NATIONAL ELIGIBILITY CUM ENTRANCE TEST (UG) SET : F4

[NEET-2020], Test held on 13 Sept. 2020

Subject : PHYSICS

1. 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) 3/2

(2) 5/3

(3) 27/8

(4) 9/4

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

(1) $-6\hat{i}$ Nm

(2) $6\hat{k}$ Nm

(3) $6\hat{i}$ Nm

(4) $6\hat{j}$ Nm

3. For transistor action, which of the following statements is correct :

(1) Both emitter junction as well as the collector junction are forward biased

(2) The base region must be very thin and lightly doped.

(3) Base, emitter and collector regions should have same doping concentrations.

(4) Base, emitter and collector regions should have same size.

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

(1) 320 m

(2) 300 m

(3) 360 m

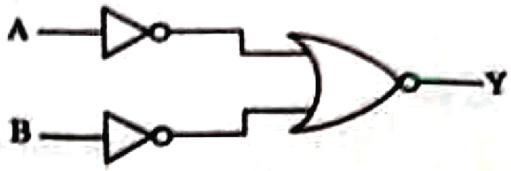
(4) 340 m

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

(1) $45^o < i_b < 90^o$ (2) $i_b = 90^o$

(3) $0^o < i_b < 30^o$ (4) $30^o < i_b < 45^o$

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



(1)

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

(2)

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

(3)

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

(4)

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

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

(1) semiconductors only

(2) insulators and semiconductors

(3) metals

(4) insulators only

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

(1) both forward bias and reverse bias

(2) increase in forward current

(3) forward bias only

(4) reverse bias only

9. **Dimensions of stress are**

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

(2) $[ML^{-1}T^{-2}]$

(3) $[MLT^{-2}]$

(4) $[ML^2T^{-2}]$

10. **Taking into account of the significant figures, what is the value of 9.99 m – 0.0099 mT :**

(1) 9.980 m

(2) 9.9 m

(3) 9.9801 m

(4) 9.98 m

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

(1) 536 Hz

(2) 537 Hz

(3) 523 Hz

(4) 524 Hz

12. **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 fromthe opposite siirface. If the refractive index' of the material of the prism is μ then the angle of incidence is nearly equal to :**

(1) μA

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

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

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

13. **The capacitance of a parallel plate capacitor with air as medium is 6 μF. With the introduction of a dielectric medium, the capacitance becomes | 30 μF. The permittivity of the medium is:**

($\varepsilon_0 = 8.85 \times 10^{-12}\ C^2\ N^{-1}\ m^{-2}$)

(1) $0.44 \times 10^{-10}\ C^2N^{-1}m^{-2}$

(2) $5.00\ C^2N^{-1}m^{-2}$

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

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

14. **Two particles of mass 5 ke and 10 kg respectively are attached to the two ends of a rigid rod oflength 1m with negligible mass.**

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

(1) 67 cm

(2) 80 cm

(3) 33 cm

(4) 50 cm

15. **A screw gauge has least count of 0.01 mm and there are 50 divisions in its circular scale. The pitch ofthe screw gauge is :**

(1) 0.5 mm

(2) 1.0 mm

(3) 0.01 mm

(4) 0.25 mm

16. **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) four times

(2) one-fourth

(3) double

(4) half

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

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

(1) $2.4\pi \times 10^{-5}\ T\ mA^{-1}$

(2) $2.4\pi \times 10^{-7}\ T\ mA^{-1}$

(3) $2.4\pi \times 10^{-4}\ T\ mA^{-1}$

(4) $8.0\pi \times 10^{-5}\ T\ mA^{-1}$

18. **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 : c

(2) 1 : c^2

(3) c : 1

(4) 1 : 1

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

(1) $\pi/2$ rad

(2) zero

(3) π rad

(4) $3\pi/2$ rad

20. **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 supended from its free end. The expression for Young's modulus is :**

(1) $\frac{MgL}{AL_1}$

(2) $\frac{MgL}{A(L_1 - L)}$

(3) $\frac{MgL_1}{AL}$

(4) $\frac{Mg(L_1 - L)}{AL}$

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

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

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

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

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

22. **The energy equivalent of 0.5 g of a substance is:**

(1) 1.5×10^{13} J

(2) 0.5×10^{13} J

(3) 4.5×10^{16} J

(4) 4.5×10^{13} J

23. **An electron is accelerated from rest through a potential difference of V volt. If the de Broglie wavelength of the electron is 1.227×10^{-2} nm, the potential difference is :**

(1) 10^3 V

(2) 10^4 V

(3) 10 V

(4) 10^2 V

24. **A short electric dipole has a dipole moment of 16×10^{-9} C m. 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 :**

$\left(\frac{1}{4\pi\varepsilon_0} = 9 \times 10^9 \text{Nm}^2/\text{C}^2\right)$

(1) 400 V

(2) Zero

(3) 50 V

(4) 200 V

25. **A 40 μF capacitor is connected to a 200 V, 50Hz ac supply. The rms value of the Wrrent in the circuit is, nearly :**

