## Ravi Maths Tuition Centre

Time : 180 Mins　　　　　T16 1　　　　　Marks : 725

1. Two astronauts have deserted their spaceship in a region of space far from the gravitational attraction of any other body. Each has a mass of 100 kg and they are 100 m apart. They are initially at rest relative to one another. How long will it be before the gravitational attraction brings them 1 em closer together?
   a) 2.52 days　b) 1.41 days　c) 0.70 days　d) 1.41 sce

2. In the circuit shown, the value of currents I_1, I_2 and I_3 are
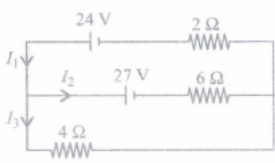
   a) $3A, \frac{-3}{2}A, \frac{9}{2}A$　b) $\frac{9}{2}A, 3A, \frac{-3}{2}A$　c) 5A,4A,-3A　d) $7A, \frac{5}{4}A, \frac{9}{2}A$

3. Six similar bulbs are connected as shown in the figure with a DC source of emf E and zero internal resistance. The ratio of power consumption by the bulbs when (i) all are glowing and (ii) in the situation when two from section A and one from section B are glowing, will be: _____.

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TEST 24/120
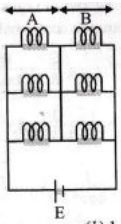
   a) 9:4　b) 1:2　c) 2:1　d) 4:9

4. If C_s be the velocity of sound in air and C be the r.m.s velocity, then:
   a) $C_s < C$　b) $C_s = C$　c) $C_s = C(\gamma/3)^{1/2}$　d) None of these

5. Two satellites are moving in orbits $R_1 > R_2$; then the velocities associated with them are
   a) $v_1 > v_2$　b) $v_1 = v_2$　c) $v_1 = 2v_2$　d) $v_1 < v_2$

6. The distance of Netune and Saturn from Sun are nearly 1013 and 101 meters respectively. Assuming that they move in circular orbits, their periodic times will be in the ratio
   a) $\sqrt{10}$　b) 100　c) $10\sqrt{10}$　d) $1\sqrt{10}$

7. convex lens of focal length f is placed some, where in between an object and a screen. The distance between object and screen is x. If numerical value of magnification produced by lens is m, then focal length of lens is
   a) $\frac{mx}{(m+1)^2}$　b) $\frac{mx}{(m-1)^2}$　c) $\frac{(m+1)^2}{m}$　d) $\frac{(m-1)^2}{m}$

8. The first model of atom in 1898 was proposed by
   a) Ernst Rutherford　b) Albert Einstein　c) J. J. Thomson　d) Niels Bohr

9. The maximum range of a projectile is 500 m. If the particle is thrown up a plane inclined at an angle of 30° with the same speed, the distance covered by it along the inclined plane will be:
   a) 250 m　b) 500 m　c) 750 m　d) 100 m

10. Assertion: Value of radius of gyration of a uniform rigid body depends on axis of rotation.

Reason : Radius of gyration is root mean square distance of particles of the body from the axis of rotation.

a)
If both assertion and reason are true and reason is the correct explanation of assertion.

b)
If both assertion and reason are true but reason is not the correct explanation of assertion

c) If assertion is true but reason is false.

d) If both assertion and reason are false.

11. A simple harmonic oscillator has a period T and energy E. The amplitude of the oscillator is doubled. Choose the correct answer.
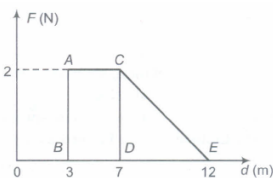   a) Period and energy get doubled.
    b) Period gets doubled while energy remains the same
    c) Energy gets doubled while period remains the same
    d) Period remains the same and energy becomes four times.

12. Force F on a particle moving in a straight line varies with distance d as shown in the figure. The work done on the particle during its displacement of 12m is:

a) 18 J   b) 21 J   c) 26 J   d) 13 J

13. An electron having momentum 2.4×10^{-23} kg m s^{-1} enters a region of uniform magnetic field of 0.15 T. The field vector makes an angle of 30° with the initial velocity vector of the electron. The radius of the helical path of the electron in the field shall be
    a) 2 mm   b) 1 mm   c) $\frac{\sqrt{3}}{2}$ mm   d) 0.5 mm

14. A thin lens of glass ($\mu = 1.5$) of focal length ± 10 cm is immersed in water ($\mu = 1.33$). The new focal length is
    a) 20 cm   b) 40 cm   c) 48 cm   d) 12 cm

15. Two particles of equal masses are revolving in circular paths of radii r_1 and r_2 respectively with the same period. The ratio of their centripetal force is:
    a) r_1/r_2 b) $\sqrt{r_2/r_1}$ c) $(r_1/r_2)^2$ d) $(r_2/r_1)^2$

16. The vertical component of earth's magnetic field at a place is $\sqrt{3}$ times the horizontal component the value of angle of dip at this place is
    a) 30°   b) 45°   c) 60°   d) 90°

17. I gm of an ideal gas expands isothermally, heat flow will be:
    a) from the gas to outside atmosphere   b) from outside atmosphere to gas
    c) zero   d) both (a) and (b)

18. Pressure of an ideal gas is i=ncreases by keeping temperature constant.What is effect on kinetic energy of molecules?
    a) Increase   b) Decrease   c) No change   d) Cannot be determined

19. An astronomical telescope has a large aperture to
    a) Reduce spherical aberration   b) Have high resolution
    c) Increase span of observation   d) Have low dispersion

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20. (A) Cars and aeroplanes are streamlined.

(R) Bernoulli's theorem hold for incompressible, non-viscous fluids.

a)

If both assertion and reason are true and reason is the correct explanation of assertion

b)

If both assertion and reason are true but reason is not the correct explanation of assertion

c) If assertion is true but reason is false

d) If both assertion and reason are false

e) If assertion is false but reason is true

21. A Carnot engine whose efficiency is 50% has an exhaust temperature of 500 K. If the efficiency is to be 60% with the same intake temperature, the exhaust temperature must be (in K).

a) 800   b) 200   c) 400   d) 600

22. A stuntman plans to run across a roof top and then horizontally off it to land on the roof of next building. The roof of the next building is 4.9 metre below the first one and 6.2 metre away from it. What should be his minimum roof top speed in m/s, so that he can successfully make the jump?

a) 3.1   b) 4.0   c) 4.9   d) 6.2

23. The magnifying power of the astronomical telescope for normal adjustment is 50. The focal length of the eyepiece is 2 cm. The required length of the telescope for normal adjustment is

a) 102 cm   b) 100 cm   c) 98 cm   d) 25 cm

24. At what height h above the earth, the value of g becomes g/2? (R = Radius of the earth)

a) 3 R   b) $\sqrt{2}$R   c) ($\sqrt{2}$-1)R   d) $\frac{1}{\sqrt{2}}$R

25. When a man is standing, rain drops appear to him falling at 60° from the horizontal from his front side. When he is travelling at 5 km per hour on a horizontal road they appear to him falling at 30°, from the horizontal from his front side. The actual speed of the rain is (in km per hour):

a) 3   b) 4   c) 5   d) 6

26. A track has two inclined surface AB and DC each of length 3 m and angle of inclination of 30° with the horizontal and a central horizontal part of length 4 m as shown in figure. A block of mass 0.2 kg slides from rest from point A. The inclined surfaces are frictionless. If the coefficient of friction between the block and the horizontal flat surface is 0.2, where will the block finally come to rest
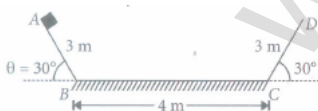
a) 0.5 m away from point B   b) 3.5 m away from point B
c) 0.5 m away from point C   d) 1.5 m away from point C

