

NEET: 2020 [QUESTION WITH ANSWER]

1. A wire of length L , area of cross section A is hanging from a fixed support. The length of the wire changes to L_1 when mass M is suspended from its free end. The expression for Young's modulus is :

- (1) $\frac{Mg(L_1 - L)}{AL}$ (2) $\frac{MgL}{AL_1}$
 (3) $\frac{MgL}{A(L_1 - L)}$ (4) $\frac{MgL_1}{AL}$

Ans. (3)

2. A cylinder contains hydrogen gas at pressure of 249 kPa and temperature 27°C.

Its density is : ($R = 8.3 \text{ J mol}^{-1} \text{ K}^{-1}$)

- (1) 0.2 kg/m^3 (2) 0.1 kg/m^3
 (3) 0.02 kg/m^3 (4) 0.5 kg/m^3

Ans. (1)

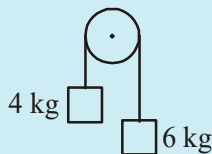
3. Light with an average flux of 20 W/cm^2 falls on a non-reflecting surface at normal incidence having surface area 20 cm^2 . The energy received by the surface during time span of 1 minute is

- (1) $12 \times 10^3 \text{ J}$ (2) $24 \times 10^3 \text{ J}$
 (3) $48 \times 10^3 \text{ J}$ (4) $10 \times 10^3 \text{ J}$

Ans. (2)

4. Two bodies of mass 4 kg and 6 kg are tied to the ends of a massless string. The string passes over a pulley which is frictionless (see figure). The acceleration of the system in terms of acceleration due to gravity (g) is :

- (1) $g/2$ (2) $g/5$
 (3) $g/10$ (4) g



Ans. (2)

5. The mean free path for a gas, with molecular diameter d and number density n can be expressed as :

- (1) $\frac{1}{\sqrt{2}n\pi d^2}$ (2) $\frac{1}{\sqrt{2}n^2\pi d^2}$
 (3) $\frac{1}{\sqrt{2}n^2\pi^2 d^2}$ (4) $\frac{1}{\sqrt{2}n\pi d}$

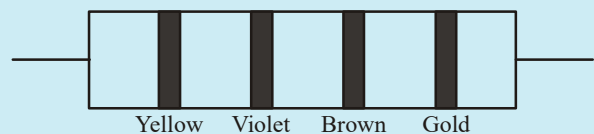
Ans. (1)

6. A ball is thrown vertically downward with a velocity of 20 m/s from the top of a tower. It hits the ground after some time with a velocity of 80 m/s. The height of the tower is : ($g = 10 \text{ m/s}^2$)

- (1) 340 m (2) 320 m
 (3) 300 m (4) 360 m

Ans. (3)

7. The colour code of a resistance is given below :



The values of resistance and tolerance, respectively, are :

- (1) $47 \text{ k}\Omega$, 10% (2) $4.7 \text{ k}\Omega$, 5%
 (3) 470Ω , 5% (4) $470 \text{ k}\Omega$, 5%

Ans. (3)

8. When a uranium isotope ${}_{92}^{235}\text{U}$ is bombarded with a neutron, it generates ${}_{36}^{89}\text{Kr}$, three neutrons and :

- (1) ${}_{40}^{91}\text{Zr}$ (2) ${}_{36}^{101}\text{Kr}$
 (3) ${}_{36}^{103}\text{Kr}$ (4) ${}_{56}^{144}\text{Ba}$

Ans. (4)

9. A spherical conductor of radius 10 cm has a charge of 3.2×10^{-7} C distributed uniformly. What is the magnitude of electric field at a point 15 cm from the centre of the sphere?

$$\left(\frac{1}{4\pi\epsilon_0} = 9 \times 10^9 \text{ Nm}^2 / \text{C}^2 \right)$$

- (1) 1.28×10^5 N/C (2) 1.28×10^6 N/C
 (3) 1.28×10^7 N/C (4) 1.28×10^4 N/C

Ans. (1)

10. A ray is incident at an angle of incidence i on one surface of a small angle prism (with angle of prism A) and emerges normally from the opposite surface. If the refractive index of the material of the prism is μ , then the angle of incidence is nearly equal to :

(1) $\frac{2A}{\mu}$ (2) μA

(3) $\frac{\mu A}{2}$ (4) $\frac{A}{2\mu}$

Ans. (2)

11. Two cylinders A and B of equal capacity are connected to each other via a stop cock. A contains an ideal gas at standard temperature and pressure. B is completely evacuated. The entire system is thermally insulated. The stop cock is suddenly opened. The process is :

- (1) adiabatic (2) isochoric
 (3) isobatic (4) isothermal

Ans. (1)

12. An iron rod of susceptibility 599 is subjected to a magnetising field of 1200 A m^{-1} . The permeability of the material of the rod is :

$$(\mu_0 = 4\pi \times 10^{-7} \text{ T m A}^{-1})$$

- (1) $8.0 \times 10^{-5} \text{ T m A}^{-1}$
 (2) $2.4\pi \times 10^{-5} \text{ T m A}^{-1}$
 (3) $2.4\pi \times 10^{-7} \text{ T m A}^{-1}$
 (4) $2.4\pi \times 10^{-4} \text{ T m A}^{-1}$

Ans. (4)

13. The energy equivalent of 0.5 g of a substance is :

- (1) 4.5×10^{13} J (2) 1.5×10^{13} J
 (3) 0.5×10^{13} J (4) 4.5×10^{16} J

Ans. (1)

14. A $40 \mu\text{F}$ capacitor is connected to a 200 V, 50 Hz ac supply. The rms value of the current in the circuit is, nearly :

- (1) 2.05 A (2) 2.5 A
 (3) 25.1 A (4) 1.7 A

Ans. (2)

15. The ratio of contributions made by the electric field and magnetic field components to the intensity of an electromagnetic wave is : (c = speed of electromagnetic waves)

- (1) 1 : 1 (2) 1 : c
 (3) 1 : c^2 (4) c : 1

Ans. (1)

16. Two particles of mass 5 kg and 10 kg respectively are attached to the two ends of a rigid rod of length 1 m with negligible mass.

The centre of mass of the system from the 5 kg particle is nearly at a distance of :

- (1) 50 cm (2) 67 cm
 (3) 80 cm (4) 33 cm

Ans. (2)

17. A resistance wire connected in the left gap of a metre bridge balances a 10Ω resistance in the right gap at a point which divides the bridge wire in the ratio 3 : 2. If the length of the resistance wire is 1.5 m, then the length of 1Ω of the resistance wire is :

- (1) 1.0×10^{-1} m (2) 1.5×10^{-1} m
 (3) 1.5×10^{-2} m (4) 1.0×10^{-2} m

Ans. (1)

18. In Young's double slit experiment, if the separation between coherent sources is halved and the distance of the screen from the coherent sources is doubled, then the fringe width becomes :

- (1) half (2) four times
 (3) one-fourth (4) double

Ans. (2)

19. A charged particle having drift velocity of $7.5 \times 10^{-4} \text{ m s}^{-1}$ in an electric field of $3 \times 10^{10} \text{ V m}^{-1}$, has a mobility in $\text{m}^2 \text{ V}^{-1} \text{ s}^{-1}$ of :