(1) 2.5 A

(2) 25.1 A

(3) 1.7 A

(4) 2.05 A

26. **The average thermal energy for a mono-atomic as is : (k_B is Boltzmann constant and T, aosolute temperature) :**

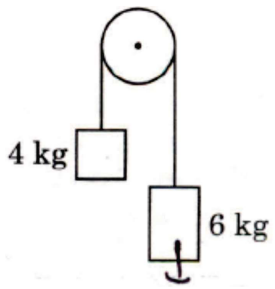
(1) $5/2\, k_B T$

(2) $7/2\, k_B T$

(3) $1/2\, k_B T$

(4) $3/2\, k_B T$

27. **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 fric-tionless (see figure). The acceleration of the system in terms of acceleration due to gravity (g) is :**



(1) g/5

(2) g/10

(3) g

(4) g/2

28. **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) 7.32×10^{-7} rad

(2) 6.00×10^{-7} rad

(3) 3.66×10^{-7} rad

(4) 1.83×10^{-7} rad

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

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

(1) 0.1 kg/m^3

(2) 0.02 kg/m^3

(3) 0.5 kg/m^3

(4) 0.2 kg/m^3

30. **The color code of a resistance is given below:**

The values of resistance and tolerance, respectively are :

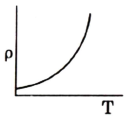
(1) 4.7 kΩ, 5%

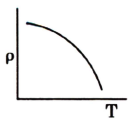
(2) 470 Ω, 5%

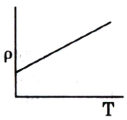
(3) 470 kΩ, 5%

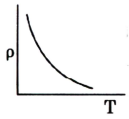
(4) 47 kΩ, 10%

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

(1) 

(2) 

(3) 

(4) 

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

(1) isochoric

(2) isobaric

(3) isothermal

(4) adiabatic

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

(1) $^{101}_{36}Kr$

(2) $^{103}_{36}Kr$

(3) $^{144}_{56}Ba$

(4) $^{91}_{40}Zr$

34. **A resistance wire connected in the left gap of a metre bridge balances a 10 D. 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 1 D. of the resistance wire is :**

(1) 1.5×10^{-1} m

(2) 1.5×10^{-2} m

(3) 1.0×10^{-2} m

(4) 1.0×10^{-1} m

35. **A charged particle having drift velocity of 7.5×10^{-4} m s^{-1} in an electric field of 3×10^{-10} Vm^{-1}, has a mobility in m^2 V^{-1} s^{-1} of:**

(1) 2.5×10^{-6}

(2) 2.25×10^{-15}

(3) 2.25×10^{15}

(4) 2.5×10^{6}

36. **Light with an average flux of20 W/cm² falls on a non-reflecting surface at nor';ual incidence liaving surface area 20 cm². The energy received by the surface during time span of 1 minute is :**

(1) 24×10^3 J

(2) 48×10^3 J

(3) 10×10^3 J

(4) 12×10^3 J

37. **For which one of the following, Bohr model is not valid :**

(1) Deuteron atom

(2) Singly ionised neon atom (Ne^+)

(3) Hydrogen atom

(4) Singly ionised helium atom (He^+)

38. **A spherical conductor ofradius 10cm has a charge of 3.2×10^{-7}C distributed uniformly. What is the magnitude of electric fiela at a point 15 cm from the centre of the sphere :**

$\left(\frac{1}{4\pi\varepsilon_0} = 9 \times 10^9 \text{Nm}^2/\text{C}^2\right)$

(1) 1.28×10^6 N/C

(2) 1.28×10^7 N/C

(3) 1.28×10^4 N/C

(4) 1.28×10^5 N/C

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

(1) 0.06

(2) 0.006

(3) 6

(4) 0.6

40. **In a certain region of space with volume 0.2 m³, the electric potential is found to be 5V throughout. The magnitude of electric field in this region is :**

(1) 1 N/C

(2) 5 N/C

(3) zero

(4) 0.5 N/C

41. **Along 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 :**

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

(1) 6.28×10^{-5} T

(2) 3.14×10^{-5} T

(3) 6.28×10^{-4} T

(4) 3.14×10^{-4} T

42. **Light of frequency 1.5 times the threshold frequency is incident on a photosensitivie material. What will be the photoelectric current if the frequency is halved and intensity is doubled :**

(1) one-fourth

(2) zero

(3) doubled

(4) four times

43. **A capillary tube of radius r is immersed in water and water risesin it to a hei:ght 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) 10.0 g

(2) 20.0 g

(3) 2.5 g

(4) 5.0 g

44. **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) 30 N

(2) 24 N

(3) 48 N

(4) 32 N

45. **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 $\frac{\pi}{3}$. 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) 1.0

(2) –1.0

(3) zero

(4) 0.5

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[NEET-2020], Test held on 13 Sept. 2020