27. The radius of curvature of the convex face of a plano-convex lens is 12 cm and the refractive index of the material of the lens is 1.5. Then, the focal length of the lens is

a) 6 cm   b) 12 cm   c) 18 cm   d) 24 cm

28. n resistors each of resistance R first combine to give maximum effective resistance and then combine to give minimum effective resistance. The ratio of the maximum to minimum resistance is

a) n   b) n^2 c) n^{-1} d) n

29. For a certain gas, the ratio of specific heats is given to be g = 1.5. For this gas:

a) $C_V = 3R/J$ b) $C_p = 3R/J$ c) $C_p = 5R/J$ d) $C_V = 5R/J$

30. The angular resolution of a 10 cm diameter telescope at a wavelength 5000Å is of the order

a) 10^6 rad   b) 10^{-2} rad   c) 10^{-4} rad   d) 10^{-6} rad

31. If a variable frequency ac source is connected to a capacitor then with decrease in frequency the displacement current will

a) increase   b) decrease   c) remains constant

d) first decrease then increase

32. A Diwali rocket is ejecting 0.05 kg of gases per second at a velocity of 400 m/sec. The accelerating force on the rocket is :

a) 20 dynes   b) 22 dynes   c) 20 N   d) 1000 N

33. In the following question, a statement of assertion is followed by a statement of reason. Mark the correct choice as :

Assertion: Potentiometer is used only to compare potential differences.

Reason: The potentiometer draws current from the voltage source being measured.

a) If assertion is true but reason is false

b) If both assertion and reason are false

c)
If both assertion and reason are true and reason is the correct explanation of assertion.

d)
If both assertion and reason are true but reason is not the correct explanation of assertion

34. A uniform disc of mass m and radius R is rolling down a rough inclined plane which makes an angle 30° with the horizontal. If the coefficients of static and kinetic friction are each equal to μ and the only forces, acting are gravitational and frictional, then the magnitude of the frictional force acting on the disc is:

a) (mg/3) upwards   b) (mg/3) downwards   c) (mg/6) upwards

d) (mg/6) downwards

35. Two coils have a mutual inductance of 0.005H. The current changes in the first coil according to equation i = i_0 sin ωt, i_0 = 10 A and w = 100π rad/s. The maximum value of emf in the second coil is _____.

a) 2π b) 5π c) π d) 4π

36. Heat given to a system can be associated with

a) kinetic energy of random motion of molecules

b) kinetic energy of orderly motion of molecules

c) total kinetic energy of random and orderly motion of molecules

d)
kinetic energy of random motion in some cases and kinetic energy of orderly motion in other

37. A planet revolves around the sun in an elliptical orbit. The linear speed of the planet will be maximum at
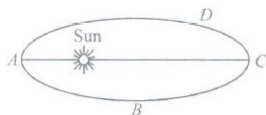
a) A   b) B   c) C   d) D

38. In Young's double slit experiment, if the separation between coherent sources is halved and the distance of the screen from the coherent source is doubled, then the fringe width becomes_____
   a) one-fourth   b) double   c) half   d) four times

39. If the velocity of light is taken as the unit of velocity and one year is taken as the unit of time, what is the unit of length?
   a) 10^{14} m   b) 9.46 x 10^{15} m   c) 9.46 x 10^{13} m   d) 9.46 x 10^{13} cm

40. Wave theory cannot explain the phenomena of
   A. Polarization
   B. Diffraction
   C. Compton effect
   D. Photoelectric effect
   Which of the following is correct?
   a) A and B   b) B and D   c) C and D   d) D and A

41. Two towers on the top of two hills are 40 km apart. The line joining them passes 50 m above a hill halfway between the towers. The longest wavelength of radio waves which can be sent between the two towers without appreciable diffraction effects is
   a) 1.25 m   b) 0.125 m   c) 2.50 m   d) 0.250 m

42. Two slits in Young's double slit experiment have widths in the ratio 81 : 1. The ratio of the amplitudes of light waves is
   a) 3:1   b) 3:2   c) 9:1   d) 6:1

43. (A) In order to hit a target, a man should point his rifle at a point higher than the target.
   (R) The bullet suffers a vertically downward deflection due to gravity.
   a)
   If both assertion and reason are true and reason is the correct explanation of assertion.
   b)
   If both assertion and reason are true but reason is not the correct explanation of assertion.
   c) If assertion is true but reason is false.
   d) If both assertion and reason are false.
   e) If assertion is false but reason is true.

44. A person can see clearly objects only when they lie between 50 cm and 400 cm from his eyes. In order to increase the maximum distance of distinct vision to infinity, the type and power of the correcting lens, the person has to use, will be_____
   a) convex, +2.25 diopter   b) concave, -2.25 diopter   c) concave, -0.25 diopter
   d) convex, +0,15 diopter

45. A man can swim with a speed of 4 km h^{-1} in still water. He crosses a river 1 km wide that flows steadily at 3 km h^{-1}. If he makes his strokes normal to the river current, how far down the river does he go when he reaches the other bank?
   a) 500 m   b) 600 m   c) 750 m   d) 850 m

46. In the formula X = 3 YZ^2, X and Z have dimensions of capacitance and magnetic induction respectively. The dimensions of Y in MKSQ system are
   a) $[M^{-3}L^{-2}T^4Q^4]$ b) $[M^{-2}L^{-1}T^5Q^3]$ c) $[M^{-1}L^{-2}T^4Q^4]$ d) $[M^{-3}L^{-1}T^4Q^4]$

47. A particle is projected under gravity with $\sqrt{2ag}$ velocity from a point at a height h above the level plane at an angle θ to it. The maximum range R on the ground is:

a) $\sqrt{(a^2+1)h}$ b) $\sqrt{a^2h}$ c) $\sqrt{ah}$ d) $2\sqrt{a(a+h)}$

48. The magnetic moment associated with a circular coil of 35 turns and radius 25 cm, if it carries a current of 11 A is
    a) 72.2 A m^2 b) 70.5 A m^2 c) 74.56 A m^2 d) 75.56 A m^2

49. Two polaroids P_2 and P_2 are placed with their axis perpendicular to each other. Unpolarised light I_0 is incident on P_1. A third polaroid P3 is kept in between P_1 and P_2 such that its axis makes an angle 45° with that of P_1' The intensity of transmitted light through P_2 is:
    a) I_0/4   b) I_o/8   c) I_o/6   d) I_o/2

50. If a vector $2\hat{i} + 3\hat{j} + 8\hat{k}$ is perpendicular to the vector
    $4\hat{i} + 4\hat{j} + \alpha\hat{k}$. Then the value of I is :
    a) -1   b) 1/2   c) -1/2   d) 1