- (1) 2.5×10^6 (2) 2.5×10^{-6}
 (3) 2.25×10^{-15} (4) 2.25×10^{15}

Ans. (1)

20. Dimensions of stress are :

- (1) $[ML^2T^{-2}]$ (2) $[ML^0T^{-2}]$
 (3) $[ML^{-1}T^{-2}]$ (4) $[MLT^{-2}]$

Ans. (3)

21. For which one of the following, Bohr model is not valid?

- (1) Singly ionised helium atom (He^+)
 (2) Deuteron atom
 (3) Singly ionised neon atom (Ne^+)
 (4) Hydrogen atom

Ans. (3)

22. A series LCR circuit is connected to an ac voltage source. When L is removed from the circuit, the phase difference between current and voltage is

$\frac{\pi}{3}$. If instead C is removed from the circuit, the

phase difference is again $\frac{\pi}{3}$ between current and

voltage. The power factor of the circuit is :

- (1) 0.5 (2) 1.0
 (3) -1.0 (4) zero

Ans. (2)

23. A capillary tube of radius r is immersed in water and water rises in it to a height h . The mass of the water in the capillary is 5 g. Another capillary tube of radius $2r$ is immersed in water. The mass of water that will rise in this tube is :

- (1) 5.0 g (2) 10.g g
 (3) 20.0 g (4) 2.5 g

Ans. (2)

24. Assume that light of wavelength 600 nm is coming from a star. The limit of resolution of telescope whose objective has a diameter of 2 m is :

- (1) 1.83×10^{-7} rad (2) 7.32×10^{-7} rad
 (3) 6.00×10^{-7} rad (4) 3.66×10^{-7} rad

Ans. (4)

25. The solids which have the negative temperature coefficient of resistance are :

- (1) insulators only
 (2) semiconductors only
 (3) insulators and semiconductors
 (4) metals

Ans. (3)

26. The capacitance of a parallel plate capacitor with

air as medium is $6 \mu F$. With the introduction of a dielectric medium, the capacitance becomes $30 \mu F$. The permittivity of the medium is :

($\epsilon_0 = 8.85 \times 10^{-12} C^2 N^{-1} m^{-2}$)

- (1) $1.77 \times 10^{-12} C^2 N^{-1} m^{-2}$
 (2) $0.44 \times 10^{-10} C^2 N^{-1} m^{-2}$
 (3) $5.00 C^2 N^{-1} m^{-2}$
 (4) $0.44 \times 10^{-13} C^2 N^{-1} m^{-2}$

Ans. (2)

27. The energy required to break one bond in DNA is 10^{-20} J. This value in eV is nearly :

- (1) 0.6 (2) 0.06
 (3) 0.006 (4) 6

Ans. (2)

28. The increase in the width of the depletion region in a p-n junction diode is due to :

- (1) reverse bias only
 (2) both forward bias and reverse bias
 (3) increase in forward current
 (4) forward bias only

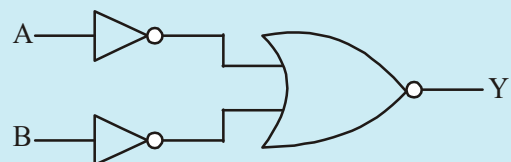
Ans. (1)

29. The quantities of heat required to raise the temperature of two solid copper spheres of radii r_1 and r_2 ($r_1 = 1.5 r_2$) through 1 K are in the ratio:

- (1) $\frac{9}{4}$ (2) $\frac{3}{2}$
 (3) $\frac{5}{3}$ (4) $\frac{27}{8}$

Ans. (4)

30. For the logic circuit shown, the truth table is :



(1) A	B	Y	(2) A	B	Y
0	0	0	0	0	1
0	1	1	0	1	1
1	0	1	1	0	1
1	1	1	1	1	0

(3)	A	B	Y	(4)	A	B	Y
	0	0	1		0	0	0
	0	1	0		0	1	0
	1	0	0		1	0	0
	1	1	0		1	1	1

Ans. (4)

31. For transistor action, which of the following statement is **correct**?

- (1) Base, emitter and collector regions should have same size.
- (2) Both emitter junction as well as the collector junction are forward biased
- (3) The base region must be very thin and lightly doped.
- (4) Base, emitter and collector regions should have same doping concentrations.

Ans. (3)

32. In a guitar, two strings A and B made of same material are slightly out of tune and produce beats of frequency 6 Hz. When tension in B is slightly decreased, the beat frequency increase to 7 Hz. If the frequency of A is 530 Hz, the original frequency of B will be :

- (1) 524 Hz
- (2) 536 Hz
- (3) 537 Hz
- (4) 523 Hz

Ans. (1)

33. A short electric dipole has a dipole moment of $16 \times 10^{-9} \text{ Cm}$. The electric potential due to the dipole at a point at a distance of 0.6 m from the centre of the dipole, situated on a line making an angle of 60° with the dipole axis is :

$$\left(\frac{1}{4\pi\epsilon_0} = 9 \times 10^9 \text{ Nm}^2 / \text{C}^2 \right)$$

- (1) 200 V
- (2) 400 V
- (3) zero
- (4) 50 V

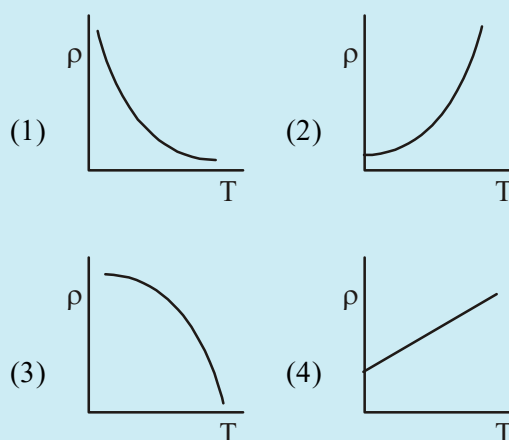
Ans. (1)

34. A body weighs 72 N on the surface of the earth. What is the gravitational force on it, at a height equal to half the radius of the earth?

- (1) 32 N
- (2) 30 N
- (3) 24 N
- (4) 48 N

Ans. (1)

35. Which of the following graph represents the variation of resistivity (ρ) with temperature (T) for copper?



Ans. (2)

36. In a certain region of space with volume 0.2 m^3 , the electric potential is found to be 5 V throughout. The magnitude of electric field in this region is :

- (1) 0.5 N/C
- (2) 1 N/C
- (3) 5 N/C
- (4) zero

Ans. (4)

37. The average thermal energy for a mono-atomic gas is : (K_B is Boltzmann constant and T, absolute temperature)

- (1) $\frac{3}{2} k_B T$
- (2) $\frac{5}{2} k_B T$
- (3) $\frac{7}{2} k_B T$
- (4) $\frac{1}{2} k_B T$

Ans. (1)

38. Find the torque about the origin when a force of $3\hat{j} \text{ N}$ acts on a particle whose position vector is $2\hat{k} \text{ m}$.

- (1) $6\hat{j} \text{ Nm}$
- (2) $-6\hat{i} \text{ Nm}$
- (3) $6\hat{k} \text{ Nm}$
- (4) $6\hat{i} \text{ Nm}$

Ans. (2)

39. Light of frequency 1.5 times the threshold frequency is incident on a photosensitive material. What will be the photoelectric current if the frequency is halved and intensity is doubled?

