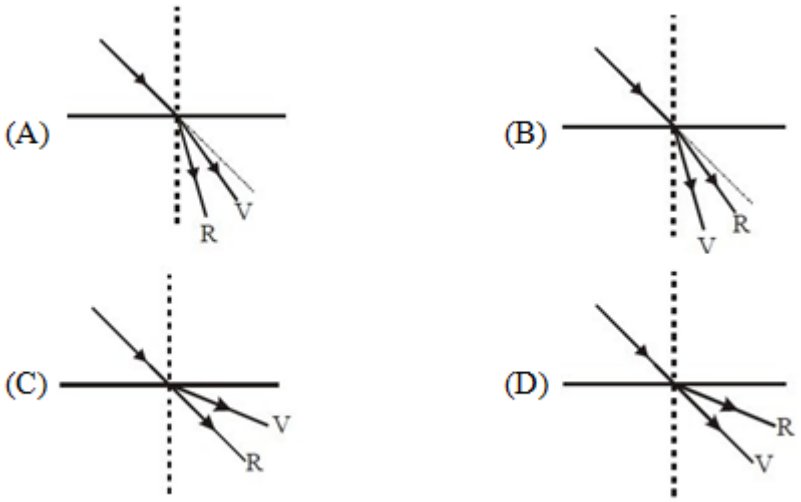
10. If the ratio of the concentration of electrons to that of holes in a semiconductor is $\frac{7}{5}$ and the ratio of currents is $\frac{7}{4}$, then what is the ratio of their drift velocities?

(A) 5/8 (B) 4/5 (C) 5/4 (D) 4/7

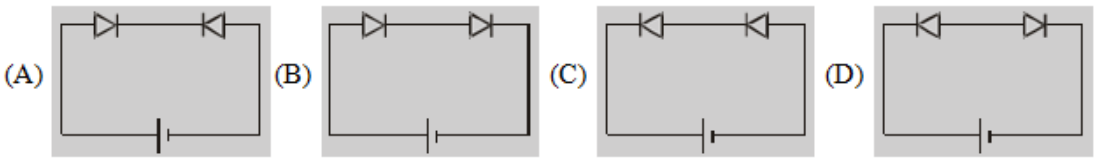
11. A train having 60 wagons each weighing 25 ton is moving with a speed of 72 km / h . If the frictional force is 10 N per ton, the power developed is-

(A) $3X10^5$ W (B) $3X10^6$ W (C) $3X10^7$W (D) $3X10^4$W

12. A ray of light is going from air to water. Which of the following figure shows dispersion of light?



13. Two identical P-N diodes are connected in series in the following ways. Maximum current will flow in circuit-



14. A thin sheet of glass (μ = 1.5) of thickness 6 microns introduced in the path of one of interfering beams in a double slit experiment shifts the central fringe to a position previously occupied by fifth dark fringe. Then the wavelength of light used is :-

(A) 6600Å (B) 3000Å (C) 4500Å (D) 7500Å

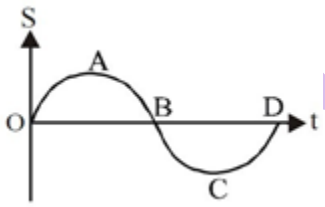
15. In a diffraction pattern due to a single slit of width 'a', the first minimum is observed at an angle 30° when light of wavelength 5000Å is incident on the slit. The first secondary maximum is observed at an angle of:

(A) $\text{Sin}^{-1}\left(\frac{1}{4}\right)$ (B) $\text{Sin}^{-1}\left(\frac{2}{3}\right)$ (C) $\text{Sin}^{-1}\left(\frac{1}{2}\right)$ (D) $\text{Sin}^{-1}\left(\frac{3}{4}\right)$

16. A linear aperture whose width is 0.02 cm is placed immediately in front of a lens of focal length 60 cm. The aperture is illuminated normally by a parallel beam of wavelength $5X10^{-5}$cm. The distance of the first bright band of the diffraction pattern from the centre of the screen is:-

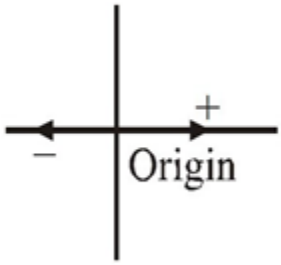
(A) 0.20 cm (B) 0.15 cm (C) 0.225 cm (D) 0.25 cm

17. A particle has a rectilinear motion and the figure gives its displacement as a function of time. Which of the following statements is false with respect to the motion?



(A) Between O and A the velocity is positive and acceleration is negative
(B) Between A and B the velocity and acceleration are positive
(C) Between B and C the velocity is negative and acceleration is positive
(D) Between C and D the acceleration is positive

18. Consider case of rectilinear motion with the sign convention given in figure. Choose INCORRECT statement:-



(A) $v > 0, a > 0$ particle is speeding up
(B) $v > 0, a < 0$ particle is slowing down
(C) $v < 0, a < 0$ particle is speeding up
(D) $v < 0, a > 0$ particle is speeding up

19. A particle is projected in a vertical plane such that its velocity with time varies according to the relation $\vec{v} = 10\hat{i} + 10\hat{j} + (20 - 10t)\hat{k}\left(\frac{m}{s}\right)$. Take horizontal ground as the $X - Y$ plane

and vertical along z -axis. If the particle was projected from origin.Find the time after which the particle again strikes the ground:-

(A) 2sec (B) 4sec (C) 8sec (D) 10sec

20. A block of metal weighing 2 kg is resting on a frictionless plane. It is struck by a jet releasing water at a rate of 1kg / s and at a speed of 5 m / s. The initial acceleration of the block is:-

(A) $\frac{5}{3}\text{m/s}^2$ (B) $\frac{25}{4}\text{m/s}^2$ (C) $\frac{25}{8}\text{m/s}^2$ (D) $\frac{5}{2}\text{m/s}^2$

21. The coefficient of friction between the block and the horizontal surface is μ as shown in figure. The block moves towards right under action of horizontal force F (figure -a). Sometime later another force P is applied to the block making an angle θ (such that tan θ = μ) with vertical as shown in (figure - b). After application of force P , the acceleration of block shall

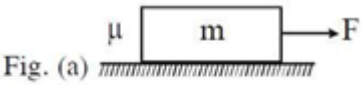


Fig. (a)

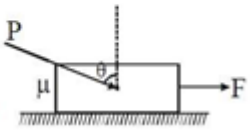


Fig. (b)

(A) increase
(B) decrease
(C) remains same
(D) information insufficient for drawing inference.

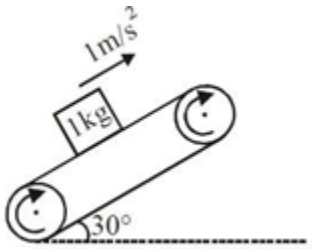
22. The three lowest resonant frequencies of a system are 50 Hz, 150 Hz and 250 Hz . The system could be:-

(A) A tube of air closed at both ends (B) A tube of air open at one end
(C) A tube of air open at both ends (D) A vibrating string with fixed ends

23. The acceleration due to gravity on the planet A is 9 times the acceleration due to gravity on planet B. A man jumps to a height of 2 m on the surface of A. What is the height of jump by the same person on the planet B?