51. Match column I with column II and select the correct option from the codes given below.

	Column I		Column II
A.	Hirudin	(i)	Hydra
B.	Canal system	(ii)	Echinodermata
C.	Nematocysts	(iii)	Leech
D.	Feather star	(iv)	Sponges
E.	Insects	(v)	Termites

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

52. choose the incorrect statement about Phycomycetes:-
    a) Members are found in aquatic habits
    b) Spores are endogenously produced in sporangium
    c) A zygospores is formed by reduction division
    d) The show all type of syngamy

53. A cell at telophase stage is observed by a student in a plant brought from the field. He tells his teacher that this cell is not like other cells is not like other cells telophase stage. There is no formation of cell plate and thus the cell is containing more number of chromosomes as compared to other dividing cells. This would result in :-
    a) Aneuplody   b) Polyploidy   c) Somaclonal variation   d) Polyteny

54. MALT constitutes about _____ per cent of the lymphoid tissue in human body.
    a) 50%   b) 20%   c) 70%   d) 10%

55. Choose the wrong enzymatic reaction.
    a) $Sucrose \xrightarrow{Invertase} Glucose + Fructose$ b) $Lactose \xrightarrow{Lactase} Glucose + Fructose$
    c) $Pepsinogen \xrightarrow{HCl} Pepsin$ d) $Maltose \xrightarrow{Maltase} Glucose + Glucose$

56. Association between mycobiont and phycobiont are found in
    a) mycorrhiza   b) root   c) lichens   d) BGA.

57. High concentration of nutrients especially nitrates and phosphates in water can accelerate which of the following phenomenon?
    a) Algal bloom   b) Eutrophication   c) Biomagnification   d) Both (a) and (b)

58. Use of anti-histamines and steroids give a quick relief from_____ .
    a) nausea   b) cough   c) headache   d) allergy

59. When a certain character is inherited only through female,parents it probably represents____

a) multiple plastid inheritance   b) cytoplasmic inheritance

c) incomplete dominance   d) Mendelian nuclear inheritance

60. **Assertion:** Secondary succession always involves a predictable sequence of species and ends up with the same climax community as existed prior to the disturbance.

Reason: A pond cannot be considered as a selfsustained ecosystem as it does not possess all the structural and functional components which work as a unit in an ecosystem.

a)

If both assertion and reason are true and reason is the correct explanation of assertion.

b)

If both assertion and reason are true but reason is not the correct explanation of assertion.

c) If assertion is true but reason is false.

d) If both assertion and reason are false.

61. Appendicular skeleton includes

a) girdles and their limbs   b) vertebrae   c) skull and vertebral column

d) ribs and sternum

62. In an organism DNA, which is double stranded 17% of the bases were shown to be cytosine percentage of the other three bases expected present in this DNA are:-

a) G-17%, A-16.5%, T-32.5%   b) G-17%, A-33%, T-33%

c) G-8.5%, A-50%, T-24.5%   d) G-34%, A-24.5%, T-24.5%

63. Fructose is absorbed into the blood through mucosa cells of intestine by the process called_____

a) active transport   b) facilitated transport   c) simple diffusion

d) co - transport mechanism

64. Among the following, where do you think the process of decomposition would be the fastest?

a) Tropical rainforest   b) Antarctic   c) Dry arid region   d) Alpine region

65. All of the following statements concerning the Actinomycetes filamentous soil bacterium Frankia are correct except that Frankia _____.

a) Can induce root nodules on many plant species.

b) Cannot fix nitrogen in the free-living state.

c)

Forms specialised vesicles in which the nitrogenase is protected from oxygen by a chemical barrier involving triterpene hopanoids.

d)

Like Rhizobium, it usually affects its host plant through root hair deformation and stimulates cell proliferation in the host's cortex.

66. Which of the following options correctly represents the lung conditions in asthama and emphysema, respectively?

a) Increased respiratory surface; Inflammation of bronchioles

b) Increased number of bronchioles; Increased respiratory surface

c) Inflammation of bronchioles; Decreased respiratory surface

d) Decreased respiratory surface; Inflammation of bronichioles

67. One very special feature in the earthworm is that

a) fertilisation of eggs occurs inside the body

b) the typhlosole greatly increases the effective absorption area of intestine

c)

the S-shaped setae embedded in the integument are the defensive weapons used against the enemies

d) it has a long dorsal tubular heart.

68. Assertion: Small sized animals are rarely found in polar regions.
Reason: Small sized animals have larger surface area relative to their volume and they have to spend much energy to generate body heat through metabolism.

a)

If both assertion and reason are true and reason is the correct explanation of assertion.

b)

If both assertion and reason are true but reason is not the correct explanation of assertion.

c) If assertion is true but reason is false.

d) If both assertion and reason are false.

69. Anaerobic work becomes painful due to accumulation of
a) Ca^{+2} ions   b) Myosin   c) Lactic acid   d) Creatine phosphate

70. Half life period of C is about ____
a) 500 years   b) 5000 years   c) 50 years   d) 5×10^4 years

71. Choose the right one among the statements given below.
a) IUDs are generally inserted by the user herself.
b) IUDs increase phagocytosis reaction in the uterus.
c) IUDs suppress gametogenesis.
d) IUDs once inserted need not be replaced.

72. After karyogamy followed by meiosis, spores are produced exogenously in
_____ .
a) Agaricus   b) Alternaria   c) Neurospora   d) Saccharomyces

73. Which out of the following statements is incorrect?
a)
The breakdown product of glucose which enters into mitochondrion during aerobic respiration is pyruvic acid generated in the cytosol.

b)
When the electrons pass from one carrier to another via complex I to IV in the electron transport chain, they are coupled to ATP synthase (complex V) for the production of ATP from ADP and Pi.

c)
The ratio of volume of O_2 consumed in respiration to the volume of CO_2 evolved is called as the respiratory quotient (RQ).

d)
Compensation point is the point reached in a plant when the rate of photosynthesis is equal to the rate of respiration

74. Read the following statements and select the correct option.
Statement 1: When the immune system fails to recognise 'self' from 'nonself and starts destroying body's own proteins, this leads to auto-immune diseases.
Statement 2: Addison's disease and rheumatoid arthritis are auto-immune diseases.

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a) Both statements 1 and 2 are correct.

b) Statement 1 is correct but statement 2 is incorrect.

c) Statement 1 is incorrect but statement 2 is correct.

d) Both statements 1 and 2 are incorrect.

75. Which one of the following is resistant to enzyme action?

a) Cork   b) Wood fibre   c) Pollen exine   d) Leaf cuticle

76. An organism used as a biofertiliser for raising soyabean crops is _____.

a) Azotobacter   b) Azospirillum   c) Rhizobium   d) Nostoc

77. The 'Devonian period' is considered to be as

a) age of fishes   b) age of amphibians   c) age of reptiles   d) age of mammals

78. Crossing over occurs during

a) Pachytene   b) Diplotene   c) Diakinesis   d) Zygotene

79. To produce 102 pollen grains, how many meiotic divisions are required?

a) 25   b) 25.5   c) 26   d) 27

80. According to Boyle's law, the product of pressure and volume is a constant. Hence,

a) if volume of lungs is increased, then pressure decreases proportionately

b) if volume of lungs is increased, then pressure also increases proportionately

c) if volume of lungs is increased, then pressure decreases disproportionately

d) if volume of lungs is increased, then pressure remains the same

81. Changes in CnRH pulse frequency in females is controlled by circulating levels of:

a) Estrogen and inhibin   b) Progesterone only   c) Progesterone and inhibin

d) Estrogen and progesterone.