- (1) four times
- (2) one-fourth

- (3) zero (4) doubled

Ans. (3)

40. A long solenoid of 50 cm length having 100 turns carries a current of 2.5 A. The magnetic field at the centre of the solenoid is :

$$(\mu_0 = 4\pi \times 10^{-7} \text{ T m A}^{-1})$$

- (1) $3.14 \times 10^{-4} \text{ T}$ (2) $6.28 \times 10^{-5} \text{ T}$
(3) $3.14 \times 10^{-5} \text{ T}$ (4) $6.28 \times 10^{-4} \text{ T}$

Ans. (4)

41. The Brewsters angle i_b for an interface should be:

- (1) $30^\circ < i_b < 45^\circ$ (2) $45^\circ < i_b < 90^\circ$
(3) $i_b = 90^\circ$ (4) $0^\circ < i_b < 30^\circ$

Ans. (2)

42. An electron is accelerated from rest through a potential difference of V volt. If the de Broglie wavelength of the electron is $1.227 \times 10^{-2} \text{ nm}$, the potential difference is :

- (1) 10^2 V (2) 10^3 V
(3) 10^4 V (4) 10 V

Ans. (3)

43. Taking into account of the significant figures, what is the value of $9.99 \text{ m} - 0.0099 \text{ m}$?

- (1) 9.98 m (2) 9.980 m
(3) 9.9 m (4) 9.9801 m

Ans. (1)

44. A screw gauge has least count of 0.01 mm and there are 50 divisions in its circular scale.

The pitch of the screw gauge is :

- (1) 0.25 mm (2) 0.5 mm
(3) 1.0 mm (4) 0.01 mm

Ans. (2)

45. The phase difference between displacement and acceleration of a particle in a simple harmonic motion is :

- (1) $\frac{3\pi}{2} \text{ rad}$ (2) $\frac{\pi}{2} \text{ rad}$
(3) zero (4) $\pi \text{ rad}$

Ans. (4)

46. Match the organism with its use in biotechnology

- (a) Bacillus thuringiensis (i) Cloning vector
(b) Thermus (ii) Construction of first

aquaticus rDNA molecule

- (c) Agrobacterium tumefaciens (iii) DNA polymerase
(d) Salmonella typhimurium (iv) Cry proteins

Select the correct option from the following :

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

Ans. (1)

47. Match the following

- (a) Inhibitor of catalytic activity (i) Ricin
(b) Possess peptide bonds (ii) Malonate
(c) Cell wall material in fungi (iii) Chitin
(d) Secondary metabolite (iv) Collagen

Choose the correct option from the following :

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

Ans. (4)

48. The plant parts which consist of two generations one within the other

- (a) Pollen grains inside the anther
(b) Germinated pollen grain with two male gametes
(c) Seed inside the fruit
(d) Embryo sac inside the ovule

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

Ans. (3)

49. The oxygenation activity of RubisCo enzyme in photorespiration leads to the formation of

- (1) 1 molecule of 3-C compound
(2) 1 molecule of 6-C compound
(3) 1 molecule of 4-C compound and 1 molecule of 2-C compound
(4) 2 molecule of 3-C compound

Ans. (1)

50. In relation to Gross primary productivity and Net

primary productivity of an ecosystem, which one of the following statements is **correct**?

- (1) Gross primary productivity is always more than net primary productivity
- (2) Gross primary productivity and Net primary productivity are one and same
- (3) There is no relation between Gross primary productivity and Net primary productivity
- (4) Gross primary productivity

Ans. (1)

51. The product(s) of reaction catalyzed by nitrogenase in root nodules of leguminous plants is/are :

- (1) Nitrate alone
- (2) Ammonia and oxygen
- (3) Ammonia and hydrogen
- (4) Ammonia alone

Ans. (3)

52. Identify the **incorrect** statements

- (1) Sapwood is involved in conduction of water and minerals from root to leaf
- (2) Sapwood is the innermost secondary xylem and is lighter in colour
- (3) Due to deposition of tannins, resins, oils etc., heart wood is dark in colour
- (4) Heart wood does not conduct water but gives mechanical support

Ans. (2)

53. Bt cotton variety that was developed by the introduction of toxin gene of *Bacillus thuringiensis* (Bt) is resistant to

- (1) Fungi diseases
- (2) Plant nematodes
- (3) Insect predators
- (4) Insects pests

Ans. (4)

54. Which of the following pairs is of unicellular algae?

- (1) *Gelidium* and *Gracilaria*
- (2) *Anabaena* and *Volvox*
- (3) *Chlorella* and *Spirulina*
- (4) *Laminaria* and *Sargassum*

Ans. (3)

55. Strobili or cones are found in :

- (1) *Pteris*
- (2) *Marchantia*
- (3) *Equisetum*
- (4) *Salvinia*

Ans. (3)

56. Name the enzyme that facilitates opening of DNA helix during transcription

- (1) DNA helicase
- (2) DNA polymerase
- (3) RNA polymerase
- (4) DNA ligase

Ans. (3)

57. Identify the **wrong** statements with reference to transport of oxygen

- (1) Partial pressure of CO₂ can interfere with O₂ binding with haemoglobin
- (2) Higher H⁺ conc. in alveoli in favours the formation of oxyhaemoglobin
- (3) Low pCO₂ in alveoli favours the formation of oxyhaemoglobin
- (4) Binding of oxygen with haemoglobin is mainly related to partial pressure of O₂

Ans. (2)

58. Identify the **correct** statements with regard to G₁ phase (Gap 1) of interphase

- (1) Reorganisation of all cell components takes place
- (2) Cell is metabolically active, grows but does not replicate its DNA
- (3) Nuclear Division takes place
- (4) DNA synthesis or replication takes place

Ans. (2)

59. Which of the following statements about inclusion bodies is **incorrect**?

- (1) These are involved in ingestion of food particles
- (2) They lie free in the cytoplasm
- (3) These represent reserve material in cytoplasm
- (4) They are not found by any membrane

Ans. (1)

60. Match the following diseases with the causative organism and select the **correct** option.

- | Column-I | Column-II |
|----------------|-------------------------|
| (a) Typhoid | (i) <i>Wuchereria</i> |
| (b) Pneumonia | (ii) <i>Plasmodium</i> |
| (c) Filariasis | (iii) <i>Salmonella</i> |
| (d) Malaria | (iv) <i>Haemophilus</i> |
- (a) (b) (c) (d) (a) (b) (c) (d)
(1) iii iv i ii (2) ii i ii iv

(3) iv i ii iii (4) i iii ii iv

Ans. (1)

61. Meiotic division of the secondary oocyte is completed
- (1) At the time of copulation
 - (2) After zygote formation
 - (3) At the time of fusion of a sperm with an ovum
 - (4) prior to ovulation

Ans. (3)

62. By which method was a new breed 'Hisardale' of sheep formed by using Bikaneri ewes and Marino rams?
- (1) Mutational breeding
 - (2) Cross breeding
 - (3) Inbreeding
 - (4) Out crossing

Ans. (2)

63. The number of substrate level phosphorylations in one turn of citric acid cycle is
- (1) One
 - (2) Two
 - (3) Three
 - (4) Zero