Subject : BIOLOGY

46. The ovary is half inferior in :

(1) Sunflower

(2) Plum

(3) Brinjal

(4) Mustard

47. Identify the wrong statement with regard to Restriction Enzymes :

(1) They are useful in genetic engineering

(2) Sticky ends can be joined by using DNA ligases

(3) Each restriction enzyme functions by inspecting the length of a DNA sequence

(4) They cut the strand of DNA at palindromic sites

48. Identify the wrong statement with reference to transport of oxygen :

(1) Higher H^+ conc. in alveoli favours the formation of oxyhaemoglobin

(2) Low pCO_2 in alveoli favours the formation of oxyhaemoglobin

(3) Binding of oxygen with haemoglobin is mainly related to partial pressure of O_2

(4) Partial pressure of CO_2 can interfere with O_2 binding with haemoglobin

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

(1) Wind and water

(2) Insects and water

(3) Insects or wind

(4) Water currents only

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

(1) 2.2 metres

(2) 2.7 metres

(3) 2.0 metres

(4) 2.5 metres

51. Dissolution of the synaptonemal complex occurs during :

(1) Diplotene

(2) Leptotene

(3) Pachytene

(4) Zygotene

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

(a) Iron	**(i) Photolysis of water**
(b) Zinc	**(ii) Pollen germination**
(c) Boron	**(iii) Required for chlorophyll biosynthesis**
(d) Manganese	**(iv) IAA biosynthesis**

Select the correct option :

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

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

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

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

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

(1) Nucellus

(2) Chalaza

(3) Hilum

(4) Micropyle

54. In relation to Gross primary productivity and Net primary productivity of an ecosystem, which one of the following statements is correct ?

(1) Gross primary producitivity and Net primary productivity are one and same

(2) There is no relationship between Gross primary productivity and Net primary productivity

(3) Gross primary productivity is always less than net primary productivity

(4) Gross primary productivity is always more than net primary productivity

55. 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) (b), (c) and (d)

(2) Only (d)

(3) Only (a)

(4) (a) and (c)

56. Identify the correct statement with reference to human digestive system :

(1) Ileum is a highly coiled part

(2) Vermiform appendix arises from duodenum

(3) Ileum opens into small intestine

(4) Serosa is the innermost layer of the alimentary canal

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

(1) Ammonia and oxygen

(2) Ammonia and hydrogen

(3) Ammonia alone

(4) Nitrate alone

58. 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) Dicotyledonous stem

(2) Dicotyledonous root

(3) Monocotyledonous stem

(4) Monocotyledonous root

59. Bilaterally symmetrical and acoelomate animals are exemplified by :

(1) Aschelminthes

(2) Annelida

(3) Ctenophora

(4) Platyhelminthes

60. Goblet cells of alimentary canal are modified from:

(1) Chondrocytes

(2) Compound epithelial cells

(3) Squamous epithelial cells

(4) Columnar epithelial cells

61. Which of the following is not an attribute of a population ?

(1) Mortality

(2) Species interaction

(3) Sex ratio

(4) Natality

62. Embryological support for evolution was disapproved by :

(1) Charles Darwin

(2) Oparin

(3) Karl Ernst von Baer

(4) Alfred Wallace

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

(1) Lectin

(2) Insulin

(3) Haemoglobin

(4) Collagen

64. Match the following columns and select the correct option :

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

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

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

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

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

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

(1) Low concentration of LH

(2) Low concentration of FSH

(3) High concentration of Estrogen

(4) High concentration of Progesterone

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

(1) Palindromic sequence

(2) Recognition site

(3) Selectable marker

(4) Ori site

67. 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) (c) and (d) (2) (a) and (d)

(3) (a) only (4) (a), (b) and (c)

68. Match the following columns and select the 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	**(iv) Blood cholesterol lowering agent**

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

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

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

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

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

(1) Prop roots

(2) Lateral roots

(3) Fibrous roots

(4) Primary roots

70. Identify the wrong statement with reference to the gene 'I' that controls ABO blood groups :

(1) When I^A and I^B are present together, they express same type of sugar

(2) Allele 'i' does not produce any sugar

(3) The gene (I) has three alleles

(4) A person will have only two of the three alleles

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

(1) Atrial natriuretic factor causes vasoconstriction

(2) Decrease in secretion of renin by JG cells

(3) More water reabsorption due to undersecretion of ADH

(4) Reabsorption of Na^+ and water from renal tubules due to aldosterone

72. Montreal protocol was signed in 1987 for control of :

(1) Release of Green House gases

(2) Disposal of e-wastes

(3) Transport of Genetically modified organisms from one country to another

(4) Emission of ozone depleting substances

73. Meiotic division of the secondary oocyte is completed :

(1) After zygote formation

(2) At the time of fusion of a sperm with an ovum

(3) Prior to ovulation

(4) At the time of copulation

74. By which method was a new breed 'Hisardale' of sheep formed by using Bikaneri ewes and Marino rams?

(1) Cross breeding

(2) Inbreeding

(3) Out crossing

(4) Mutational breeding

75. If the head of cockroach is removed, it may live for few days because :

(1) The head holds a small proportion of a nervous system while the rest is situated along the ventral part of its body