(A) $\frac{2}{9}$m (B) 18 m (C) 6 m (D) $\frac{2}{3}m$

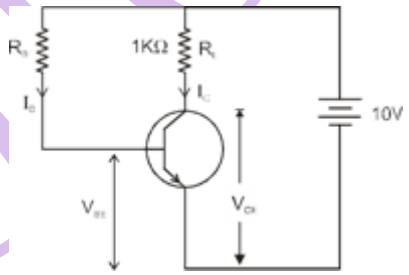
24. A block of mass 1kg is stationary with respect to a conveyer belt that is accelerating with 1m / s^2 upwards at an angle of 30° as shown in figure. Which of the following is/are correct?



(A) Force of friction on block is 6 N upwards.
(B) Force of friction on block is 1.5N upwards
(C) Contact force between the block and belt is 10.5 N approximately
(D) Contact force between the block and belt is $5\sqrt{3N}$.

(A) A only (B) B only (C) A&C (D) B&D

25. In the circuit shown in figure, the current gain $\beta = 100$for a npn transistor. The bias resistance RB so that V_{CE} = 5V is (V_{BE} << 10 V)

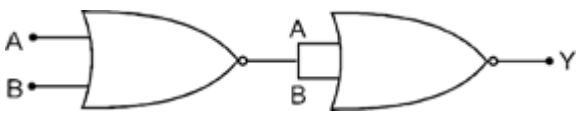


(A) $2 \times 10^3\Omega$ (B) $10^5\Omega$ (C) $2 \times 10^5\Omega$ (D) $5 \times 10^5\Omega$

26. A chain of mass M and length L is kept on a table with L / 4 portion overhanging from edge. Work done by external force to put the hanging portion back on the table-

(A) $\frac{MgL}{16}$ (B) $\frac{MgL}{32}$ (C) $\frac{MgL}{8}$ (D) $\frac{MgL}{12}$

27. In the following circuit, the output Y for all possible inputs A and B is expressed by the truth table:



(A)

A	B	Y
0	0	0
0	1	0
1	0	0
1	1	1

(B)

A	B	Y
0	0	1
0	1	1
1	0	1
1	1	0

(C)

A	B	Y
0	0	1
0	1	0
1	0	0
1	1	0

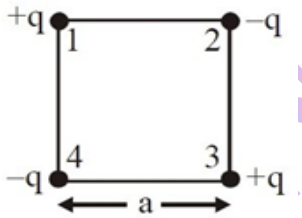
(D)

A	B	Y
0	0	0
0	1	1
1	0	1
1	1	1

28. The charge on a particle is 100 times that of electron. It is revolving in a circular path of radius 0.8 m at a frequency of 1011 revolutions per second. The magnetic field at the c entre of path will be–

(A) $10^{-7}\mu_0$ (B) $\frac{10^{-7}}{\mu_0}$ (C) $10^{-17}\mu_0$ (D) $10^{-6}\mu_0$

29. The work done required to put the four charges together at the corners of a square of side a, as shown in the figure is:-

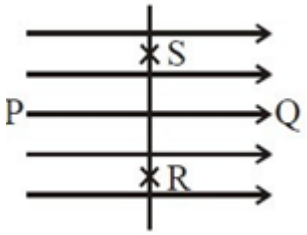


(A) $\frac{1}{4\pi\varepsilon_0}\frac{q^2}{a}$ (B) $\frac{2.6}{4\pi\varepsilon_0}\frac{q^2}{a}$ (C) $\frac{2.6}{4\pi\varepsilon_0}\frac{q^2}{a}$ (D) none of these

30. Two heater coils separately take 10 min and 5 min to boil a certain amount of water. If both the coils are connected in series, the time taken will be?

(A) 15min (B) 7.5min (C) 10/3min (D) 12.5min

31. The points resembling equal potentials are:-



a.

(A) P and Q (B) S and Q (C) S and R (D) P and R

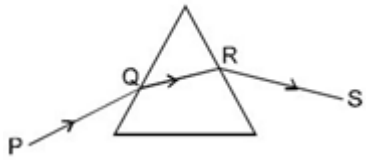
32. An electron of mass m_e initially at rest, moves through a certain distance in a uniform electric field in time t_1. A proton of mass m_p , also, initially at rest, takes time t_2 to move through an equal distance in this uniform electric field. Neglecting the effect of gravity, the ratio t_1 / t_2 is nearly equal to:-

(A) 1 (B) $(m_p/m_e)^{1/2}$ (C) $(m_e/m_p)^{1/2}$ (D) 1836

33. A particle of mass 2gm and charge 1μC is held at a distance of 1m from a fixed charge of 1mC. If the particle is released it will be repelled. The speed of the particle when it is at a distance of 10 m from the fixed charge is:-

(A) 100 m /s (B) 90 m /s (C) 60 m /s (D) 45 m /s

34. An equilateral prism is kept on a horizontal surface. A typical ray of light PQRS is shown in the figure. For minimum deviation



(A) the ray PQ must be horizontal (B) the ray RS must be horizontal
(C) the ray QR must be horizontal (D) any one of them can be horizontal

35. A particle of mass m moving east-ward with a speed V collides with another particle of the same mass moving north-ward with the same speed V. The two particles coalesce on collision. The new particle of mass 2 m will move in the north-east direction with a velocity

(A) $\sqrt{2V}$ due N − E (B) $\frac{V}{\sqrt{2}}$ *due* $N-E$ (C) $\sqrt{2V}$ *due* $S-E$ (D) $\frac{V}{\sqrt{2}}$ *due* SE

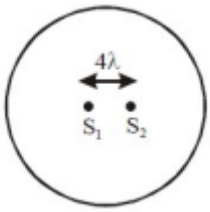
SECTION-B

This section will have 15 questions. Candidate can choose to attempt any 10 questions out of these 15 questions. In case if candidate attempts more than 10 questions, first 10 attempted questions will be considered for marking.

36. A bullet of mass 20 g and moving with 600 m / s collides with a block of mass 4 kg hanging with the string. What is velocity of the bullet when it comes out of block, if block rises to height 0.2 m after collision

(A) 200 m /s (B) 150 m /s (C) 400 m /s (D) 300 m /s

37. If two coherent sources are placed at a distance 4λ from each other symmetric to the centre of the circle shown in the figure, then number of maxima shown on the screen placed along the circumference is

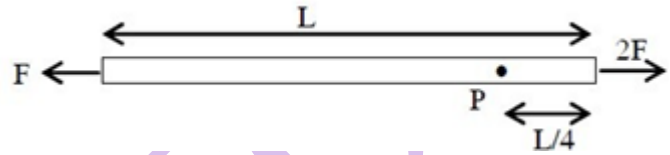


(A) 16 (B) 12 (C) 8 (D) 4

38. In Young's double slit experiment, the intensity of light at a point on the screen where the path difference is λ is I_0 The intensity of light at a point where the path difference becomes $\frac{\lambda}{6}$ is:-

(A) I_0 (B) $\frac{3I_0}{4}$ (C) $\frac{I_0}{3}$ (D) $\frac{I_0}{2}$

39. A uniform rod of mass M and length L lies flat on a frictionless horizontal surface. Two forces F and 2 F are applied along the length of the rod as shown. The tension in the rod at point P is



(A) F (B) 3F (C) $\frac{5F}{4}$ (D) $\frac{7F}{4}$

40. A satellite is moving around of the earth with speed V in circular orbit radius r .If the radius is decreased by 2%. The speed of the satellite will:-

(A) Increase by 1%
(B) Increase by 0.5%
(C) Decrease by 1%
(D) Decrease by 0.5%

41. A linear harmonic oscillator of force constant $2 \times 10^6\ N/m$ and amplitude 0.01m has a total mechanical energy of 160 joule. Its

(A) maximum potential energy is 100 J
(B) maximum kinetic energy is 100 J
(C) minimum potential energy is 100 J
(D) minimum potential energy is zero.