Ans. (1)

64. Choose the **correct** pair from the following :
- (1) Polymerases - Break the DNA into fragments
 - (2) Nucleases - Separate the two strands of DNA
 - (3) Exonucleases - Make cuts at specific positions within DNA
 - (4) Ligases - Join the two DNA molecules

Ans. (4)

65. The infectious stage of *Plasmodium* that enters the human body is :
- (1) Sporozoites
 - (2) Female gametocytes
 - (3) Male gametocytes
 - (4) Trophozoites

Ans. (1)

66. Which of the following is **not** an attribute of a population?
- (1) Natality
 - (2) Mortality
 - (3) Species interaction

(4) Sex ratio

Ans. (3)

67. Select the **correct** events that occur during inspiration.
- (a) Contraction of diaphragm
 - (b) Contraction of external inter-costal muscles
 - (c) Pulmonary volume decreases
 - (d) Intra pulmonary pressure increases
- (1) (c) and (d) (2) (a), (b) and (d)
(3) only (d) (4) (a) and (b)

Ans. (4)

68. According to Rober May, the global species diversity is about
- (1) 20 million
 - (2) 50 million
 - (3) 7 million
 - (4) 1.5 million

Ans. (3)

69. The QRS complex in standard ECG representation
- (1) Depolarisation of auricles
 - (2) Depolarisation of ventricles
 - (3) Repolarisation of ventricles
 - (4) Repolarisation of auricles

Ans. (2)

70. Which of the following statements is **not correct**?
- (1) The proinsulin has an extra peptide called C-peptide
 - (2) The functional insulin has A and B chains linked together by hydrogen bonds
 - (3) Genetically engineered insulin is produced in *E-Coli*
 - (4) In man insulin is synthesised as a proinsulin

Ans. (2)

71. The transverse section of a plant shows following anatomical features :
- (a) Large number of scattered vascular bundles surrounded by bundle sheath
 - (b) Large conspicuous parenchymatous ground tissue
 - (c) Vascular bundles conjoint and closed
 - (d) Phloem parenchyma absent

Identify the category of plant and its part :

- (1) Monocotyledonous root
- (2) Dicotyledonous stem

- (3) Dicotyledonous root
 (4) Monocotyledonous stem

Ans. (4)

72. Select the **correct** statements

- (1) Glucagon is associated with hypoglycemia
 (2) Insulin acts on pancreatic cells and adipocytes
 (3) Insulin is associated with hyperglycemia
 (4) Glucocorticoids stimulate gluconeogenesis

Ans. (4)

73. Montreal protocol was signed in 1987 for control of

- (1) Emission of ozone depleting substances
 (2) Releases of Green House gases
 (3) Disposal of e-wastes
 (4) Transport of Genetically modified organisms from one country to another

Ans. (1)

74. Match the following columns and select the **correct** option :

- | | |
|------------------------------|----------------------|
| (a) 6-15 pairs of gill slits | (i) <i>Trygon</i> |
| (b) Heterocercal caudal fin | (ii) Cyclostomes |
| (c) Air Bladder | (iii) Chondrichthyes |
| (d) Poison sting | (iv) Osteichthyes |
- (a) (b) (c) (d) (a) (b) (c) (d)
- (1) iii iv i ii (2) iv ii iii i
 (3) i iv iii ii (4) ii iii iv i

Ans. (4)

75. Identify the **wrong** statements with regard to Restriction Enzymes

- (1) They cut the strand of DNA at palindromic sites
 (2) They are useful in genetic engineering
 (3) Sticky ends can be joined by using DNA ligases
 (4) Each restriction enzyme functions by inspecting the length of a DNA sequence

Ans. (3)

76. Match the following with respect to meiosis :

- | | |
|----------------|---------------------|
| (a) Zygotene | (i) Terminalization |
| (b) Pachytene | (ii) Chiasmata |
| (c) Diplotene | (iii) Crossing over |
| (d) Diakinesis | (iv) Synapsis |

Select the **correct** option from the following :

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

Ans. (1)

77. Cuboidal epithelium with brush border of microvilli is found in

- (1) ducts of salivary glands
 (2) proximal convoluted tubule of nephron
 (3) eustachian tube
 (4) lining of intestine

Ans. (2)

78. Name the plant growth regulator which upon spraying on sugarcane crop, increases the length of stem, thus increasing the yield of sugarcane crop

- (1) Gibberellin
 (2) Ethylene
 (3) Abscisic acid
 (4) Cytokinin

Ans. (1)

79. Match the following columns and select the **correct** option :

- | | |
|------------------------------------|------------------------------------|
| (a) Bt cotton | (i) Gene therapy |
| (b) Adenosine deaminase deficiency | (ii) Cellular defence |
| (c) RNAi | (iii) Detection of HIV infection |
| (d) PCR | (iv) <i>Bacillus thuringiensis</i> |
- (a) (b) (c) (d) (a) (b) (c) (d)
- (1) iii iv i iv (2) ii iii iv i
 (3) i ii iii iv (4) iv i ii iii

Ans. (4)

80. The ovary is half inferior in

- (1) Mustard (2) Sunflower
 (3) Plum (4) Bringal

Ans. (3)

81. Which one of the following is the most abundant protein in the animals ?

- (1) Collagen (2) Lectin
 (3) Insulin (4) Haemoglobin

Ans. (1)

82. If the distance between two consecutive base pairs is 0.34 nm and the total number of base pairs of DNA double helix in a typical mammalian cell 6.6×10^9 bp, then the length of the DNA approximately :

- (1) 2.5 meters (2) 2.2 meters
(3) 2.7 meters (4) 2.0 meters

Ans. (2)

83. The first phase of translation is

- (1) Recognition of DNA molecule
(2) Aminoacylation of tRNA
(3) Recognition of an anti-codon
(4) Binding of mRNA to ribosome

Ans. (2)

84. Which of the following hormone levels will cause release of ovum (ovulation) from the graffix follicle?

- (1) High concentration of Progesterone
(2) Low concentration of LH
(3) Low concentration of FSH
(4) High concentration of Estrogen

Ans. (4)

85. Flippers of Penguins and Dolphins are example of

- (1) Convergent evolution
(2) Industrial melanism
(3) Natural selection
(4) Adaptive radiation

Ans. (1)

86. Identify the **wrong** statements with reference to the gene 'I' that controls ABO blood groups

- (1) A person will have only two of the three alleles
(2) When I^A and I^B are present together, they express same type of sugar
(3) Allele 'i' does not produce any sugar
(4) The gene (I) has three alleles

Ans. (2)

87. Select the option including all sexually transmitted diseases

- (1) Gonorrhoea, Malaria, Genital herpes
(2) AIDS, Malaria, Filaria
(3) Cancer, AIDA, Syphilis
(4) Gonorrhoea, Syphilis, Genital herpes

Ans. (4)

88. Match the following columns and select the **correct** option :

- | | |
|-----------------|--|
| (a) Eosinophils | (i) Immune response |
| (b) Basophils | (ii) Phagocytosis |
| (c) Neutrophils | (iii) Release histaminase, destructive enzymes |
| (d) Lymphocytes | (iv) Release granules containing histamine |