82. Aerobic respiratory pathway is appropriately termed_____

a) parabolic   b) amphibolic   c) anabolic   d) catabolic

83. Reduction in pH of blood will _____ .

a) reduce the rate of heart beat.   b) reduce the blood supply to the brain.

c) decrease the affinity of hemoglobin with oxygen.

d) release bicarbonate ions by the liver.

84. The phosphates remain outside the natural cycle for a long time

a) When they form compounds with metals

b) When they are incorporates in bone and teeth

c) When the bodies of the organisms excrete and decompose

d) Both (1) & (2)

85. To determine the effect of intra-specific competition on the growth of saplings of Eucalyptus dives, an experiment was designed in which two sets of pots were used. In the first set only 1 sapling was planted per pot and in the other set 16 saplings were planted per pot. To check for the effect of intra-specific competition on allocation of resources, a decreasing amount of water was added to each set.

The results have been graphically indicated below. Which of the following conclusions can be best drawn from the study?
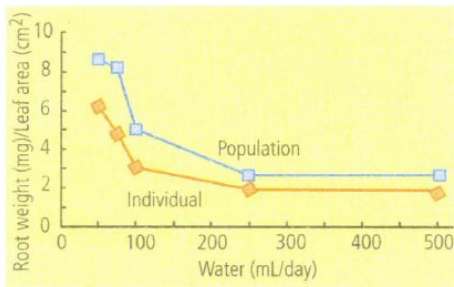
a) More resources are allocated to the root during low water conditions

b) Competition for water among individuals of a population causes more root growth as compared to individuals who are growing alone.

c) Lesser leaves are formed under low water conditions

d) Root growth is higher in individuals grown singly as compared to individuals in populations.

86. Ladybird is useful to get rid of
    a) Aphids   b) Mosquitoes   c) Boll worm   d) Jassids

87. The second maturation division of the mammalian ovum occurs _____
    a) shortly after ovulation before the ovum makes entry into the fallopian tube.
    b) until after the ovum has been penetrated by a sperm.
    c) until the nucleus of the sperm has fused with that of the olum.
    d) in the graafian follicle following the first maturation division.

88. In the following question, a statement of assertion is followed by a statement of reason. Mark the correct choice as :
    Assertion: The technique of growing plants in a nutrient solution is known as hydroponics.
    Reason: Hydroponics is used for commercial production of vegetables such as tomato, seedless cucumber and lettuce.
    a) If both assertion and reason are true and reason is the correct explanation of assertion
    b) If both assertion and reason are true but reason is not the correct explanation of assertion
    c) If assertion is true but reason is false
    d) If both assertion and reason are false.

89. Cri-du-chat syndrome in humans is caused by the
    a) Fertilization of an XX egg by a normal Y-bearing sperm
    b) Loss of half of the short arm of chromosome 5
    c) Loss of half of the Long arm of chromosome 5
    d) Trisomy of 21st chromosome

90. If a double stranded DNA has 20% of cytosine, what will be the percentage of adenine in it?
    a) 20%   b) 40%   c) 30%   d) 60%

91. Nerve fibres transmit the nerve message by _____ means.
    a) chemical   b) physical   c) electrochemical   d) electrical

92. **Assertion:** The trichomes in the shoot system are usually multicellular.
    Reason: The trichomes help in preventing water loss due to evaporation.
    a) If both assertion and reason are true and reason is the correct explanation of assertion.
    b) If both assertion and reason are true but reason is not the correct explanation of assertion.
    c) If assertion is true but reason is false.
    d) If both assertion and reason are false.

93. Pneumatophores occur in :
    a) Carnivorous plants   b) Free-floating hydrophytes   c) Halophy.tes
    d) Submerged hydrophytes

94. Which of the following RNAs should be most abundant in animal cell?
    a) t-RNA   b) m - RNA   c) mi-RNA   d) r-RNA

95. Which of the following statements is incorrect with regard to bilateral symmetry?
    a) Body can be divided into two equal halves by a single plane only.
    b) The organisms that show bilateral symmetry have paired body organs that occur on the two sides of a central axis.
    c) It is found in all invertebrates and few vertebrates.
    d) Spider and crab show bilateral symmetry

96. Consider the following water conservation mechanisms
    A. Nasal countercurrent mechanism
    B. Dependence on metabolic water
    C. Highly hypertonic urine
    D. Living more opn protein rich diet
    The kangaroo rat living in desert can survive without drinking water because of
    a) A, B & C   b) A, B &D   c) B, C & D   d) A, C & D

97. Species diversity _____ as we move away from the _____ towards ____
    a) decreases, equator, poles   b) increases, equator, poles
    c) decreases, poles, equator   d) none of these

98. Bridge between two generations which contributes equally in the heredity of the offsprings is
    a) Chromosome   b) Somatic cells   c) Sperm and egg   d) Factor

99. Sensitive pigmented layer of eye is_____
    a) cornea   b) retina   c) sclerotic   d) iris

100. Which struture involved in genetic engineerting:
    a) Plastid   b) Plasmid   c) Codon   d) None

101. Which of the following compounds reacts slower in electrophilic substitution?
    a) $C_6H_5NO_2$ b) C_6H_5OH c) $C_6H_5CH_3$ d) $C_6H_5NH_2$

102. Which one of the following expressions represent the electron probabilitv function (D)
    a) $4\pi r dr \Psi^2$ b) $4\pi r^2 dr \Psi$ c) $4\pi r^2 dr \Psi^2$ d) $4\pi r dr \Psi$

103. Butane nitrile can be prepared by heating
    a) propyl alcohol with KCN   b) butyl chloride with KCN
    c) butyl alcohol with KCN   d) propyl chloride with KCN.

104. Which one of the following sets of monosaccharides forms sucrose?

a) α-D-galactopyranose and α-D glucopyranose
b) α-D-glucopyranose and β-D-fructofuranose
c) β-D-galactopyranose and α-D glucopyranose
d) α-D-galactopyranose and β-D glucopyranose

105. **Assertion:** Third law of thermodynamics is confined to pure crystalline solids.
Reason: Theoretical arguments and practical evidences have shown that entropy of solutions and super cooled liquids is not zero at 0 K.

a)
If both assertion and reason are true and reason is the correct explanation of assertion.

b)
If both assertion and reason are true but reason is not the correct explanation of assertion.

c) If assertion is true but reason is false.

d) If both assertion and reason are false.