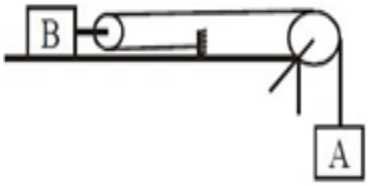
42. The length of a solenoid is 0.1 m and its diameter is very small. A wire is wound over it in two layers. The number of turns in the inner layer is 50 and that on the outer layer is 40. The strength of current flowing in two layers is in the same direction and is 3 ampere. The magnetic induction in the middle of the solenoid will be-

(A) 3.4×10^{-3} Tesla
(B) 3.4×10^{-3} Gauss
(C) 3.4×10^{3} Tesla
(D) 3.4×10^{3} Gauss

43. A ball is thrown at an angle of 30° to the horizontal. It falls on the ground at a distance of 90 m. If the ball is thrown with the same initial speed at an angle 30° to the vertical, it will fall on the ground at a distance of-

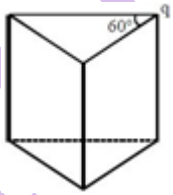
(A) 120 m (B) 27 m (C) 90 m (D) 30 m

44. Relation between accelerations of A and B in the given figure is:-



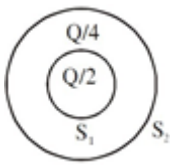
(A) $a_A = a_B$
(B) $2a_A = a_B$
(C) $a_A = 2a_B$
(D) Masses of blocks are required.

45. A charge q is placed at a vertex of the given geometry of angle 60°. Then, the flux coming out from this geometry will be



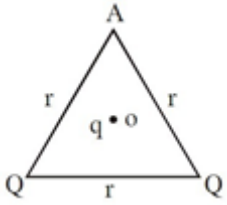
(A) $\frac{q}{6\epsilon_0}$ (B) $\frac{q}{16\epsilon_0}$ (C) $\frac{q}{8\epsilon_0}$ (D) $\frac{q}{12\epsilon_0}$

46. S_1 and S_2 are two concentric shells enclosing charges $\frac{Q}{2}$ and $\frac{Q}{4}$ respectively as shown in figure. What is the ratio of the electric Flux through S_1 and S_2?



(A) $\frac{3}{\sqrt{4}}$ (B) $\frac{\sqrt{2}}{3}$ (C) $\frac{\sqrt{4}}{3}$ (D) $\frac{3}{\sqrt{2}}$

47. Two equal charges Q Placed at two comers of equilateral triangle and q is placed at center point O. If the net electric field at A is zero, then find q.



(A) $+\frac{Q}{\sqrt{2}}$ (B) $+\frac{Q}{\sqrt{3}}$ (C) $-\frac{\sqrt{3}Q}{4}$ (D) $-\frac{Q}{\sqrt{3}}$

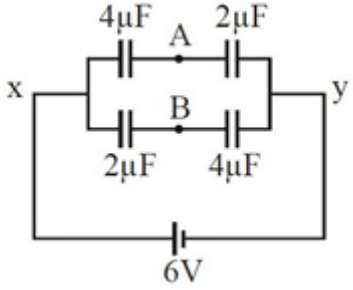
48. In a meter bridge, null point is 20 cm. When the known resistance R is shunted by 10Ω resistance, null point is found to be shifted by 10 cm. The value of unknown resistance X is.

(A) 10Ω (B) 25Ω (C) 50Ω (D) None

49. Two identical capacitors each of capacitance 5μF are charged to potentials 2kV and 1kV respectively. The -ve ends are connected together. When the +ve ends are also connected together, the loss of energy of the system is:-

(A) 160 J (B) 0 J (C) 5 J (D) 1.25 J

50. What is the potential difference between A and B in the circuit shown?



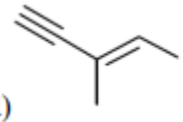
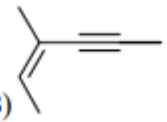
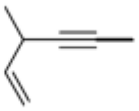
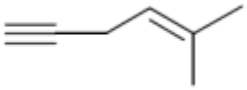
(A) 2V (B) 4V (C) 3V (D) 12V

Subject : Chemistry
SECTION-A
(Attempt All 35 questions)

51. What is not correct about $[Fe(H_2O)_5NO]^{+2}$?

(A) Magnetic moment of complex is $\sqrt{8}$ B.M.
(B) Coordination number of metal is 6
(C) It is a octahedral complex.
(D) Brown colour is due to charge transfer spectra

52. Which of the following will produce chiral molecule after treatment with H2/Lindlar's catalyst?

(A)  (B)  (C)  (D) 

53. Charge required for liberating 710 g of Cl2 (g) by electrolyzing a concentrated solution of NaCl will be:-

(A) 1.93×10^5 C (B) 1.93×10^6 C (C) 9.65×10^6 C (D) 9.65×10^5 C

54. Electrolytic conductivity of 0.3M solution of KCl at 298 K is 3.72×10^{-2} Scm^{-1}. Calculateits molar conductivity ($Scm^2\ mol^{-1}$): -

(A) 124 (B) 30.56 (C) 192 (D) 185

55. Equivalent mass of Cl_2 in the given reaction will be
[M = molar mass of Cl_2]

$$3Cl_2 + 6NaOH \rightarrow 5NaCl + NaClO_3 + 3H_2O$$

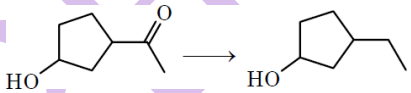
(A) $\frac{3M}{5}$ (B) $\frac{5M}{3}$ (C) $\frac{M}{10}$ (D) $\frac{M}{5}$

56. Which one of the following is not a method of concentration of ore?

(A) electromagnetic separation (B) smelting
(C) gravity separation (D) froth floatation process

57. Which of the following metals is obtained by the self-reduction process?

(A)Copper (B) Iron (C) Silver (D) Magnesium

58. 

Most suitable reactant for the above conversion:

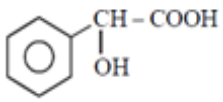
(A)Zn - Hg / HCl (B)NH_2 - NH_2 / OH (C)H_2 / Ni (D)$LiAlH_4$

59. Oxidation number of iodine in IO^-_3, IO^-_4, KI and I_2 respectively are :-

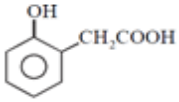
(A) -1, -1, 0, +1 (B) +3, +5, +7, 0 (C) +5, +7, -1, 0 (D) -1, -5, -1, 0

60. In which of the following both are having same number of total electrons and iso-structural?
$NO_3^-, CO^{2-}_3, ClO^-_3, SO_3$

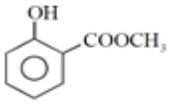
61. A compound liberate CO_2 with $NaHCO_3$ and also gives colour with neutral $FeCl_3$, the possible structure of the compound is



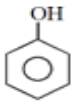
(A)



(B)



(C)



(D)

62. On increasing temperature, conductance of electrolytic solution

(A) Increases (B) Decreases (C) Do not change (D) None

63. Which of the following is not correct statement about detergents?

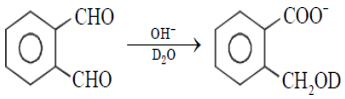
(A) Sodium dodecylbenzenesulphonate is example of non-ionic detergent.