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

Ans. (4)

89. Match the trophic levels with their **correct** species examples in grasslands ecosystem:

- | | |
|--------------------------|--------------|
| (a) Fourth trophic level | (i) Crow |
| (b) Second trophic level | (ii) Vulture |
| (c) First trophic level | (iii) Rabbit |
| (d) Third trophic level | (iv) Grass |

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

Ans. (4)

90. In light reaction, plastoquinone facilitates the transfer of electrons from

- (1) $Cytb_6/f$ complex to PS-I
(2) PS-I to $NADP^+$
(3) PS-I to ATP synthase
(4) PS-II to $Cytb_6/f$ complex

Ans. (4)

91. Embryological support for evolution was rHsappnrnprl by :

- (1) Alfred Wallace
(2) Charles Darwin
(3) Oparin
(4) Karl Ernst von Baer

Ans. (4)

92. Bilaterally symmetrical and acoelomate animals are exemplified by:

- (1) Platyhelminthes (2) Aschelminthes

- (3) Annelida (4) Ctenophora

Ans. (1)

93. Which of the following would help in prevention of diuresis ?

- (1) Reabsorption of Na^+ and water from renal tubules due to aldosterone
 (2) Atrial natriuretic factor causes vasoconstriction
 (3) Decrease in secretion of renin by JG cells
 (4) More water reabsorption due to undersecretion of ADH

Ans. (1)

94. Match the following correct option.

- | | |
|--------------------------------------|---------------------------------------|
| Column I | Column II |
| (a) Clostridium butylicum | (i) Cyclosporin - A |
| (b) Trichoderma Polysporum | (ii) Butyric Acid |
| (c) Monascus Purpureus | (iii) Citric Acid |
| (d) Aspergillus Niger lowering agent | (iv) Blood cholesterol lowering agent |

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

Ans. (1)

95. Some dividing cells exit the cell cycle and enter vegetative inactive stage. This is called quiescent stage (G_0). This process occurs at the end of:

- (1) G_1 phase (2) S phase
 (3) G_2 phase (4) M phase

Ans. (4)

96. In which of the following techniques the embryo are transferred to assist those females who cannot conceive ?

- (1) GIFT and ZIFT (2) ICSI and ZIFT
 (3) GIFT and ICSI (4) ZIFT and IUT

Ans. (4)

97. Which of the following statements are true for the phylum-Chordata ?

- (a) In Urochordata notochord extends from head to tail and it is present throughout their life.
 (b) In Vertebrata notochord is present during the embryonic period only.
 (c) Central nervous system is dorsal and hollow.
 (d) Chordata is divided into 3 subphyla : Hemichordata, Tunicata and Cephalochordata.
 (1) (c)and(a) (2) (a)and(b)
 (3) (b)and(c) (4) (d)and(c)

Ans. (3)

98. Snow-blindness in Antarctic region is due to:

- (1) Inflammation cornea due to high dose of UV-B radiation
 (2) High reflection of light from snow
 (3) Damage to retina caused by infra-red rays
 (4) Freezing of fluids in the eye by low temperature

Ans. (1)

99. Match the following column and select Lh correct option.

- | | |
|---------------------|--------------------------|
| Column - I | Column - II |
| (a) Pituitary gland | (i) Grave's disease |
| (b) Thyroid gland | (ii) Diabetes mellitus |
| (c) Adrenal gland | (iii) Diabetes insipidus |
| (d) Pancreas | (iv) Addison's disease |
- | | | | | |
|-----|-------|-------|------|-------|
| | (a) | (b) | (d) | (d) |
| (1) | (iii) | (ii) | (i) | (iv) |
| (2) | (iii) | (i) | (iv) | (ii) |
| (3) | (ii) | (i) | (iv) | (iii) |
| (4) | (iv) | (iii) | (i) | (ii) |

Ans. (2)

100. Which of the following statements is correct ?

- (1) Adenine pairs with thymine through one H-bond.
 (2) Adenine pairs with thymine through three H-bonds.
 (3) Adenine does not pair with thymine.
 (4) Adenine pairs with thymine through two H-bonds.

Ans. (4)

101. Match the following concerning essential elements and their functions in plants:

- | | |
|---------------|---|
| (a) Iron | (i) Photolysis of water |
| (b) Zinc | (ii) Poin germination |
| (c) Boron | (iii) Required for chlorophyll biosynthesis |
| (d) Manganese | (iv) LAA biosynthesis |

Select the correct option:

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

Ans. (2)

102. Which of the following is not an inhibitory substance governing seed dormancy ?

- (1) Abscisic acid
 (2) Phenolic acid
 (3) Para-ascorbic acid
 (4) Gibberellic acid

Ans. (4)

103. From binomial nomenclature, F.L. Miller pronounced the names of amino acids by mixing the following in a closed flask:

- (1) CH₃, H₂, NH₄ and water vapor at 800°C
- (2) CH₄, H₂, NH₃ and water vapor at 600°C
- (3) CH₃, H₂, NH₃ and water vapor at 600°C
- (4) CH₄, H₂, NH₃ and water vapor at 800°C

Ans. (4)

104. Experimental verification of the chromosomal theory of inheritance was done by:

- (1) Sutton
- (2) Boveri
- (3) Morgan
- (4) Mendel

Ans. (3)

105. The body of the ovule is fused within the funicle at:

- (1) Micropyle
- (2) Nucellus
- (3) Chalaza
- (4) Hilum

Ans. (4)

106. Identify the correct statement with reference to human digestive system.

- (1) Serosa is the innermost layer of the alimentary canal.
- (2) Ileum is a highly coiled part.
- (3) Vermiform appendix arises from duodenum.
- (4) Ileum opens into small intestine.

Ans. (2)

107. Dissolution of the synaptonemal complex occurs during.

- (1) Zygotene
- (2) Diplotene
- (3) Leptotene
- (4) Pachytene

Ans. (2)

108. Floridean starch has structure similar to:

- (1) Amylopectin and glycogen
- (2) Mannitol and algin
- (3) Laminarin and cellulose
- (4) Starch and cellulose

Ans. (1)

109. The palindromic sequence which is recognized by EcoRI is:

- (1) 5'-GGAACC-3'
3' - CCTTGG - 5'
- (2) 5' - CTTAAG - 3'
3' GAATTC 5'
- (3) 5' - GGATCC - 3'
3'-CCTAGG-5'
- (4) 5' - GAATTC - 3'
3' - CTTAAG - 5'

Ans. (4)

110. Select the correct match.

- (1) Phenylketonuria Autosomal dominant trait
- (2) Sickle cell anaemia - Autosomal recessive

(3) Thalassemia

(4) Haemophilia

trait, chromosome-11

X linked

Y linked

Ans. (2)

111. Identify the substances having glycosidic bond and peptide bond, respectively in their structure:

- (1) Glycerol, trypsin
- (2) Cellulose, lecithin
- (3) Inulin, insulin
- (4) Chitin, cholesterol

Ans. (3)

112. The process of growth is maximum during:

- (1) Lag phase
- (2) Senescence
- (3) Dormancy
- (4) Log phase

Ans. (4)

113. Match the following columns and select the correct option.

	Column - I	Column - II
(a)	Organ of Corti	(i) Connects middle ear and pharynx
(b)	Cochlea	(ii) Coiled part of the labyrinth
(c)	Eustachian tube	(iii) Attached to the oval window
(d)	Slapes	(iv) Located on the basilar membrane

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

Ans. (2)

114. The process responsible for facilitating loss of water in liquid form from the tip of grass blades at night and in early morning is :

- (1) Root pressure
- (2) Imbibition
- (3) Plasmolysis
- (4) Transpiration

Ans. (1)

115. Identify the wrong statement with reference to immunity.

- (1) When ready-made antibodies are directly given, it is called "Passive immunity".
- (2) Active immunity is quick and gives full response.
- (3) Foetus receives some antibodies from mother, it is an example for passive immunity.
- (4) When exposed to antigen (living or dead) antibodies are produced in the host's body. It is called "Active immunity".