106. When chlorine is passed through propene at 400°C, which of the following is formed?

a) PVC   b) Allyl chloride   c) Propyl chloride   d) 1, 2-Dichloroethane

107. The total number of possible isomers of the complex compound $[Cu^{II}(NH_3)_4]$ $[Pt^{II}Cl_4]$ are:

a) 5   b) 6   c) 3   d) 4

108. According to the adsorption theory of catalysis, the speed of the reaction increases because

a) Adsorption lowers the activation energy of the reaction

b)
The concentration of reactant molecules at the active centres of the catalyst becomes high due to strong adsorption

c)
In the process of adsorption, the activation energy of the molecules becomes large.

d) Adsorption produces heat which increase the speed of the reaction

109. Work done on an ideal gas in a cylinder when it is compressed by an external pressure in a single step is shown below:

Which of the following graphs will show the work done on the gas?
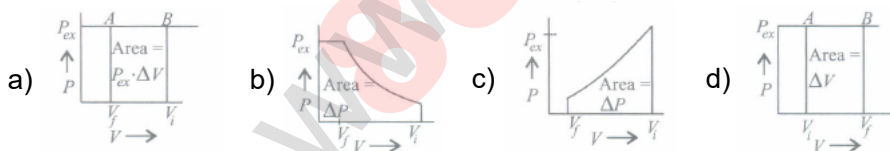
110. The number of electrons involved in the conversion of MnO_4^- to MnO_2 is

a) 3   b) 4   c) 1   d) 2

111. Hydrolysis of $SiCl_4$ gives

a) $Si(OH)_4$ b) $SiOCl_2$ c) SiO_2 d) H_2SiO_4

112. $[Co(NH_3)_4(NO_2)_2]Cl$ exhibits:

a) linkage isomerism, geometrical isomerism and optical isomerism
b) linkage isomerism, ionization isomerism and optical isomerism
c) linkage isomerism, ionization isomerism and geometrical isomerism
d) ionization isomerism, geometrical isomerism and optical isomerism

113. Guanine is an example of

a) a nitrogenous base   b) a nucleoside   c) a nucleotide   d) phosphate

114. Which of the following is false statement?
a) BH_3 is a Lewis acid   b) All the B-H distances in diborane (B_2H_6) are equal
c) Boranes are easily hydrolysed   d) $LiAlH_4$ reduces BCl_3 to borane

115. The most stable oxidation state of chromium is
a) + 5   b) + 3   c) + 2   d) + 4

116. What is the correct dipole moment of NH_3 and NF_3 respectively?
a) 4.90×10^{-30} cm and 0.80×10^{-30} cm
b) 0.80×10^{-30} cm and 4.90×10^{-30} cm
c) 4.90×10^{-30} cm and 4.90×10^{-30} cm
d) 0.80×10^{-30} cm and 0.80×10^{-30} cm

117. Which of the following gases is not responsible for photochemical smog?
a) Oxides of nitrogen   b) Hydrocarbons   c) Inert gases   d) Carbon monoxide

118. Blood cells retain their normal shape in solutions which are
a) hypotonic to blood   b) isotonic to blood   c) hypertonic to blood
d) equinormal to blood

119. $[Pt(NH_3)_4][CuCl_4]$ and $[Cu(NH_3)_4][PtCl_4]$ are known as
a) ionisation isomers   b) coordination isomers   c) linkage isomers
d) polymerisation isomers.

120. Assertion: Heavy metals such as cadmium, mercury, nickel etc. are water pollutants.
Reason: Heavy metals are not harmful to humans
a)
If both assertion and reason are true and reason is the correct explanation of assertion.
b)
If both assertion and reason are true but reason is not the correct explanation of assertion.
c) If assertion is true but reason is false.
d) If both assertion and reason are false.

121. Which one of the following is incorrect for ideal solution?
a) $\Delta H_{mix} = 0$ b) $\Delta U_{mix} = 0$ c) $\Delta P = P_{obs} - P_{\text{calculate by Raoult's law}} = 0$
d) $\Delta G_{mix} = 0$

122. HCl can be prepared by
a) $NaCl + H_2SO_4 \xrightarrow{420K}$ b) $NaHSO_4 + NaCl \xrightarrow{823K}$ c) $NaNO_3 + H_2SO_4 \rightarrow$
d) both (a) and (b)

123. The correct order of reactivity towards the electrophilic substitution of the compounds aniline (I), benzene (II) and nitrobenzene (III) is
a) I>II>III   b) III>II>I   c) II>III>I   d) IIII

124. Colour of transition metal ions are due to absorption of some wavelength. This results in
a) d-s transition   b) s-s transition   c) s-d transition   d) d-d transition

125. The increasing order of energies of various molecular orbitals of N_2, is given below:
$$\sigma 1s < \sigma^*1s < \sigma 2s < \sigma^*2s < \pi 2p_x = \pi 2p_y < \sigma 2p_z < \pi^*2p_x = \pi^*2p_y < \sigma^*2p_z$$
The above sequence is not true for the molecule:
a) C_2 b) B_2 c) O_2 d) Be_2

126. Which of the following statements is correct?
a) E_{cell} and D_rG of cell reaction both are extensive properties.
b) E_{cell} and D_rG of cell reaction both are intensive properties.

c)

E_{cell} is an intensive property while D_rG of cell reaction is an extensive property.

d)

E_{cell} is an extensive property while D_rG of cell reaction is an intensive property.

127. Calculate the energy in joule corresponding to light of wavelength 45 nm
(Planck's constant, h= 6.63 x 10⁻³⁴Js, speed of light, c= 3 x 10⁸ ms⁻¹.) :

a) 6.67×10^{15} b) 6.67×10^{11} c) 4.42×10^{-15} d) 4.42×10^{-18}

128. The suspension of slaked lime in water is known as:

a) Lime water   b) Quick lime   c) Milk of lime

d) Aqueous solution of slaked lime.

129. Which of the following statements is incorrect about the collison theory of chemical reaction?

a)

It considers reacting molecules or atoms to be hard spheres and ignores their structural features

b) Number of effective collisions determines the rate of reaction

c)

Collision of atoms or molecules possessing sufficient threshold energy results into the product formation

d)

Molecules should collide with sufficient threshold energy and proper orientation for the collision to be effective

130. Which one of the following statements is not true regarding (+) lactose?

a)

On hydrolysis (+) lactose gives equal amount of D(+) glucose and D(+) galactose.

b)

(+) Lactose is a β-glucoside formed by the union of a molecule of D(+) glucose and a molecule of D(+) galactose

c) (+) Lactose is a reducing sugar and does not exhibit mutarotation.

d) (+) Lactose, $C_{12}H_{22}O_{11}$ contains 8-OH groups

131. Movement of dispersion medium under the influence of electric field is known as

a) electrodialysis   b) electrophoresis   c) electroosmosis   d) cataphoresis.