(B) There are both hydrophilic part and hydrophobic parts in anionic detergents

(C) CH3 – (CH2)15- N+ (CH3)3 .Br- is a cationic detergent

(D) Anionic detergents are used in tooth pastes

64.



Which of the following is involved in the reaction?

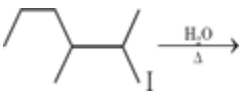
(A) Intramolecular aldol condensation

(B) Intermolecular cannizaro's reaction

(C) Involving intramolecular hydride transfer

(D) Perkin reaction

65. Total number of possible alkenes obtained in the given reaction is



(A) 4 (B) 5 (C) 6 (D) 7

66. In 1.5 litre, 2MNaOH solution, 320gm bromine and 0.5 mole acetone are added giving colourless dense bromoform liquid. Excess NaOH was back titrated against $0.5MH_2SO_4$ using phenolphthalein as indicator, Volume of H_2SO_4 required to reach end point is - (Br = 80) (Assume that excess NaOH does not react with Br_2 left and bromoform formed)

(A) $\frac{1}{4}$ litre (B) $\frac{1}{2}$ litre (C) $\frac{1}{3}$ litre a. 1 litre

67. Which gas is adsorbed to maximum amount by activated carbon?

(A) $H_2(g)$ (B) He(g) (C) CO(g) (D) $CO_2(g)$

68. At a certain instant a piece of radioactive material contains 6 × 10–11 mole of atoms. The t1/2 of material is 69.3 days. Calculate number of disintegrations per second.
(Given⟶NA = 6×10^{23})

(A) 36×10^{8} (B) 36×10^{10} (C) $\frac{24}{10^{8}}$ (D) $\frac{10^{8}}{24}$

69. All valence electrons of central atom are present in hybridised orbitals in which of the following paramagnetic species?

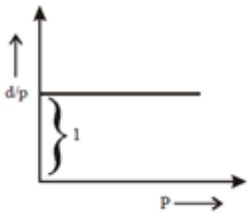
70. Choose the correct order of size :

(A) $Ce^{4+} > La^{+3}$ (B) $Ce^{4+} > La^{+3}$ (C) $Ce^{4+} > La^{+3}$ (D) $Ce^{4+} > La^{+3}$

71. 12 mL of gaseous hydrocarbon was mixed with 450 mL of air [N2 + O2 mixture] and exploded in an eduiometer tube. On cooling, volume of gas mixture was 432 mL which on passing through KOH become 396 mL and after passing through alkaline pyrogallol, 360 mL of gas was left. The molecular formula of hydrocarbon will be-

(A) C_3H_4 (B) C_3H_4 (C) C_3H_4 (D) C_3H_4

72. For an ideal gas $d/p\ \left(\frac{denist}{Pressure}\right)$ graph at 27°C is given: if density is in gm/Litre and pressure is in atmosphere then molar mass of gas will be – [R = 0.08 L - atm - mol^{-1} - K^{-1}]



(A) 48 gm/mole (B) 20 gm/mole (C) 24 gm/mole (D) 60 gm/mole

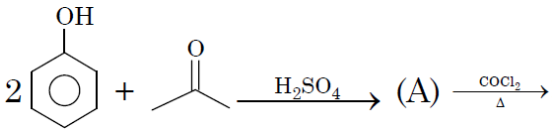
73. An indicator is a weak acid and pH range of its colour is 3.0 to 4.4. The ionisation constant of indicator is (log 2 = 0.3)

(A) 2×10^{-5}M (B) 2×10^{-4}M (C) 4×10^{-4}M (D) 4×10^{-5}M

74. The heat of combustion of gaseous hydrocarbon C3H8 at constant volume is meased in bomb calorimeter at 298 K is found to be 2201.1KJ / mole . Find the enthalpy change at same temperature -

(A) - 2208.53 KJ/mole
(B) - 2210.35KJ / mole
(C) - 2193.53 KJ/mole
(D) +2201 KJ/mole

75.

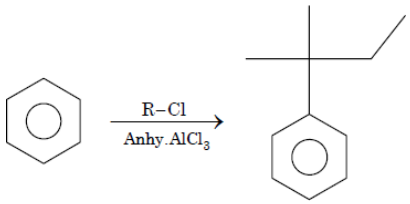


Polymer?

Identify the name of polymer obtained as a final product in above reaction sequence?

(A) Dacron (B) Glyptal (C) Lexan (D) Orlon

76.



Total possible R–Cl in above reaction can be:

(A) 5 (B) 6 (C) 7 (D) 8

77. A hypothetical metal having atomic mass 60 amu form HCP arrangement and its density is found to be 50 gm / cm3 then closest distance between tetrahedral and octahedral void is : (Use : $N_A = 6 \times 10^{23}$)

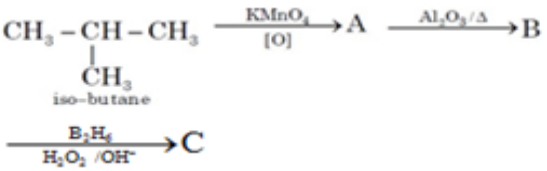
(A) $\sqrt{\frac{3}{2}}$ Å (B) $\sqrt{6}$ Å (C) $\frac{\sqrt{3}}{2}$ Å (D) $\sqrt{3}$ Å

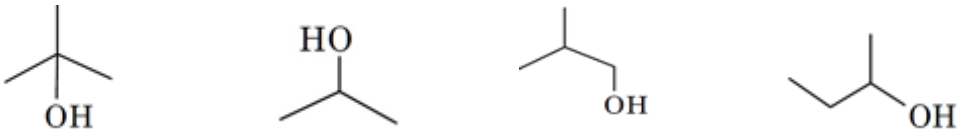
78. 100 mL, 0.1 M CH_3COONH_4 solution has pH x1. Now by keeping temperature constant 400mL of water was added to solution and on calculation pH was found to be x2.The ratio of x1 to x2 will be –

(Given Pka (NH_4^+) = 9.3, Pka (CH_3COOH) = 4.7)

(A) 1 (B) 7/5 (C) 12/7 (D) 2/3

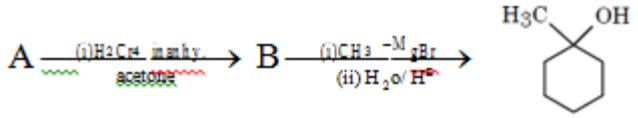
79.



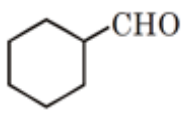


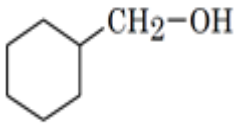
(A) (B) (C) (D)

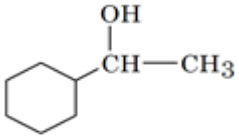
80.