Ans. (2)

116. In water hyacinth and water lily, pollination takes place by:

- (1) water currents only

- (2) wind and water
- (3) insects and water
- (4) insects or wind

Ans. (4)

117. Which is the important site of formation of glycoproteins and glycolipids in eukaryotic cells ?

- (1) Peroxisomes
- (2) Golgi bodies
- (3) Polysomes
- (4) Endoplasmic reticulum

Ans. (2)

118. Which of the following regions of the globe exhibits highest species diversity ?

- (1) Madagascar
- (2) Himalayas
- (3) Amazon forests
- (4) Western Ghats of India

Ans. (3)

119. Goblet cells of alimentary canal are modified from:

- (1) Columnar epithelial cells
- (2) Chondrocytes
- (3) Compound epithelial cells
- (4) Squamous epithelial cells

Ans. (1)

120. Which of the following is correct about viroids ?

- (1) They have free RNA without protein coat.
- (2) They have DNA with protein coat.
- (3) They have free DNA without protein coat.
- (4) They have RNA with protein coat.

Ans. (1)

121. Secondary metabolites such as nicotine, strychnine and caffeine are produced by plants for their;

- (1) Growth response
- (2) Defence action
- (3) Effect on reproduction
- (4) Nutritive value

Ans. (2)

122. Match the following columns and select the correct option.

Column - I	Column - II
(a) Placenta	(i) Androgens
(b) Zona pellucida	(ii) Human Chorionic Gonadotropin (hCG)
(c) Bulbo-urethral glands	(iii) Layer of the ovum
(d) Leydig cells	(iv) Penis
(a) (b) (c) (d)	
(1) (i) (iv) (ii) (iii)	
(2) (iii) (ii) (iv) (i)	
(3) (ii) (iii) (iv) (i)	

- (4) (iv) (iii) (i) (ii)

Ans. (3)

123. Ray florets have:

- (1) Superior ovary
- (2) Hypogynous ovary
- (3) Half inferior Ovary
- (4) Inferior ovary

Ans. (4)

124. Which of the following is put into Anaerobic sludge digester for further sewage treatment ?

- (1) Floating debris
- (2) Effluents of primary treatment
- (3) Activated sludge
- (4) Primary sludge

Ans. (3)

125. The enzyme enterokinase helps in conversion of:

- (1) trypsinogen into trypsin
- (2) caseinogen into casein
- (3) pepsinogen into pepsin
- (4) protein into polypeptides

Ans. (1)

126. Match the following columns and select the correct option.

Column - I	Column - II
(a) Gregarious, polyphagous pest	(i) <i>Asterias</i>
(b) Adult with radial symmetry and larva with bilateral symmetry	(ii) Scorpion
(c) Book lungs	(iii) <i>Ctenoplanea</i>
(d) Bioluminescence	(iv) <i>Locusta</i>
(a) (b) (c) (d)	
(1) (iv) (i) (ii) (iii)	
(2) (iii) (ii) (i) (iv)	
(3) (ii) (i) (iii) (iv)	
(4) (i) (iii) (ii) (iv)	

Ans. (1)

127. Presence of which of the following conditions in urine are indicative of Diabetes Mellitus ?

- (1) Uremia and Renal Calculi
- (2) Ketonuria and Glycosuria
- (3) Renal calculi and Hyperglycaemia
- (4) Uremia and Ketonuria

Ans. (2)

128. Match the following columns and select the correct option.

Column - I	Column-II
(a) Floating Ribs	(i) Located between second and seventh ribs
(b) Acromion	(ii) Head of the

- (c) Scapula
(d) Glenoid cavity
- Humerus
(iii) Clavicle
(iv) Do not connect with the sternum

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

Ans. (3)

129. How many true breeding pea plant varieties did Mendel select as pairs, which were similar except in one character with contrasting traits ?

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

Ans. (2)

130. If the head of cockroach is removed, it may live for days because

- (1) the cockroach does not have nervous system.
(2) the head holds a small proportion of a nervous system while the rest is situated along the ventral part of its body.
(3) the head holds a 1/3rd of a nervous system while the rest is situated along the dorsal part of its body.
(4) the supra-oesophageal ganglia of the cockroach are situated in ventral part of abdomen.

Ans. (2)

131. Which of the following refer to correct example(s) of organisms which have evolved due to changes in environment brought about by anthropogenic action ?

- (a) Darwin's Finches of Galapagos islands.
(b) Herbicide resistant weeds.
(c) Drug resistant eukaryotes.
(d) Man-created breeds of domesticated animals like dogs.

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

Ans. (2)

132. Identify the basic amino acid from the following.

- (1) Glutamic Acid
(2) Lysine
(3) Valine
(4) Tyrosine

Ans. (2)

133. In gel electrophoresis, separated DNA fragments can be visualized with the help of:

- (1) Ethidium bromide in UV radiation
(2) Acetocarmine in UV radiation
(3) Ethidium bromide in infrared radiation
(4) Acetocarmine in bright blue light

Ans. (1)

134. The sequence that controls the copy number of the linked DNA in the vector, is termed:

- (1) Ori site
(2) Palindromic sequence
(3) Recognition site
(4) Selectable marker

Ans. (1)

135. The roots that originate from the base of the stem are:

- (1) Primary roots
(2) Prop roots
(3) Lateral roots
(4) Fibrous roots

Ans. (4)

136. The calculated spin only magnetic moment of Cr^{2+} ion is

- (1) 4.90 BM
(2) 5.29 BM
(3) 2.84 BM
(4) 3.87 BM

Ans. (1)

137. Match the following and identify the correct option :

- | | |
|--|---|
| (a) $\text{CO}(\text{g}) + \text{H}_2(\text{g})$ | (i) $\text{Mg}(\text{HCO}_3)_2 + \text{Ca}(\text{HCO}_3)_2$ |
| (b) Temporary hardness of water | (ii) An electron deficiency hydride |
| (c) B_2H_6 | (iii) Synthesis gas |
| (d) H_2O_2 | (iv) Non-planar structure |

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

Ans. (4)

138. The mixture which shows positive deviation from Raoult's law is :

- (1) Benzene + Toluene
(2) Acetone + Chloroform
(3) Chloroethane + Bromoethane
(4) Ethanol + Acetone

Ans. (4)

139. Identify the correct statement from the following
(1) Blister copper has blistered appearance due to evolution of CO_2

- (2) Vapour phase refining is carried out for nickel by Van Arkel method.
(3) Pig iron can be moulded into a variety of shapes
(4) Wrought iron is impure iron with 4% carbon

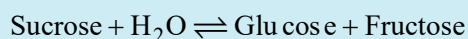
Ans. (2)

140. Urea reacts with water to form A which will decompose to form B. B when passed through $\text{Cu}^{2+}(\text{aq})$, deep blue colour solution C is formed. What is the formula of C from the following ?