132. Arrange the following solutions in increasing order of their osmotic pressures.

(i) 34.2 g/litre sucrose

(ii) 60 g/litre of urea

(iii) 90 g/litre of glucose

(iv) 58.5 g/litre of sodium chloride

a) (i) < (iii) < (ii) < (iv)   b) (iii) < (i) < (iv) < (ii)   c) (i) < (iii) < (iv) < (ii)

d) (ii) < (iv) < (i) < (iii)

133. One mole of acidified $K_2Cr_2O_7$ on reaction with excess KI will liberate mole(s) of I_2

a) 3   b) 1   c) 7   d) 2

134. Assuming complete ionisation, same moles of which of the following compounds will require the least amount of acidified $KMnO_4$ for complete oxidation?

a) $FeSO_3$ b) FeC_2O_4 c) $Fe(NO_2)_2$ d) $FeSO_4$

135. In the reaction, $Cl_2 + CH_4 \xrightarrow{h\nu} CH_3Cl + HCl$ presence of a small amount of oxygen

a) increases the rate of reaction for a brief period of time

b) decreases the rate of reaction for a brief period of time

c) does not affect the rate of reaction   d) completely stops the reaction

136. Which is not true statement?

   a) a-carbon of a-amino acid is asymmetric   b) All proteins are found in L-form.
   c) Human body can synthesize all proteins they need.
   d) At pH=7 both amino and carboxylic groups exist in ionized form.

137. The correct set of quantum numbers for the unpaired electron of chlorine atom is:
   a) $2,0,0,+\frac{1}{2}$ b) $2,1,-1,+\frac{1}{2}$ c) $3,1,1,\pm\frac{1}{2}$ d) $3,0,0,\pm\frac{1}{2}$

138. Reactivity of hydrogen atoms attached to different carbon atoms in alkanes has the order:
   a) tertiary > primary > secondary   b) primary > secondary > tertiary
   c) Both (a) and (b)   d) tertiary > secondary > primary

139. The commercial name of polyacrylonitrile is
   a) dacron   b) orlon (acrilan)   c) PVC   d) bakelite.

140. In blast furnace iron oxide is reduced by
   a) silica   b) carbon monoxide   c) carbon   d) lime stone

141. $CF_2=CF_2$ is monomer of :
   a) teflon   b) orlon   c) polythene   d) nylon-6

142. How many gram of a dibasic acid (mol. wt. 200) should be present in 100 mL of the aqueous solution to give 0.1 N?
   a) 1 g   b) 2 g   c) 10 g   d) 20 g

143. Consider the following reaction:
   HCHO + 2[Ag(NH$_3$)$_2$] + 30H$^-$ → 2Ag + HCOO$^-$ + 4NH$_3$ + 2H$_2$O
   Which of the following statements regarding oxidation and reduction is correct?
   a) HCHO is oxidised to HCOO$^-$ and [Ag(NH$_3$)$_2$]$^+$ is reduced to Ag
   b) HCHO is reduced to HCOO$^-$ and [Ag(NH$_3$)$_2$]$^+$ is oxidised to Ag.
   c) [Ag(NH$_3$)$_2$]$^+$ is reduced to Ag while OH$^-$ is oxidised to HCOO$^-$.
   d) [Ag(NH$_3$)$_2$]$^+$ is oxidised to NH3 while HCHO is reduced to H$_2$O.

144. Match the column I with column II and mark the appropriate choice.

Column I		Column II	
(A)	Thiosulphuric acid	(i)	H_2SO_5
(B)	Caro's acid	(ii)	$H_2S_2O_6$
(C)	Marshall's acid	(iii)	$H_2S_2O_3$
(D)	Dithionic acid	(iv)	$H_2S_2O_5$

   a) (A) → (i); (B) → (ii); (C) → (iii); (D) → (iv)
   b) (A) → (iv); (B) → (iii); (C) → (ii); (D) → (i)
   c) (A) → (iii); (B) → (i); (C) → (iv); (D) → (ii)
   d) (A) → (ii); (B) → (iii); (C) → (i); (D) → (iv)

145. Which of the following techniques is most suitable for purification of cyclohexanone from a mixture containing benzoic acid, isoamyl alcohol, cyclohexane and cyclohexanone?
   a) Crystallisation   b) IR spectroscopy   c) Sublimation   d) Evaporation

146. Which of the following has strongest bond?
   a) HF   b) HCl   c) HBr   d) HI

147. Which is not correct regarding the adsorption of a gas on surface of solid
   a) On increasing temperature, adsorption increase continuously
   b) Enthalpy and entropy change are -ve.
   c) Adsorption is more for some specific substances
   d) This phenomenon is reversible

148. Assertion: A tetrahedral void is surrounded by four spheres and an octahedral void is surrounded by six spheres.

Reason: The number of tetrahedral voids is double the number of close packed spheres and number of octahedral voids is equal to number of close packed spheres

a)
If both assertion and reason are true and reason is the correct explanation of assertion.

b)
If both assertion and reason are true but reason is not the correct explanation of assertion

c) If assertion is true but reason is false.

d) If both assertion and reason are false

149. **Assertion:** Physisorption of a gas adsorbed at low temperature may change into chemisorption at a high temperature.

Reason: Usually low pressure is also favourable for chemisorption.

a)
If both assertion and reason are true and reason is the correct explanation of assertion.

b)
If both assertion and reason are true but reason is not the correct explanation of assertion.

c) If assertion is true but reason is false.

d) If both assertion and reason are false.

150. In the silver plating of copper, $K[Ag(CN)_2]$ is used instead of $AgNO_3$. The reason is _____ .

a) A thin layer of Ag is formed on Cu.   b) More voltage is required.

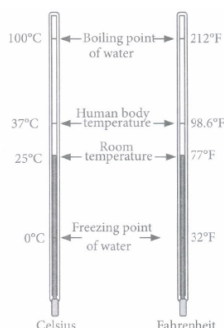c) Ag^+ ions are completely removed from solution.

d)
Less availability of Ag^+ ions, as Cu can not displace Ag from $[Ag(CN)_2]$ - ion.

151. Which one of the following ions exhibits d-d transition and paramagnetism as well?

a) CrO_4^{2-} b) $Cr_2O_7^{2-}$ c) MnO_4^- d) MnO_4^{2-}

152. Consider the following figure,

The correct relationship between fahrenheit and celsius scale is

a) $°F = °C + 273.15$ b) $°F = \frac{2}{5}°C + 16$ c) $°F = \frac{9}{5}°C + 32$ d) $°F = \frac{1}{3}°C + 32$

153. Use the data of and find out the most stable oxidised species.

a) Cr^{3+} b) MnO_4^- c) $Cr_2O_7^{2-}$ d) Mn^{2+}

154. Boron has two stable isotopes, ^{10}B (19%) and ^{11}B (81%). Average atomic weight for boron in the periodic table is:

a) 10.8   b) 10.2   c) 11.2   d) 10.0

155. The blue compound formed in the positive test for nitrogen with Lassaigne solution of an organic compound is
    a) $Na_4[Fe(CN)_5(NOS)]$ b) $Na_3[Fe(CN)_6]$ c) $Fe(CN)_6$ d) $Fe_4[Fe(CN)_6]_3$

156. In DNA, the complimentary bases are _____
    a) Adenine and thymine; guanine and cytosine
    b) Adenine and thymine; guanine and uracil
    c) Adenine and guanine; thymine and cytosine
    d) Uracil and adenine; cytosine and guanine

157. For the following reactions:
    (A) $CH_3CH_2CH_2Br + KOH \rightarrow CH_3CH = CH_2 + KBr + H_2O$

    (B)

    (C)
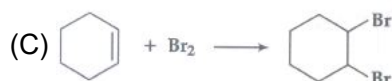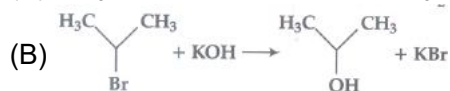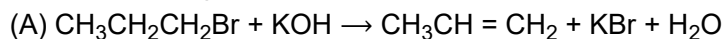
    a) (A) is elimination, (B) and (C) are substitution reactions.
    b) (A) is substitution, (B) and (C) are addition reactions.
    c) (A) and (B) are elimination reactions and (c) is addition reaction
    d) (A) is elimination, (B) is the substitution and (C) is the addition reaction.