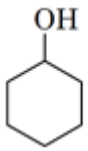


identify structure of "A"

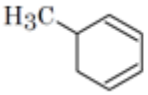
(A) 

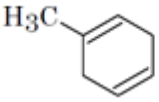
(B) 

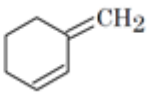
(C) 

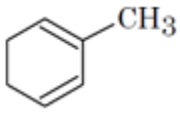
(D) 

81. Which of the following alkene is most stable?

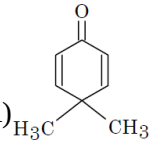
(A) 

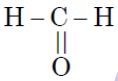
(B) 

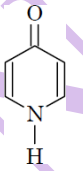
(C) 

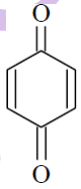
(D) 

82. Which of the following compound show tautomerism

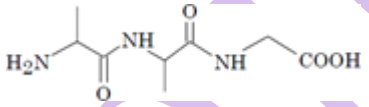
(A) 

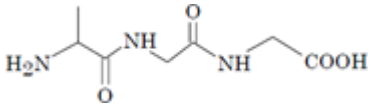
(B) 

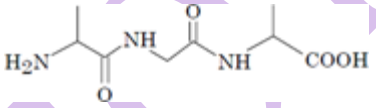
(C) 

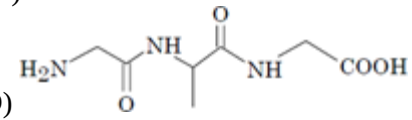
(D) 

83. The correct structure of tripeptide made up of Alanine-Glycine-Alanine is :

(A) 

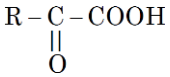
(B) 

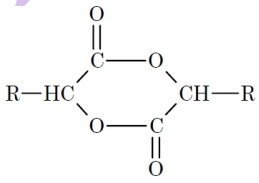
(C) 

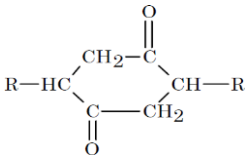
(D) 

84. Compound RCH2 CO2H (A) on reaction with Br2 /Red P gives B which on reaction with aq KOH gives C which on heating gives D. Find out D.

(A) R – CH = CH –COOH

(B) 

(C) 

(D) 

85. Which one has highest 2nd I.P value?

(A) Mn (B) Cr (C) V (D) Ti

SECTION-B

This section will have 15 questions. Candidate can choose to attempt any 10 questions out of these 15 questions. In case if candidate attempts more than 10 questions, first 10 attempted questions will be considered for marking.

86. Which gas produces brown coloured solution when it is passed through aqueous solution of FeSO4?

(A) NO (B) CO (C) NH3 (D) H2S

87. pH of a 0.1M solution HCl is changed by 0.3 unit due to dilution, calculate change in osmoticpressure if temperature of solution is 300K. (R = 1/12 litre atm/K/mole)

(A) 2.5 atm (B) 5 atm (C) 7.5 atm (D) 1.25 atm

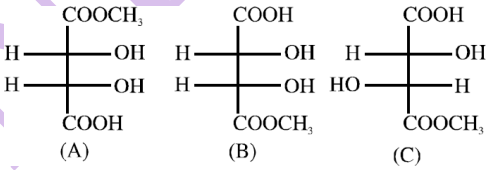
88. The correct statement about the compounds A, B and C

(A) A & B are identical

(B) A & B are diastereomers

(C) A & C are enantiomers

(D) A & B are enantiomers



89. Oxidation energy of Li(s) to Li^+(aq) is least in group IA elements. This is mainly because of:

(A)lowest heat of sublimation of Li

(B) maximum heat of hydration of Li^+

(C) less negative heat of hydration of Li^+

(D) maximum ionization energy of Li

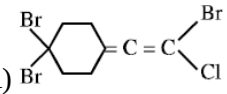
90. In presence of organic solvent $K_2 Cr_2 O_7 + H_2O_2$ in acidic medium gives?

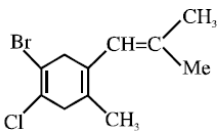
(A) CrO_3 (B) CrO_5 (C) CrO_2 (D) Cr_2O_4

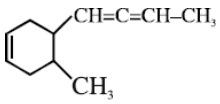
91. For the equilibrium $SO_2Cl_2(g)$ $SO_2(g) + Cl_2$ (g) , what is the temperature at which $\frac{K_P(atm)}{K_C(M)} = 3$?

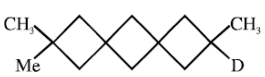
(A) 0.027 K (B) 0.36 K (C) 36.54 K (D) 273 K

92. Which of the following compound can show geometrical isomerism

(A) 

(B) 

(C) 

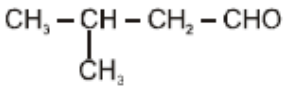
(D) 

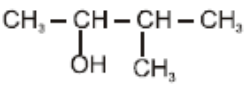
93. In which of the following species, the underlined carbon having sp^3 hybridisation?

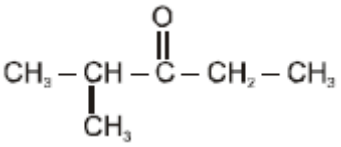
(A)CH_3-$\underline{C}$OOH (B) CH_3-$\underline{C}H_2OH$ (C) $CH_3\underline{C}OCH_3$ (D) CH_2=$\underline{C}$H-CH_3

94. Which of the following compounds has wrong IUPAC name:

(A) $H_3 - CH_2 - CH_2 - COO - CH_2CH_3$ ⟶ Ethyl butanoate

(B)  ⟶ 3-Methylbutanal

(C)  ⟶ 2-Methyl-3-butanol

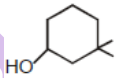
(D)  ⟶ 2-Methyl-3-pentanone

95. The functional group, which is found in amino acid is

(A)– COOH group (B) – NH2 group (C) – CH3 group (D) both (1) and (2)

96. The general formula $C_nH_{2n}O_2$ could be for open chain

(A)diketones (B)carboxylic acids (C)diols (D)dialdehydes.

97. The IUPAC name of the compound is 

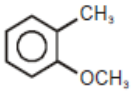
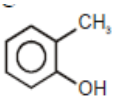
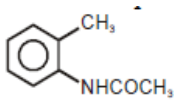
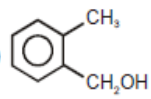
(A) 3, 3 - dimethyl - 1 - hydroxy cyclohexane

(B) 1, 1 - dimethyl - 3 -hydroxy cyclohexane

(C) 3, 3 - dimethyl - 1 - cyclohexanol

(D) 1, 1 - dimethyl - 3 – cyclohexanol

98. Which one of the following is most reactive towards electrophilic reagent?

(A)  (B)  (C)  (D) 

99. The correct order of increasing bond length of C–H, C–O, C–C and C=C is :

(A) C–H < C=C < C–O < C–C (B) C–C < C=C < C–O < C–H

(C) C–O < C–H < C–C < C=C (D) C–H < C–O < C–C < C=C

100. The correct order of decreasing acid strength of trichloroacetic acid (A), trifluoroacetic acid(B), acetic acid (C) and formic acid (D) is :

(A) B > A > D > C (B) B > D > C > A

(C) A > B > C > D (D) A > C > B > D

SUBJECT:- BOTANY
SECTION –A
Attempt All 35 Question

101. Which statement is incorrect?

(A) Smallest cell is mycoplasma which is 0.3m in length

(B) Largest isolated single cell is ostrich egg.