- (1) $[\text{Cu}(\text{NH}_3)_4]^{2+}$ (2) $\text{Cu}(\text{OH})_2$
 (3) $\text{CuCO}_3 \cdot \text{Cu}(\text{OH})_2$ (4) CuSO_4

Ans. (1)

141. Hydrolysis of sucrose is given by the following reaction.



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

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

Ans. (4)

142. Identify the incorrect match

- | Name | IUPAC official Name |
|----------------|---------------------|
| (a) Unnilunium | (i) Mendeleevium |
| (b) Unniltrium | (ii) Lawrencium |
| (c) Unnihexium | (iii) Seaborgium |
| (d) Unununnium | (iv) Darmstadtium |
| (1) b, ii | (2) c, iii |
| (3) d, iv | (4) a, i |

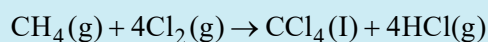
Ans. (3)

143. Which of the following is a basic amino acid ?

- (a) Alanine (b) Tyrosine
 (c) Lysine (d) Serine

Ans. (3)

144. Which is the change in oxidation number of carbon in the following reaction ?



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

Ans. (2)

145. Sucrose in hydrolysis gives

- (1) $\alpha\text{-D-Glucose} + \beta\text{-D-Glucose}$
 (2) $\alpha\text{-D-Glucose} + \beta\text{-D-Fructose}$
 (3) $\alpha\text{-D-Fructose} + \beta\text{-D-Fructose}$
 (4) $\beta\text{-D-Glucose} + \alpha\text{-D-Fructose}$

Ans. (2)

146. The number of Faradays (F) require to produce 20 g of calcium from molten CaCl_2 (Atomic mass of $\text{Ca} = 40 \text{ g mol}^{-1}$) is

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

Ans. (4)

147. For the reaction, $2\text{Cl}(\text{g}) \rightarrow \text{Cl}_2(\text{g})$, the correct option is :

- (1) $\Delta_r H > 0$ and $\Delta_r S < 0$
 (2) $\Delta_r H < 0$ and $\Delta_r S > 0$
 (3) $\Delta_r H < 0$ and $\Delta_r S < 0$
 (4) $\Delta_r H > 0$ and $\Delta_r S > 0$

Ans. (3)

148. The following metal ion activates many enzymes, participates in the oxidation of glucose to produce ATP and with Na, is responsible for the transmission of nerve signals.

- (1) Copper (2) Calcium
 (3) Potassium (3) Iron

Ans. (3)

149. Identify the incorrect statement .

- (1) The transition metals and their compounds are known for their catalytic activity due to their ability to adopt multiple oxidation states and to form complexes.
 (2) Interstitial compounds are those that are formed when small atoms like H, C or N are trapped inside the crystal lattices of metals.
 (3) The oxidation state of chromium in CrO_4^{2-} and $\text{Cr}_2\text{O}_7^{2-}$ are not the same
 (4) $\text{Cr}^{2+}(\text{d}^4)$ is a stronger reducing agent than $\text{Fe}^{2+}(\text{d}^6)$ in water

Ans. (3)

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

- (1) heat of reaction
 (2) threshold energy
 (3) collision frequency
 (4) activation energy

Ans. (3)

151. Reaction between benzaldehyde and acetophenone in presence of dilute NaOH is known as :

- (1) Cannizzaro's reaction
 (2) Cross Cannizzaro's reaction
 (3) Cross Aldol condensation

- (4) Aldol condensation
- Ans. (3)**
152. A tertiary butyl carbocation is more stable than a secondary butyl carbocation because of which of the following ?
- (1) + R effect of $-CH_3$ groups
 (2) - R effect of $-CH_3$ groups
 (3) Hyperconjugation
 (4) - I effect of $-CH_3$ groups
- Ans. (3)**
153. Find out the solubility of $Ni(OH)_2$ in 0.1 M NaOH. Given that the ionic product of $Ni(OH)_2$ is 2×10^{-15}
- (1) $2 \times 10^{-8} M$ (2) $1 \times 10^{-13} M$
 (3) $1 \times 10^8 M$ (4) $2 \times 10^{-13} M$
- Ans. (4)**
154. Identify a molecule which does not exist
- (1) Li_2 (2) C_2
 (3) O_2 (4) He_2
- Ans. (4)**
155. Elimination reaction of 2-Bromo-pentane to form pent-2-ene is
- (a) β - Elimination reaction
 (b) Follows Zaitsev rule
 (c) Dehydrohalogenation reaction
 (d) Dehydration reaction
- (1) (a), (c), (d) (2) (b), (c), (d)
 (3) (a), (b), (d) (4) (a), (b), (c)
- Ans. (4)**
156. Measuring Zeta potential is useful in determining which property of colloidal solution ?
- (a) Solubility
 (b) Stability of the colloidal particles
 (c) Size of the colloidal particles
 (d) Viscosity
- Ans. (2)**
157. The number of protons, neutrons and electrons in $^{175}_{71}Lu$, respectively, are :
- (1) 104, 71 and 71
 (2) 71, 71 and 104
 (3) 175, 104 and 71
 (4) 71, 104 and 71
- Ans. (4)**
158. Identify the correct statements from the following :
- (a) $CO_2(g)$ is used as refrigerant for ice-cream and frozen food.
- (b) The structure of C_{60} contains twelve six carbon rings and twenty five carbon rings.
 (c) ZSM-5, a type of zeolite, is used to convert alcohols into gasoline
 (d) CO is colorless and odourless gas
- (1) (a) and (c) only
 (2) (b) and (c) only
 (3) (c) and (d) only
 (4) (a), (b) and (c) only
- Ans. (3)**
159. An element has a body centered cubic (bcc) structure with a cell edge of 288 pm. The atomic radius is
- (1) $\frac{\sqrt{2}}{4} \times 288 pm$ (2) $\frac{4}{\sqrt{3}} \times 288 pm$
 (3) $\frac{4}{\sqrt{2}} \times 288 pm$ (4) $\frac{\sqrt{3}}{4} \times 288 pm$
- Ans. (4)**
160. Paper chromatography is an example of :
- (1) Partition chromatography
 (2) Thin layer chromatography
 (3) Column chromatography
 (4) Adsorption chromatography
- Ans. (1)**
161. Which of the following oxoacid of sulphur has -O-O-linkage ?
- (1) H_2SO_4 , sulphuric acid
 (2) $H_2S_2O_8$ peroxodisulphuric acid
 (3) $H_2S_2O_7$, pyrosulphuric acid
 (4) H_2SO_3 , sulphurous acid
- Ans. (2)**
162. The rate constant for a first order reaction is $4.606 \times 10^{10-3} s^{-1}$. The time required to reduce 2.0g of the reactant to 0.2 g is :
- (1) 200 s (b) 500 s
 (3) 1000 s (4) 100 s
- Ans. (2)**
163. Which of the following alkane cannot be made in good yield by Wurtz reaction ?
- (1) 2,3 - Dimethylbutane
 (2) n-Heptane
 (3) n-Butane
 (4) n-Hexane
- Ans. (2)**
164. Match the following :
- | | |
|--------------|---------------|
| Oxide | Nature |
| (a) CO | (i) Basic |

- (b) BaO (ii) Neutral
 (c) Al₂O₃ (iii) Acidic
 (d) Cl₂O₇ (iv) Amphoteric

Which of the following is correct option?