(2) The head holds a 1/3rd of a nervous system while the rest is situated along the dorsal part of its body

(3) The supra-oesophageal ganglia of the cockroach are situated in ventral part of abdomen

(4) The cockroach does not have nervous system

76. Identify the incorrect statement :

(1) Sapwood is the innermost secondary xylem and is lighter in colour

(2) Due to deposition of tannins, resins, oils etc, heart wood is dark in colour

(3) Heart wood does not conduct water but gives mechanical support

(4) Sapwood is involved in conducton of water and minerals from root to leaf

77. Select the option including all sexually transmitted diseases :

(1) AIDS, Malaria, Filaria

(2) Cancer, AIDS, Syphilis

(3) Gonorrhoea, Syphilis, Genital herpes

(4) Gonorrhoea, Malaria, Genital herpes

78. Identify the wrong statement with reference to immunity :

(1) Active immunity is quick and gives full response

(2) Foetus receives some antibodies from mother, it is an example for passive immunity

(3) When exposed to antigen (living or dead) antibodies are produced in the host's body. It is called "Active immunity".

(4) When ready-made antibodies are directly given, it is called "Passive immunity".

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

Column - I	Column - II
(a) Bt cotton	(i) Gene therapy
(b) Adenosine deaminase deficiency	(ii) Cellular defence
(c) RNAi	(iii) Detection of HIV infection
(d) PCR	(iv) Bacillus thuringiensis

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

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

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

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

80. Which of the following statements is correct ?

(1) Adenine pairs with thymine through three H-bonds

(2) Adenine does not pair with thymine

(3) Adenine pairs with thymine through two H-bonds

(4) Adenine pairs with thymine through one H-bond

81. According to Robert May the global species diversity is about :

(1) 50 million

(2) 7 million

(3) 1.5 million

(4) 20 million

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

(1) Defence action

(2) Effect on reproduction

(3) Nutritive value

(4) Growth response

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

(1) Anabaena and Volvox

(2) Chlorella and Spirulina

(3) Laminaria and Sargassum

(4) Gelidium and Gracilaria

84. The enzyme enterokinase helps conversion of :

(1) Caseinogen into casein

(2) Pepsinogen into pepsin

(3) Protein into polypeptides

(4) Trypsinogen into trypsin

85. Match the following columns and select the correct option :

Column - I	Column - II
(a) 6–15 pairs of gill slits	(i) Trygon
(b) Heterocercal caudal fin	(ii) Cyclostomes
(c) Air Bladder	(iii) Chondrichthyes
(d) Poison sting	(iv) Osteichthyes

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

86. 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) Imbibition
(2) Plasmolysis
(3) Transpiration
(4) Root pressure

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

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

88. Match the following coloumns and select the correct option :

Columns - I	Columns - II
(a) Floating Ribs	(i) Located between second and seventh ribs
(b) Acromion	(ii) Head of the Humerus
(c) Scapula	(iii) Clavicle
(d) Glenoid cavity	(iv) Do not connect with the sternum

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

89. Select the correct statement :

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

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

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

91. Which of the following is correct about viroids ?

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

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

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

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

(1) Himalayas
(2) Amazon forests
(3) Western Ghats ofIndia
(4) Madagascar

94. 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) Lubrication of the Penis

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

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

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

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

95. Match the trophic levels with their correct species examples in grassland ecosystem.

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

Select the correct option:

(a) (b) (c) (d)

(1) (iv) (iii) (ii) (i)

(2) (i) (ii) (iii) (iv)

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

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

96. Flippers of Penguins and Dolphins are examples of:

(1) Industrial melanism

(2) Natural selection

(3) Adaptive radiation

(4) Convergent evolution

97. The number of substrate level phosphorylations in one turn of citric acid cycle is :

(1) Two

(2) Three

(3) Zero

(4) One

98. Which of the following statements is not correct?

(1) The functional insulin has A and B chains linked together by hydrogen bonds.

(2) Genetically engineered insulin is produced in E-Coli.

(3) In man insulin is synthesised as a proinsulin.

(4) The proinsulin has an extra peptide called C-peptide.

99. 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. Stapes	iv. Located on the basilar membrane

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

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

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

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

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

(1) Sphase

(2) G_2 phase

(3) M phase

(4) G_1 phase

101. The process of growth is maximum during:

(1) Senescence

(2) Dormancy

(3) Log phase

(4) Lag phase

102. The QRS complex in a standard ECG represents:

(1) Depolarisation of ventricles

(2) Repolarisation of ventricles

(3) Repolarisation of auricles

(4) Depolarisation of auricles

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

(1) Plant nematodes

(2) Insect predators

(3) Insect pests

(4) Fungal diseases

104. In which of the following techniques, the embryos are transferred to assist those females who cannot conceive?

(1) ICSI and ZIFT

(2) GIFT and ICSI

(3) ZIFT and IUT

(4) GIFT and ZIFT

105. Floridean starch has structure similar to :

(1) Mannitol and algin

(2) Laminarin and cellulose

(3) Starch and cellulose

(4) Amylopectin and glycogen

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

(1) Ethylene

(2) Abscisic acid

(3) Cytokinin

(4) Gibberellin

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

	Column-I	Column-II
(a)	Gregarious, polyphagous pest	(i) Asterias
(b)	Adult with radial symmetry and larva with bilateral symmetry	(ii) Scorpion
(c)	Book lungs	(iii) Ctenoplana
(d)	Bioluminescence	(iv) Locusta

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

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

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

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

108. 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) (a) and (b)

(2) (b) and (c).