(C) Nerve cells are the longest cells and can be seen by naked eyes.

(D) Human R.B.C is about 7 mm in diameter

102. Azolla has a symbiotic relationship with

(A)Chlorella (B)Anabaena (C)Nostoc (D) Tolypothrix

103. A and B cells are contiguous. Cell A has OP = 10 atm. TP = 7 atm and DPD = 3 atm. Cell Bhas OP = 8 atm, TP = 3 atm and DPD = 5 atm. The result would be

(A) No movement of water (B) Equilibrium between the two

(C) Movement of water from A to B (D) Movement of water from B toA.

104. Semiconservation replication of DNA was given by

(A) Watson and Crick (B) Bateson and Punnett

(C) Messelson and Stahl (D) Avery, McCarty and Mactleod

105. Read the following statements & check out the option with incorrect statements with respectto prokaryotes.

(i) Prokaryotic cell's envelop consists of a tightly bounded three layered structures with outerto inner arrangement as cell membrane, glycocalyx & cellwall.

(ii) Mesosomes and chromatophores are the cell wall extensions

(iii) Fimbriae are small bristle like fibres helpful in attachment with a substratum.

(iv) Thin filamentous extension from the cellwall of bacteria are called flagella.

(A) only (i) (B) (i) & (ii) (C) (i) & (iv) (D) only (ii)

106. t - RNA attach to larger subunit of ribosomes with the help of which loop –

(A) DHU – loop (B) T ΨC loop (C) Anticodon loop (D) Minor loop

107. DNA is not present in –

(A) Mitochondria (B) Chloroplast (C) Bacteriophage (D) TMV

108. Bending of shoot towards light is due to

(A) Phototaxis

(B) Increase in auxin and elongation of cells in shaded area

(C) More cells divided on lighted side due to auxin

(D) More cells divided on lighted side due to gibberellins.

109. The floral formula $\oplus\ \male\ K_{2+2}\,C_4\,A_{2+4}\,G_{(2)}$ represents

(A) Solanum nigrum (B) Hibiscus rosa-sinensis

(C) Citrus aurantum (D) Brassica compestris

110. According to Mendelism which pair of character is showing dominance ?

(A) Terminal position of flower and green colour of seed coat.

(B) Wrinkled seeds and green colour of seed coat.

(C) Yellow pod and round seeds.

(D) Green pod and axial position of flower.

111. Bacterial flagella are formed of.

(A) Amines (B) Proteins (C) Lipids (D) Carbohydrates.

112. Common inhibitor of germination is

(A) GA (B) ABA (C) Pantothenic acid (D) Tartaric acid.

113. In yeast, duration of cell cycle is about :-

(A) 80 minutes (B) 99 minutes (C) 1.30 hrs. (D) 60 minutes

114. Size of grapes increases in application of

(A) Gibberellin (B) Auxin (C) Cytokinin (D) All the above.

115. Which of the following ions are essential for effective mechanism of PS-II

(A) Mn^{++} & Cl^- (B) Mg^+ & NO3 (C) Fe^{++} & Cl^- (D) K^+ & Na^+

116. A convenient way for easy identification of an organism by applying diagnostic contrasting characters is called

(A) Systematics (B) key (C) classification (D) none of these

117. Formation of NADPH2 in chloroplast occurs during

(A) Cyclic photophosphorylation (B) Non - cyclic photophosphorylation

(C) Oxidative photophosphorylation (D) Substrate level phosphorylation

118. Endospores are considered equivalent to seeds because

(A) Like seeds, endospores don't have chlorophyll

(B) like seeds, endospores don't show metabolic activity

(C) Like seeds they are resistant

(D) All of the above

119. The Singer and Nicolson's Model of Plasma membrane differs from the Robertson's modelin the-

(A) Number of lipid layers (B) Arrangement of proteins

(C) Arrangement of lipid layers (D) Absence of protein layers

120. Botanical Gardens provide

(A) Beautiful area for recreation (B) reservoir for tropical plants

(C) Exsitu conservation of Germplasm (D) natural habitat for wild life

121. First CO_2 acceptor in photosynthesis is

(A) Ribulose 5 P (B) Ribulose 1, 5 diphosphate

(C) Glucose 6 phosphate (D) none of these

122. Occurrence of different types of leaves in Limnophylla is called

(A) Heterophylly (B) Pseudophylly (C) Heterophily (D) Heterotrophy

123. Which of the following is monocarpic plant :-

(A) Shisham (B) Mango (C) Pinus (D) Bamboo

124. Number of chromatids in each chromosome at anaphase is-

(A) One in mitosis, one in meiosis-I and two in meiosis-I

(B) One in mitosis, two in meiosis-I and one in meiosis-II

(C) Two in mitosis, one in meiosis-I and two in meiosis-II

(D) Two in mitosis, two in meiosis-I and two in meiosis-II

125. Which law of Mendel is still universal in nature?

(A) Law of dominance (B) Law of indepenent assortment

(C) Law of segregation (D) Linkage

126. Net gain of ATP molecules per hexose during aerobic respiration is

(A) 12 (B) 18 (C) 30 (D) 36

127. Number of chromosome pairs at equator in metaphase-I of a diploid plant cell (n = 25 chromosomes) shall be-

(A) 50 (B) 100 (C) 75 (D) 25

128. Chemical modification of substance like glycosylation of protein and lipid occur in :.

(A) Endoplasmic reticulum (B) Golgi body

(C) Lysosome (D) Ribosome

129. Link enzyme in cellular respiration is

(A) Citrate synthetase (B) Pyruvate dehydrogenase

(C) Isocitrate dehydrogenase (D) Succinyl thiokinase

130. In meiosis, how many cycles of chromosome division occurs ?

(A) One (B) Four (C) Two (D) Three

131. Match the following

Column – I	**Column – II**
A. Zoophily	i. Pollination by birds
B. Ornithophily	ii. Pollination by insect
C. Entomophily	iii. Pollination by bats
D. Chiropterophily	iv. Pollination by animals

(A) A - iii; B - ii; C - i; D – iv (B) A - i; B - ii; C - iii; D - iv

(C) A - iv; B - i; C - ii; D – iii (D) A - iv; B - ii; C - iii; D – i

132. Sporopollenin

(A) Is the major component of intine

(B) Can be degraded by few fungal origin enzymes

(C) Is highly sensitive to increased temperature in the environment

(D) Can withstand strong acids and alkali

133. Which of the following is correct

(A) In pteridophytes, Microsporangia develop to form pollen sacs

(B) In gymnosperms, microsporangia develop to form pollination drop

(C) In angiosperms, microsporangia develop to form pollen sacs

(D) In gymnosperms, megasporophyll develops to form ovary

134. How many hot spots of biodiversity in the world have been identified till date by Norman Myers?

(A) 17 (B) 25 (C) 34 (D) 43

135. In an area where DDT had been used extensively, the population of birds declined significantly because

(A) Birds stopped laying eggs

(B) Earthworms in the area got eradicated

(C) Cobras were feeding exclusively on birds

(D) Many of the birds laid eggs, that did not hatch

SECTION –B

This section will have 15 questions. Candidate can choose to attempt any 10 question out of these 15 question. First 10 attempted questions will be considered for marking.