158. There is no difference between a 2p and 3p orbitals regarding:
    a) Value of n   b) Size   c) Energy   d) Shape

159. Which of the following is not a food additive?
    a) Preservatives   b) Sweetening agents   c) Flavours   d) Oxidants

160. Amongst the elements with following electronic configurations which one of them may have the highest ionization energy
    a) $[Ne]3s^23p^1$ b) $[Ne]3s^23p^3$ c) $[Ne]3s^23p^2$ d) $[Ar]3d^{10}4s^24p^3$

161. Which of the following is not a method of refining of metals?
    a) Electrolysis   b) Smelting   c) Poling   d) Liquation

162. Which of the following statements about pH and H^+ ion concentration is incorrect?
    a)
    Addition of one drop of concentrated HCl in NH_4OH solution decreases pH of the solution.
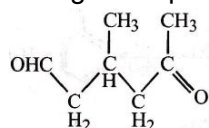   b)
    A solution of the maximum of one equivalent of each of CH_3COOH and NaOH has a pH of 7.
    c) pH of pure neutral water is not zero.
    d)
    A cold and concentrated H_2SO_4 has lower H^+ ion concentration than a dilute solution of H_2SO_4

163. A single compound of the structure:

    is obtainable from ozonolysis of which of the following cyclic compounds?
    a)   b)   c)   d)
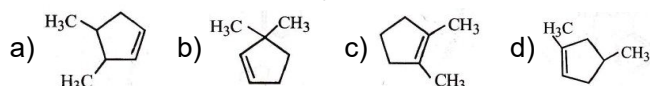
164. Which of the following undergoes nucleophilic substitution exclusively by S_N1 mechanism?
    a) Benzyl chloride   b) Ethyl chloride   c) Chlorobenzene   d) Isopropyl chloride

165. What is the basic formula for starch?
a) $(C_6H_{12}O_6)_n$ b) $(C_6H_{10}O_5)_n$ c) $C_{12}H_{22}O_{11}$ d) $(C_6H_{12}O_4)_n$

166. The angular momentum of 3p-orbitals in terms of h* $\left(h* = \dfrac{h}{2\pi} \right)$ is:

a) $\sqrt{2h}$ *   b) 2h*   c) $\frac{h*}{\sqrt{2h}}$ d) h*

167. Which of the following metals is not extracted by leaching?
a) Aluminium   b) Mercury   c) Silver   d) Gold

168. Choose the correct statement about the given figures.

a) (II) represents solid state while (III) represents liquid state
b) (II) represents liquid state while (III) represents solid state
c) (1) represents solid state while (III) represents liquid state
d) (I) represents liquid state while (III) represents solid state,

169. Which of the following will give a pair of enantiomers? (en = $NH_2CH_2CH_2NH_2$)
a) $[Cr(NH_3)_6][Co(CN)_6]$ b) $[Co(en)_2Cl_2]Cl$ c) $[Pt(NH_3)_4][PtCl_6]$
d) $[Co(NH_3)_4Cl_2]NO_2$

170. A violet compound of manganese (P) decomposes on heating to liberate oxygen and compounds (Q) and (R) of manganese are formed. Compound (R) reacts with KOH in the presence of potassium nitrate to give compound (Q). On heating compound (R) with conc. H_2SO_4 and NaCl, chlorine gas is liberated and a compound (5) of manganese along with other products is formed. Compounds P to S are

a)

P	Q	R	S
$KMnO_4$	K_2MnO_4	$MnCl_2$	MnO_2

b)

P	Q	R	S
K_2MnO_4	MnO_2	$KMnO_4$	$MnCl_2$

c)

P	Q	R	S
$KMnO_4$	K_2MnO_4	MnO_2	$MnCl_2$

d)

P	Q	R	S
K_2MnO_4	$KMnO_4$	MnO	$MnCl_2$

171. Below point 'A' FeO can_____ .
a) be reduced by carbon monoxide only
b) be reduced by both carbon monoxide and carbon

c) be reduced by carbon only

d) not be reduced by both carbon and carbon monoxide

172. Cyclic hydrocarbon 'A' has all the carbon and hydrogen atoms in a single plane. All the carbon bonds have the same length less than 1.54 Å but more than 1.34 Å. The C - C - C bond angle will be:

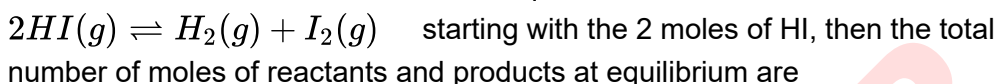a) $109^0 28^{'}$ b) 100^0 c) 180^0 d) 120^0

173. Base strength of:

(A) H_3C-CH

(B) $H_2C = \overline{CH}$ and

(C) $H - C \equiv \overline{C}$

is in the order of

a) (B)>(A)>(C)   b) (C)>(B)>(A)   c) (A)>(C)>(B)   d) (A)>(B)>(C)

174. If α is the fraction of HI dissociated at equilibrium in the reaction,

$2HI(g) \rightleftharpoons H_2(g) + I_2(g)$ starting with the 2 moles of HI, then the total number of moles of reactants and products at equilibrium are

a) $2+2\alpha$ b) 2   c) $1+\alpha$ d) $2-\alpha$

175. In a reversible reaction, the energy of activation of the forward reaction is 50 kcal. The energy of activation for the reverse reaction will be :

a) < 50 kcal   b) 50 kcal   c) either greater than or less than 50 kcal

d) > 50 kcal

176. 34.05 mL of phosphorus vapour weighs 0.0625 g at 546°C and 1 bar pressure. What is the molar mass of phosphorus?

a) 124.77 g mol^{-1} b) 124.75 g mol^{-1} c) 12.47 g mol^{-1} d) 30 g mol^{-1}

177. In Kjeldahl's method of estimation of nitrogen, nitrogen is quantitatively converted to ammonium sulphate. It is then treated with standard solution of alkali. The nitrogen which is present is estimated as

a) N_2 gas   b) NO_2 gas   c) NH_3 gas   d) $(NH_4)SO_4$ ppt.

178. Which of the following reagents can not be used to oxidise primary alcohols to aldehydes?

a) CrO_3 in anhydrous medium   b) $KMnO_4$ in acidic medium

c) Pyridinium chlorochromate   d) Heat in the presence of Cu at 573 K.