(3) (d) and (c).

(4) (c) and (a)

109. The first phase of translation is :•

(1) Aminoacylation of tRNA

(2) Recognition of an anti-codon

(3) Binding of mRNA to ribosome

(4) Recognition of DNA molecule

110. Identify the basic amino acid from the following.

(1) Lysine

(2) Valine

(3) Tyrosine

(4) Glutamic Acid

111. The infectious stage of Plasmodium that enters the human body is :

(1) Female gametocytes

(2) Male gametocytes

(3) Trophozoites

(4) Sporozoites

112. Identify the correct statement with regard to G_1 phase (Gap 1) of interphase.

(1) Cell is metabolically active, grows but does not replicate its DNA.

(2) Nuclear Division takes place.

(3) DNA synthesis or replication takes place.

(4) Reorganisation of all cell components takes place.

113. In light reaction, plastoquinone facilitates the transfer of electrons "from :

(1) PS-I to $NADP^+$

(2) PS- I to ATP synthase

(3) PS-II to $Cytb_6f$ complex

(4) $Cytb_6f$ complex to PS- I

114. The oxygenation activity of RuBisCo enzyme photorespiration leads to the formation of:

(1) 1 molecule of 6-C compound

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

(3) 2 molecules of 3-C compound

(4) 1 molecule of 3-C compound

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

(1) Golgi bodies

(2) Polysomes

(3) Endoplasmic reticulum

(4) Peroxisomes

116. 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) a-iii, b-iv, c-i, d-ii (B) a-ii, b-iii, c-i, d-iv

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

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

(1) Cellulose, lecithin

(2) Inulin, insulin

(3) Chitin, cholesterol

(4) Glycerol, trypsin

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

(1) Boveri

(2) Morgan

(3) Mendel

(4) Sutton

119. The specific palindromic sequence which is recognized by EcoRI is :

(1) 5' - CTTAAG - 3'
3' - GAATTC - 5'

(2) 5' - GGATCC - 3'
3' - CCTAGG - 5'

(3) 5' - GAATTC - 3'
3' - CTTAAG - 5'

(4) 5' - GGAACC - 3'
3' - CCTTGG - 5'

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

(1) DNA polymerase

(2) RNA polymerase

(3) DNA ligase

(4) DNA helicase

121. Select the correct match.

(1)	Sickle cell anaemia	–	Autosomal recessive trait, chromosome-II
(2)	Thalassemia	–	X linked
(3)	Haemophilia	–	Y linked
(4)	Phenylketonuria	–	Autosomal dominant trait

122. From his experiments, S.L. Miller produced amino acids by mixing the following in a closed flask:

(1) CH_4, H_2, NH_3 and water vapour at 600°C

(2) CH_3, H_2, NH_3 and water vapour at 600°C

(3) CH_4, H_2, NH_3 and water vapour at 800°C

(4) CH_3, H_2, NH_4 and water vapour at 800°C

123. Match the following columns and select the 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) (c) (d)

(1) (iii) (i) (iv) (ii)

(2) (ii) (i) (iv) (iii)

(3) (iv) (iii) (i) (ii).

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

124. Cuboidal epithelium with brush border ofmicrovilli is found in :

(1) proximal convoluted tubule of nephron

(2) eustachian tube

(3) lining of intestine

(4) ducts of salivary glands

125. Strobili or cones are found in :

(1) Marchantia

(2) Equisetum

(3) Salvinia

(4) Pteris

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

(1) High reflection of light from snow

(2) Damage to retina caused by infra-red rays

(3) Freezing of fluids in the eye by low temperature

(4) Inflammation of cornea due to high dose of UV-B radiation

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

Column-I	Column-II
(a) Typhoid	**(i) Wuchereria**
(b) Pneumonia	**(ii) Plasmodium**
(c) Filariasis	**(iii) Salmonella**
(d) Malaria	**(iv) Haemophilus**

(a) (b) (c) (d)

(1) (ii) (i) (iii) (iv)

(2) (iv) (i) (ii) (iii)

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

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

128. Choose the correct pair from the following:

(1) Nucleases	–	Separate the two strands of DNA
(2) Exonucleases	–	Make cuts at specific positions within DNA
(3) Ligases	–	Join the two DNA molecules
(4) Polymerases	–	Break the DNA into fragments

129. Which of the following statements about inclusion bodies is incorrect :

(1) They lie free in the cytoplasm.

(2) These represent reserve material in cytoplasm

(3) They are not bound by any membrane

(4) These are involved in ingestion of food particles.