136. Match Column - I with Column - II and select the correct answer from the codes given below.

Column – I		**Column – II**
A. Ganga action plan	i.	N_2 fixing cyanobacterium
B. Bt cotton	ii.	Ministry of environment and forests
C. Rhizonium	iii.	Insect resistant plant
D. Nostoc	iv.	N_2 fixing bacterium

(A) a - (ii), b - (iii), c - (iv), d - (i)
(B) a - (iii), b - (ii), c - (iv), d - (i)
(C) a - (ii), b - (iv), c - (iii), d - (i)
(D) a - (i), b - (iii), c - (ii), d - (iv)

137. Match the following and choose the correct combinations from the options given

Column – I	**Column – II**
(a) DDT	(p) CO, CO_2
(b) PAN	(q) Smog
(c) Acid rain	(r) Biological magnification
(d) Global warming	(s) SO_2

(A) (1)-(s), (2)-(r), (3)-(q), (4)-(p)
(B) (1)-(p), (2)-(r), (3)-(q), (4)-(s)
(C) (1)-(q), (2)-(r), (3)-(s), (4)-(p)
(D) (1)-(r), (2)-(q), (3)-(s), (4)-(p)

138. Biogas production occurs with the help of :

(A) Methanogens
(B) Anaerobic breakdown of organic matter
(C) Aerobic breakdown of organic matter
(D) More than one option is correct

139. Which one of the following is a wrong statement?

(A) Most of the forests have been lost in tropical areas

(B) Ozone in upper part of atmosphere is harmful to animals

(C) Greenhouse effect is a natural phenomenon

(D) Eutrophication is a natural phenomenon in freshwater bodies

140. Select the correct statement from the following

(A) Biogas is produced by the activity of aerobic bacteria on animal waste

(B) Methanobacterium is an aerobic bacterium found in rumen of cattle

(C) Biogas, commonly called gobar gas, is pure methane

(D) Activated sludge-sediment in settlement tanks of sewage treatment plant is a right sourceof aerobic bacteria

141. Match the following columns.

Column – I	**Column – II**
a. Termination (Translation)	1. Aminoacyl tRNA synthatase
b. Translation	2. Okazaki fragments
c. Transcription	3. GTP dependent release factor
d. Transcription	4. RNA polymerase

Codes

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

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

142. The amino acid attaches to the tRNA at its

(A) 5-end (B) 3-end (C) Anticodon site (D) DHU loop

143. Colour blindness in humans

(A) results in defect in either red or green cone of eyes

(B) is caused due to the mutation in gene found on X-chromosome

(C) affects males more frequently than females

(D) All of the above

144. Companion cells in plants are associated with

(A)vessels (B)sperms (C)sieve elements (D)guard cells

145. The polygenic traits

(A) are influenced by environment

(B) phenotype reflect the contribution of each allele

(C) effect of each allele is additive

(D) All of the above

146. The two gases making highest relative contribution to the greenhouse gases are:

(A)CO_2 and N_2O (B)CO_2 and NH_4 (C)CH_4 and N_2O (D)CFC_5 and N_2O

147. When pollen grains of a flower are transferred to stigma of another flower of a different plant, the process is called

(A) Geitonogamy (B) Xenogamy (C) Autogamy (D) Homogamy

148. Autogamy means

(A) Transfer of pollen from anthers to stigma of the same flowers

(B) Transfer of pollen from one flowers to another on the different plant

(C) Occurence of male and female sex organ in the same flowers

(D) All of these

149. According to Mendelism which pair of character is showing dominance ?

(A) Terminal position of flower and green colour of seed coat.

(B) Wrinkled seeds and green colour of seed coat.

(C) Yellow pod and round seeds.

(D) Green pod and axial position of flower.

150. When F1 generation hybrid tall Tt is crossed with dwarf tt parent, it is a case of:-

(A) Dihybrid cross (B) test cross

(C) Crossing over (D) Reciprocal cross

SUBJECT:- ZOOLOGY
SECTION –A
Attempt All 35 Question

151. Quarternary structure of protein

(A) Consists of four subunits

(B) May be either a or b

(C) Is unrelated to two function of the protein

(D) Is dictated by the primary structures of the individual subunits

152. Uricotelic mode of passing out nitrogenous wastes is found in :

(A) Reptiles and Bird (B) Birds and Annelids

(C) Amphibians and Reptiles (D) Insects and Amphibians

153. The most active phagocytic white blood cells are

(A) Neutrophils and monocytes (B) Neutrophils and Eosinophils

(C) Lymphocytes and macrophages (D) Eosinophils and Lymphocytes

154. On high mountains, difficulty in breathing is due to

(A) Decrease in partial pressure of oxygen

(B) Decrease in amount of oxygen

(C) Increase in carbon dioxide concentration

(D) All of the above

155. Which one of the following is a fat-soluble vitamin and its related deficiency disease?

(A) retinol – xerophthalmia (B) cobalamine - beri-beri

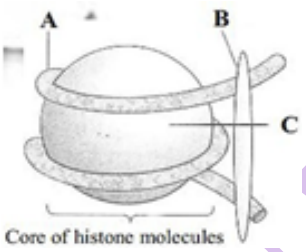
(C) calciferol – pellagra (D) ascorbic acid - scurvy

156. Third ventricle of brain is also known as

(A) metacoel (B) rhinocoel

(C) paracoel (D) diacoel

157. The given figure shows the structure of nucleosome with their parts labelled as A, B & C. Identify A, B and C.



(A) A – DNA; B – H1 histone; C – Histone octamer

(B) A – H1 histone; B – DNA; C – Histone octamer

(C) A – Histone octamer; B – RNA; C – H 1 histone

(D) A – RNA; B – H1 histone; C – Histone octamer

158. How many autosomes does a human primary spermatocyte have?

(A) 34 (B) 44 (C) 54 (D) 33

159. Chimeric DNA is

(A) Gene clone (B) Recombinant-DNA

(C) Transposon (D) Vector shuttle

160. Match the scientists listed under column - 'I' with ideas listed Column - 'II'

Column - I	**Column – II**
A. Darwin	i. Abigenesis
B. Oparin	ii. Use and disuse of organs
C. Lamarck	iii. Continental drift theory
D. Wagner	iv. Evolution by natural selection

Options

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

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

161. Brush border is characteristic of

(A) Neck of nephron (B) Collecting tube

(C) Proximal convoluted tubule (D) All of the above

162. Peripatus is a connecting link between

(A) Ctenophora and Platyhelminthes (B) Mollusca and Echinodermata

(C) Annelida and Arthropoda (D) Coelenterata and porifera

163. Match Column - I with Column - II and select the correct answer from codes given below.

Column - I	**Column – II**
A. Sporozoties	i. Infectious form
B. Filariasis	ii. Aedes mosquitoes
C. Typhoid	iii. Wuchereria
D. Chikingunya	iv. Widal test

(A) A - iv; B - ii; C - i; D – iii (B) A - iii; B - iv; C - ii; D - i

(C) A - ii; B - iii; C - i; D – iv (D) A - i; B - iii; C - iv; D – ii

164. Reabsorption of useful substances from glomerular filtrate occurs in

(A) Collecting tube (B) Loop of Henle

(C) Proximal convoluted tubule (PCT) (D) Distal convoluted tubule (DCT)

165. 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

Options :

A) A - ii; B - i; C - iii; D -iv (B) A - iii; B - iv; C - ii; D - i

(C) A - iii; B - i; C - ii; D - iv (D) A - ii; B - iv; C - iii; D - i

166. Assertion : Cannabinoids are drugs of abuse.

(A) Reason: They affect cardiovascular system and central nervous system activity.