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

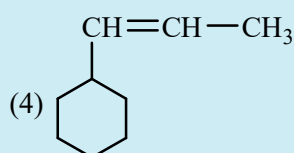
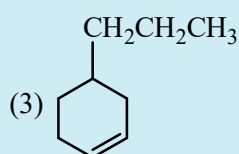
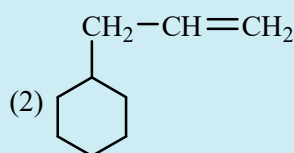
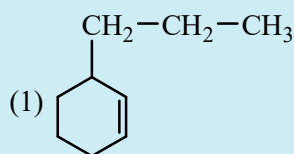
Ans. (1)

165. A mixture of N₂ and Ar gases in a cylinder contains 7g of N₂ and 8 g of Ar. if the total pressure of the mixture of the gases in the cylinder is 27 bar, the partial pressure of N₂ is [Use atomic masses (in g mol⁻¹): N = 14, Ar = 40]

- (1) 12 bar (b) 15 bar
 (3) 18 bar (4) 9 bar

Ans. (2)

166. An alkene on ozonolysis gives methanal as one of the product. Its structure is



Ans. (2)

167. The freezing point depression constant (K_f) of benzene is 5.12 K kg mol⁻¹. The freezing point depression for the solution of molality 0.078 m containing a non-electrolyte solute in benzene is (rounded off upto two decimal places):

- (1) 0.80 K (2) 0.40 K
 (3) 0.60 K (4) 0.20 K

Ans. (2)

168. The correct option for free expansion of an ideal gas under adiabatic condition is

- (1) q = 0, ΔT < 0 and w > 0
 (2) q < 0, ΔT = 0 and w = 0
 (3) q > 0, ΔT > 0 and w > 0
 (4) q = 0, ΔT = 0 and w = 0

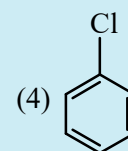
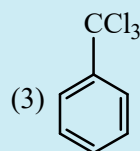
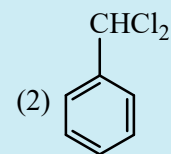
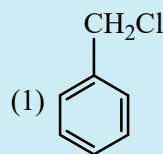
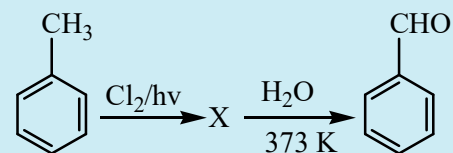
Ans. (4)

169. Which one of the followings has maximum number of atoms ?

- (a) 1 g of Mg(s) [Atomic mass of Mg = 24]
 (b) 1 g of O₂ (g) [Atomic mass of O = 10]
 (c) 1 g of La (s) [Atomic mass of La = 7]
 (d) 1 g of Ag(s) [Atomic mass of Ag = 106]

Ans. (3)

170. Identify compound X in the following acquence of reactions :



Ans. (2)

171. Which of the following is the correct order of increasing field strength of ligands to form coordination compounds ?

- (1) SCN⁻ < F⁻ < CN⁻ < C₂O₄²⁻
 (2) F⁻ < SCN⁻ < C₂O₄²⁻ < CN⁻
 (3) CN⁻ < C₂O₄²⁻ < SCN⁻ < F⁻
 (4) SCN⁻ < F⁻ < C₂O₄²⁻ < CN⁻

Ans. (4)

172. Which of the following is a natural polymer ?

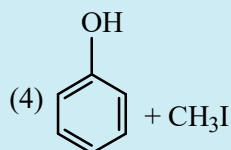
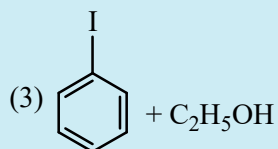
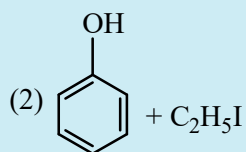
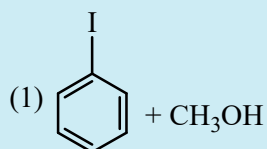
- (1) poly (Butadiene - styrene)
 (2) polybutadiene
 (3) poly (Butadiene-acrylonitrile)
 (4) cis-1,4-polyisoprene

- Ans. (4)**
 173. Which of the following set of molecules will have zero dipole moment ?
 (1) Boron trifluoride, hydrogen fluoride, carbon dioxide, 1,3-dichlorobenzene
 (2) Nitrogen trifluoride, beryllium difluoride, water, 1,3-dichlorobenzene
 (3) Boron trifluoride, beryllium difluoride, carbon dioxide, 1,4-dichlorobenzene
 (4) Ammonia, beryllium difluoride, water, 1,4-dichlorobenzene

- Ans. (3)**
 174. HCl was passed through a solution of CaCl_2 , MgCl_2 and NaCl . Which of the following compound(s) crystallise(s) ?
 (1) Only NaCl
 (2) Only MgCl_2
 (3) NaCl , MgCl_2 and CaCl_2
 (4) Both MgCl_2 and CaCl_2

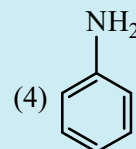
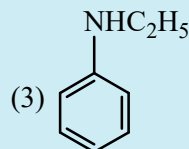
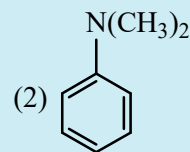
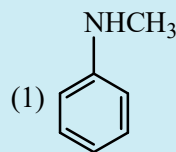
- Ans. (4)**
 175. Which of the following is not correct about carbomonoxyde ?
 (1) it reduces oxygen carrying ability of blood
 (2) The carboxyhaemoglobin (haemoglobin bound to CO) is less stable than oxyhaemoglobin
 (3) it is produced due to incomplete combustion
 (4) It forms carboxyhaemoglobin

- Ans. (2)**
 176. Anisole on cleavage with HI gives



- Ans. (4)**

177. Which of the following amine will give the carbylamine test ?



- Ans. (4)**
 178. Reaction between acetone and methylmagnesium chloride followed by hydrolysis will give :

- (1) Sec. Butyl alcohol
 (2) Tert. butyl alcohol
 (3) Isobutyl alcohol
 (4) Isopropyl alcohol

- Ans. (2)**
 179. On electrolysis of dil. sulphuric acid using Platinum (Pt) electrode, the product obtained at anode will be :

- (1) oxygen gas
 (2) H_2S gas
 (3) SO_2 gas
 (4) Hydrogen gas

- Ans. (1)**
 180. Which of the following is a cationic detergent?

- (1) Sodium stearate
 (2) Cetyltrimethyl ammonium bromide
 (3) Sodium dodecylbenzene sulphonate
 (4) Sodium lauryl sulphate

- Ans. (2)**