130. 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) (a), (b) and (d)

(2) only (d)

(3) (a) and (b)

(4) (c) and (d)

131. Ray florets have:

(1) Hypogynous ovary

(2) Half inferior ovary

(3) Inferior ovary

(4) Superior ovary

132. Match the organism with its use in biotechnology.

(a) Bacillus thuringiensis	**(i) Cloning vector**
(b) Thermus aquaticus	**(ii) Construction of first rDNA molecule**
(c) Agrobacterium tumifaciens	**(iii) DNA polymerase**
(d) Salmonella typhimurium	**(iv) Cry proteins**

Select the correct option from the following:

(a) (b) (c) (d)

(1) (iii) (ii) (iv) (i)

(2) (iii) (iv) (i) (ii)

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

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

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

(1) Phenolic acid

(2) Para-ascorbic acid

(3) Gibberellic acid

(4) Abscisic acid

134. 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)

(1) (i) (ii) (iv) (iii)

(2) (ii) (iv) (iii) (i)

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

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

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

(1) Acetocarmine in UV radiation

(2) Ethidium bromide in infrared radiation

(3) Acetocarmine in bright blue light

(4) Ethidium bromide in UV radiation

136. Which of the following is a natural polymer?

(1) polybutadiene

(2) poly (Butadiene-acrylonitrile)

(3) cis-1, 4-polysioprene

(4) poly (Butadiene-styrene)

137. On electrolysis of dil, sulphuric acid using Platinum (Pt) electrode, the product otbained at anode will be:

(1) H_2S gas (2) SO_2 gas

(3) Hydrogen gas (4) Oxygen gas

138. An element has a body centered cubic (bcc) structure with a cell edge of 288 pm. The atomic radius is:

(1) $\frac{4}{\sqrt{3}}$ x 288 pm (2) $\frac{4}{\sqrt{2}}$ x 288 pm

(3) $\frac{\sqrt{3}}{4}$ x 288 pm (4) $\frac{\sqrt{2}}{4}$ x 288 pm

139. The correct option for free expanion of an ideal gas under adiabatic condition is:

(1) $q < 0,\ \Delta T = 0$ and $w = 0$

(2) $q > 0,\ \Delta T > 0$ and $w > 0$

(3) $q = 0,\ \Delta T = 0$ and $w = 0$

(4) $q = 0,\ \Delta T < 0$ and $w > 0$

140. Which of the following set of molecules will have zero dipole moment?

(1) Nitrogen trifluoride, beryllium difluoride, water, 1, 3-dichlorobenzene

(2) Boron trifluoride, beryllium difluoride, carbon dioxide, 1-4, dichlorobenzene

(3) Ammonia, beryllium difluoride, water 1, 4-dichlorbenzene

(4) Boron trifluoride, hydrogene fluoride, carbon dioxide, 1, 3-dichlorobenzee

141. A mixture of N_2 and Ar gases in a cylinder contains 7 g of N_2 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 N_2 is:

[Use atomic masses (in g mol^{-1}): N = 14, Ar = 40]

(1) 15 bar (2) 18 bar

(3) 9 bar (4) 12 bar

142. Identity the correct statements for the following:

(1) CO_2(g) is used as refrigerant for ice-cream and frozen food.

(2) The structure of C_{60} contains twelve six carbon rigns and twenty five carbon rings.

(3) ZSM-5, a type of zeolite, is used to convert alcohols into gasoline

(4) CO is colorless and odourless gas.

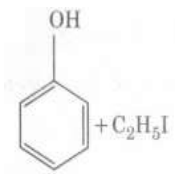
(1) (2) and (3) only

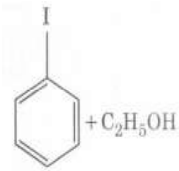
(2) (3) and (4) only

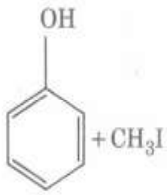
(3) (1), (2) and (3) only

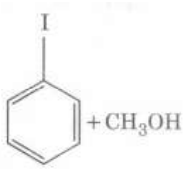
(4) (1) and (3) only

143. Anisole on cleavage with HI gives:

(1) 

(2) 

(3) 

(4) 

144. The mixture which shows positive deviation from Roult's law is:

(1) Acetone + Chloroform

(2) Chloroethane + Bromoethane

(3) Ethanol + Acetone

(4) Benzene + Toluene

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

(1) $F^- < SCN^- < C_2O_4^{2-} < CN^-$

(2) $CN^- < C_2O_4^{2-} < SCN^- < F^-$

(3) $SCN^- < F^- < C_2O_4^{2-} < CN^-$

(4) $SCN^- < F^- < CN^- < C_2O_4^{2-}$

146. Which of the following has maximum number of atoms?

(1) 1 g of CO_2(g) [Atomic mass of O = 16]

(2) 1 g of Li(s) [Atomic mass of Li = 7]

(3) 1 g of Ag(s) [Atomic mass of Ag = 108]

(4) 1 g of Mg(s) [Atomic mass of Mg = 24]

147. Which of the following alkane cannot be made in good yield by Wurtz reaction?

(1) n-Heptane (2) n-Butane

(3) n-Hexane (4) 2, 3-Dimethylbutane

148. Which of the following is not correct about carbon monoxide?

(1) The carboxyhaemoglobin (haemoglobin bound to CO) is less stable than oxyhaemoglobin

(2) It is produced due to incomplete combustion.