(B) If both Assertion and Reason are true and reason is the correct explanation of Assertion

(C) If both Assertion and Reason true, but Reason is not the correct explanation of Assertion

(D) If Assertion is true but Reason is false

(E) If both Assertion and Reason are false

167. Which of the following was most similar to modern man?

(A) Java man (B) Neanderthal man

(C) Homo habilis (D) Cro-Magnon man

168. Where does the ovum receive the sperm?

(A) Animal pole (B) Vegetal pole

(C) Zona pellucida (D) None of the above

169. A person addict for alcohol gets his liver destroyed because :

(A) Liver stores excess of protein (B) Liver stores excess of fat

(C) Liver stores excess of starch (D) Liver stores excess of glycogen

170. Ureters act as urogenital ducts in :

(A) human males (B) human females

(C) frog's both males and females (D) frog's males

171. During refractory period :-

(A) Nerve transmits impulse very slowly (B) Nerve can not transmit impulse

(C) Nerve transmits impulses very rapidly (D) None of the above

172. The kind of epithelium which forms the inner walls of blood vessels is

(A) Columnar epithelium (B) Ciliated columnar epithelium

(C) Squamous epithelium (D) Cuboidal epithelium

173. Elbow joint is an example of

(A) Pivot joint (B) Hinge joint

(C) Gliding joint (D) Ball and socket joint

174. Match Column - I with Column - II and select the correct option from the codes given below.

Column - I	**Column – II**
A. Natural methods	i. Coitus interruptus
B. IUDs	ii. LNG - 20
C. Barrier methods	iii. Diaphragms
D. Surgical methods	iv. Multiload 375
E. Oral contraceptives	v. Saheli
	vi. Nirodh
	vii. Sterilization
	viii. Vasectomy
	ix. CuT

(A) A - i; B - ii, iv, ix; C - iii, vi; D - vii, viii; E - v
(B) A - i; B - ii, iv; C - iii, vi, ix; D - vii, viii; E - v
(C) A - i; B - ii, iv, ix; C - iii, ix; D - vii, viii; E - v, vi
(D) A - i; B - iv, ix; C - ii, iii, vi; D - vii, viii; E- v

175. A method of birth control is

(A) GIFT (B) HJF (C) IVF-ET (D) lUDs

176. The "repeating unit" of glycogen is

(A) Fructose (B) Mannose (C) Glucose (D) Galactose

177. The birth control device not used by women is

(A) Diaphragm (B) Oral pill (C) Nirodh (D) Copper T

178. The prenatal technique to determine the genetic disorders in a foetus is called

(A) Laproscopy (B) Amniocentesis (C) Abstinence (D) Coitus interrupts

179. Low Ca++ in the body fluid may be the cause of

(A) Anaemia (B) Angina pectoris (C) Gout (D) Tetany

180. Oxygen carrier or the respiratory pigment in the blood of frog and other vertebrates is :

(A) Haemocyanin (B) Cytochrome (C) Haemoglobin (D) None of these

181. Which one of the following pairs of animals comprise 'jawless fishes'?

(A) Guppies and hag fishes (B) Lampreys and eels

(C) Mackerels and Rohu (D) Lampreys and hag fishes

182. Which one of the following pair of organs includes only the endocrine glands?

(A) thymus and testes (B) adrenal and ovary

(C) parathyroid and adrenal (D) pancreas and parathyroid.

183. In old age, stiffness of joints is due to the

(A) Hardening of bones (B) Inefficiency of muscles

(C) Decrease in synovial fluid (D) Enlargement of bones

184. In human body, which one of the following is anatomically correct?

(A) collar bones - 3 pairs

(B) salivary glands - 1 pair

(C) cranial nerves - 10 pairs

(D) floating ribs - 2 pairs.

185. Injury to adrenal cortex is not likely to affect the secretion of which of the following

(A) Both Androstendione and Dehydroepiandroserone

(B) Adrenaline

(C) Cortisol

(D) Aldosterone

SECTION –B

This section will have 15 questions. Candidate can choose to attempt any 10 question out of these 15 questions. First 10 attempted questions will be considered for marking.

186. Lymph differ from blood in possessing

(A) only WBC (B) more RBC and WBC

(C) more RBC and few WBC (D) more WBC and few RBC

187. Glucose is taken back from glomerular filtrate through :

(A) Diffusion (B) Osmosis (C) Active transport (D) Passive transport

188. Which of the following statement is/are true?

I. Glomerular filtrate is isotonic to plasma.

II. When the urine passes into collecting tubule, it becomes hypotonic.

III. Filtrate is isotonic in proximal convoluted tubule.

IV. Filtrate becomes more and more hypotonic as it passes through descending limb of Henle's loop.

Choose the correct option:-

(A) I and III (B) I, II and III (C) II and III (D) Only II

189. Sensitive pigmented layer of eye is

(A) Cornea (B) retina (C) sclerotic (D) iris

190. Haversian canal occurs in

(A) humerus (B) pubis (C) scapula (D) clavicle

191. Anti-sterility vitamin is :

(A) Vitamin B12 (B) Vitamin D (C) Vitamin E (D) Vitamin A

192. Cartilaginous rings in trachea are incomplete at which surface.

(A) Dorsal (B) Ventral (C) Lateral (D) Ventrolateral

193. Wall of alveoli is composed of

(A) Simple squamous epithelium (B) Simple cuboidal epithelium

(C) Pseudostratified epithelium (D) Simple columnar epithelium

194. Prothrombin is found in :-

(A) Intestine and helps in cellulose digestion

(B) Liver and helps in production of bile

(C) Blood and gives red colour

(D) Blood and helps in blood clotting

195. Parasympathetic activity during micturition causes:-

(A) Contraction of detrusor muscle and contraction of internal urethral sphincter

(B) Contraction of detrusor muscle and relaxation of internal urethral sphincter.

(C) Relaxation of detrusor muscle and relaxation of internal urethral sphincter

(D) Relaxation of detrusor muscle and contraction of Internal urethral sphincter

196. In response to decrease in blood volume and blood pressure which of the following do not occur?

(A) Secretion of Renin (B) Secretion of aldosterone

(C) Secretion of vasopressin (D) Secretion of ANF

197. The amount of glucose present in urine of normal man is :-

(A) 0 mg/ml (B) 120 mg/ml (C) 40 mg/ml (D) 5 mg/ml

198. During muscular contraction, which of the following events occur?

I. H-zone disappears

II. A-band widens

III. I-band reduces in width

IV. Width of A- band is unaffected

V. M-line and Z-line come closer

(A) I, III, IV and V (B) I, II, and V (C) II, IV and V (D) I, II and III

199. The main function of acetylcholine is to :-

(A) Increase heart beat

(B) Help in synaptic transmission of nerve impulse

(C) Help in conduction of nerve impulse through axon

(D) Control reflex action

200. When the axons membrane is positively charged outside and negatively charged inside, thenthe condition is known as :-

(A) Action potential (B) Resting potential

(C) Active potential (D) Differential potential