(3) It forms carboxyhaemoglobin.

(4) It reduces oxygen carrying ability of blood.

149. For the reaction, $2Cl(g) \rightarrow Cl_2(g)$, 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 $\Delta_r S < 0$

150. Match the following and identify the correct option.

(1) $CO(g) + H_2(g)$	**(i) $(Mg)(HCO_3)_2$+ $Ca(HCO_3)_2$**
(2) Temporary hardnes of water	**(ii) An electron deficient hydride**
(3) B_2H_6	**(iii) Synthesis gas**
(4) H_2O_2	**(iv) Non-planar structure**

	(1)	(2)	(3)	(4)
(1)	(iii)	(iv)	(ii)	(i)
(2)	(i)	(iii)	(ii)	(iv)
(3)	(iii)	(i)	(ii)	(iv)
(4)	(iii)	(ii)	(i)	(iv)

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

(1) $Cu(OH)_2$

(2) $CuCO_3.Cu(OH)_2$

(3) $CuSO_4$

(4) $[Cu(NH_3)_4]^{2+}$

152. Hydrolysis of sucrose is given by the following reactions.

Sucrose + $H_2O \rightleftharpoons$ Glucose + Frcutose

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

(1) 8.314 J mol^{-1} K^{-1} x 300 K x ln(3×10^{13})

(2) -8.314 J mol^{-1} K^{-1} x 300 K x ln(4×10^{13})

(3) -8.314 J mol^{-1} K^{-1} x 300 K x ln(2×10^{13})

(4) 8.314 J mol^{-1} K^{-1} x 300 K x ln(2×10^{13})

153. The calcualted spin only magnetic moment of Cr^{2+} ion is:

(1) 5.92 BM (2) 2.84 BM

(3) 3.87 BM (4) 4.90 BM

154. Measuring Zeta potential is useful in determining with property of colloidal solution?

(1) Stability of the colloidal particles

(2) Size of the colloidal particles

(3) Viscosity

(4) Solubility

155. Which of the following is a cationic detergent?

(1) Cetyltrimethyl ammonium bromide

(2) Sodium dodecylbenzene sulphonate

(3) Sodium laury sulphate

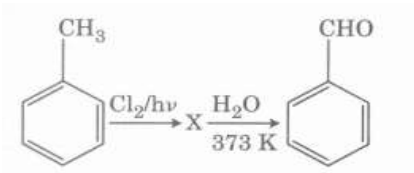
(4) Sodium stearate

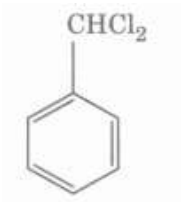
156. Find out the solubility of $Ni(OH)_2$ in 0.1 M NaOH. Given that the ionic product of $Ni(OH)_2$ is 2×10^{-15}.

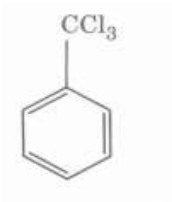
(1) 1×10^{-13} M (2) 1×10^{8} M

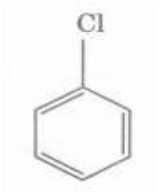
(3) 2×10^{-13} M (4) 2×10^{-8} M

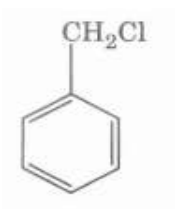
157. Identify compound X in the following sequence of reactions:



(1) 

(2) 

(3) 

(4) 

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

(1) Calcium (2) Potassium

(3) Iron (4) Copper

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

(1) threshold energy

(2) collision frequency

(3) activation energy

(4) heat of reaction

160. The rate constant for a first order reaction is 4.606×10^{-3} s^{-1}. The time required to reduce 2.0 g of the reactant to 0.2 g is:

(1) 500 s (2) 1000 s

(3) 100 s (4) 200

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

(1) 3 (2) 4

(3) 1 (4) 2

162. Identifty the correct statement from the following

(1) Vapour phase refining is carried out for Nickel by Van Arkel method

(2) Pig iron can be moulded into a variety of shapes.

(3) Wrought iron is impure iron with 4% carbon.

(4) Blisker copper has blistered appearance due to evolution of CO_2

163. Identify a molecule which does not exist.

(1) C_2 (2) O_2

(3) He_2 (4) Li_2

164. 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) Hyperconjugation

(3) -I effect of $-CH_3$ groups

(4) +R effect of $-CH_3$ groups

165. HCl was passed through a solution of $CaCl_2.MgCl_2$ and NaCl. Which of the following compound(s) crystallise (s)?

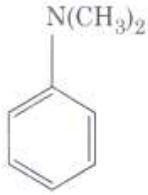
(1) Only $MgCl_2$

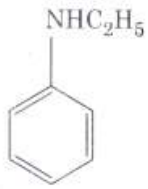
(2) NaCl, $MgCl_2$ and $CaCl_2$

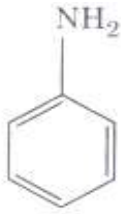
(3) Both $MgCl_2$ and $CaCl_2$

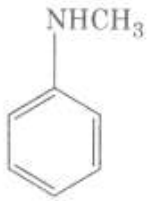
(4) Only NaCl

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

(1) 

(2) 

(3) 

(4) 

167. Identify the incorrect match.

Name	IUPAC Official Name
(1) Unnilunium	**(i) Mendelevium**
(2) Unnitrium	**(ii) Lawrencium**
(3) Unnilhexium	**(iii) Seaboragium**
(4) Ununnnium	**(iv) Darmstadtium**

(1) (3), (iii) (2) (4), (iv)

(3) (1), (i) (4) (2), (ii)

168. Reaction between acetone and methylmagnesium chloride followed by hydrolysis will give:

(1) Tert, butyl alcohol (2) Isobutyl alcohol

(3) Isopropyl alcohol (4) Sec. butyl alcohol

169. Sucrose on hydrolysis gives:

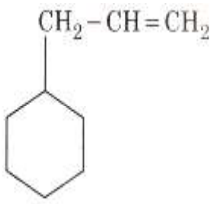
(1) α -D-Glucose + β -D-Fructose

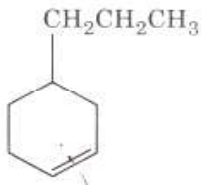
(2) α -D-Fructose + β -D-Fructose

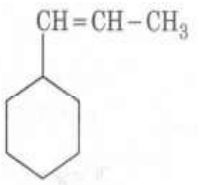
(3) β -D-Glucose + α -D-Fructose

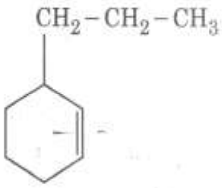
(4) α -D-Glucose + β -D-Glucose

170. An alkane on ozonolysis gives methanal as one of the product. Its structure is:

(1) 

(2) 

(3) 

(4) 

171. Identify the incorrect statement.

(1) Interstitial compounds are those that are formed when small atoms like H, C or N are trapped inside the crystal lattices of metals.

(2) The oxidation states of chromium in CrO_4^{2-} and $Cr_2O_7^{-2}$ are not the same

(3) Cr^{2+} (d^4) is a strongest reducing agent than Fe^{2+}(d^6) in water.

(4) 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.

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

(1) Tyrosine

(2) Lysine

(3) Serine

(4) Alanine

173. which of the following oxoacid of sulphur has -O-O- linkage?

(1) $H_2S_2O_8$, peroxodisulphuric acid

(2) $H_2S_2O_7$, pyrosulphuric acid

(3) H_2SO_3, sulphurous acid

(4) H_2SO_4, sulphuric acid

174. Elimination reaction of 2-Bromo-pentane to form pent-2-ene is:

(1) β -Elimination reaction

(2) Follows Zaitseve rule

(3) Dehydrohalogentaiton reaction

(4) Dehydration reaction

(1) (2), (3), (4) (2) (1), (2)., (4)

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

175. Match the following :

Oxide	Nature
(1) CO	**(i) Basic**
(2) BaO	**(ii) Neutral**
(3) Al_2O_3	**(iii) Acidic**
(4) Cl_2O_7	**(iv) Amphoteric**

Which of the following is correct option?

	(1)	(2)	(3)	(4)
(1)	(iii)	(iv)	(i)	(ii)
(2)	(iv)	(iii)	(ii)	(i)
(3)	(i)	(ii)	(iii)	(iv)
(4)	(ii)	(i)	(iv)	(iii)

176. The freezing point depression constant (K_f) of benzene is 5.12 K kg mol^{-1}. The freezing point depresion for the solution of molality 0.078 m containing a non-electrolyte solute in benzene is (rounded off up to two decimal places):

(1) 0.40 K

(2) 0.60 K

(3) 0.20 K

(4) 0.80 K

177. Paper chromatography is an example of:

(1) Thin layer chromatography

(2) Column chromatography

(3) Adsorption chromatography

(4) Partition chromatography

178. What is the change in oxidation number of carbon in the following reaction?

$$CH_4(g) + 4Cl_2(g) \rightarrow CCl_4(l) + 4HCl(g)$$

(1) -4 to +4

(2) 0 to -4

(3) +4 to +4

(4) 0 to +4

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

(1) Cross Cannizzaro's reaction

(2) Cross Aldol condensation

(3) Aldol condensation

(4) Canizzaro's reaction

180. The number of protons, neutrons and electrons in $^{175}_{71}Lu$, respectively, are:

(1) 71, 71 and 104

(2) 175, 104 and 71

(3) 71, 104 and 71

(4) 104, 71 and 71