179. The rate constant of a reaction depends upon

a) temperature of the reaction   b) extent of the reaction

c) initial concentration of the reactants   d) the time of completion of reaction

180. Which of the following equations depict the oxidising nature of H_2O_2?

a) $2MnO_4^- +6H^+ + 5H_2O_2 \rightarrow 2Mn^{2+} + 8H_2O +5O_2$

b) $2Fe^{3+}+ 2H^+ + H_2O_2 \rightarrow 2Fe^{2+}+ 2H_2O + O_2$ c) $2HI + H_2O_2 \rightarrow I_2 + 2H_2O$

d) $KIO_4 + H_2O_2 \rightarrow KIO_3 + H_2O + O_2$

181. Mole fraction of the solute in a 1.00 molal aqueous solution is :

a) 0.0177   b) 0.0344   c) 1.7700   d) 0.1770

182. Match the column I with column II and mark the appropriate choice.

Column I	Column II	
(Atom)	(No. of unpaired electrons)	
(A) $_{15}P$	(i)	6 unpaired electrons
(B) $_{24}Cr$	(ii)	2 unpaired electrons
(C) $_{26}Fe$	(iii)	3 unpaired electrons
(D) $_{14}Si$	(iv)	4 unpaired electrons

a) (A) → (ii), (B) → (i), (C) → (iii), (D) → (iv)

b) (A) → (i), (B) → (iii), (C) → (ii), (D) → (iv)

c) (A) → (iii), (B) → (i), (C) → (iv), (D) → (ii)

d) (A) → (iv), (B) → (ii), (C) → (i), (D) → (iii)

183. The C-O- H bond angle in alcohols is slightly less than the tetrahedral angle whereas the C-O-C bond angle in ether is slightly greater because

   a) of repulsion between the two bulky R groups.

   b) O atom in both alcohols and ethers is Sp^3 -hybridised

   c) lone pair - lone pair repulsion is greater than bond pair-bond pair repulsion.

   d) none of these

184. Following solutions were prepared by mixing different volumes of NaOH and HCl of different concentrations:

   (1) 60 ml $\frac{M}{10}$ HCl +40 ml $\frac{M}{10}$ NaOH

   (2) 55 ml $\frac{M}{10}$ HCl +45 ml $\frac{M}{10}$ NaOH

   (3) 75 ml $\frac{M}{5}$ HCl +25 ml $\frac{M}{5}$ NaOH

   (4) 100 ml $\frac{M}{10}$ HCl + 100 ml $\frac{M}{10}$ NaOH

   pH of which one of them will be equal to 1?

   a) 2   b) 1   c) 4   d) 3

185. When $CH_3CH_2CHCl_2$ is treated with $NaNH_2,$ the product formed is _____ .

   a) $CH_3 - CH = CH_2$ b) $CH_3 - C \equiv CH$ c) $CH_3CH_2CH\begin{smallmatrix}NH_2\\NH_2\end{smallmatrix}$

   d) $CH_3CH_2CH\begin{smallmatrix}Cl\\NH_2\end{smallmatrix}$

186. Assertion: In vapour state sulphur is paramagnetic in nature.

   Reason: In vapour state sulphur exists as S_2 molecule.

   a)
   If both assertion and reason are true and reason is the correct explanation of assertion.

   b)
   If both assertion and reason are true but reason is not the correct explanation of assertion

   c) If assertion is true but reason is false.

   d) If both assertion and reason are false

187. Match the column I with column II and mark the appropriate choice

Column-I(Structure)	Column II (Packing efficiency)	
A)Simple cubic structure	(i)	68%
B)Face centred cubic structure	(ii)	74%
C)Body centred cubic structure	(iii)	52%

   a) (A)→ (iii), (B)→ (ii), (C)→ (i)   b) (A) → (i), (B) → (ii), (C) → (iii

   c) (A) → (ii), (B) → (i), (C) → (iii)   d) (A) → (iii), (B) → (i), (C) → (ii)

188. Study the orbital diagrams of two atoms 'X and 'y. Which subshell will be more stable and why?
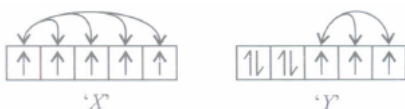
   a) X, exchange energy is maximum, so is stability.
   b) Y, exchange energy is maximum, so is stability.
   c) X, exchange energy is minimum, so stability is maximum.
   d) Y, exchange energy is minimum, so stability is maximum.

189. Arrange the following metals in increasing order of their reducing power.
[Given:
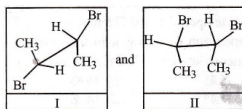$E^0_{K^+/K} = -2.93V$, $E^0_{Ag^+/Ag} = +0.80V$, $E^0_{Al^{3+}/Al} = -1.66V$, $E^0_{Au^{3+}/Au} = +1.40V$, $E^0_{Li^+/Li} =$
a) Li < K < Al < Ag < Au   b) Au < Ag < Al < K < Li   c) K < Al < Au < Ag < Li
d) Al < Ag < Au < Li < K

190. Generally transition elements form coloured salts due to the presence of unpaired electrons. Which of the following compounds will be coloured in solid state?
a) Ag_2SO_4 b) CuF_2 c) ZnF_2 d) Cu_2Cl_2

191. Given

I and II are
a) A pair of optical isomers   b) Identical   c) A pair of conformers
d) A pair of geometrical isomers

192. Assertion: When alkyl aryl ethers react with excess of hydrogen halides, phenol and alkyl halide are produced.
Reason: Alkyl aryl ethers are cleaved at the alkyl-oxygen bond due to more stable aryl-oxygen bond.
a)
If both assertion and reason are true and reason is the correct explanation of assertion.
b)
If both assertion and reason are true but reason is not the correct explanation of assertion.
c) If assertion is true but reason is false.
d) If both assertion and reason are false.

193. How much time is required to deposit 1 x 10^{-3} ern thick layer of silver (density is 1.05 g cm^{-3}) on a surface of area 100 cm^2 by passing a current of 5 A through $AgNO_3$ solution?
a) 125s   b) 115s   c) 18.7s   d) 27.25s

194. In the following question, a statement of assertion is followed by a statement of reason. Mark the correct choice as :
Assertion: Iron(III) catalyses the reaction between iodide and persulphate ions.
Reason: Transition metals act as catalysts.
a)
If both assertion and reason are true and reason is the correct explanation of assertion
b)
If both assertion and reason are true but reason is not the correct explanation of assertion.
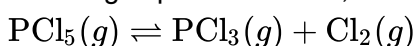c) If assertion is true but reason is false
d) If both assertion and reason are false

195. Coordination number of Ni in $[Ni(C_2O_4)]^{4-}$ is:
a) 3   b) 6   c) 4   d) 2

196. For the gas phase reaction,
$$PCl_5(g) \rightleftharpoons PCl_3(g) + Cl_2(g)$$
which of the following conditions are correct?
kindly send me your key Answers to our email id - padasalai.net@gmail.com

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a) $\Delta H = 0$ and $\Delta S < 0$ b) $\Delta H > 0$ and $\Delta S > 0$

c) $\Delta H < 0$ and $\Delta S < 0$ d) $\Delta H > 0$ and $\Delta S < 0$

197. Half-life for radioactive ^{14}C is 5760 yr. In how many years, 200 mg of ^{14}C will be reduced to 25 mg?

a) 5760 yr   b) 11520 yr   c) 17280 yr   d) 23040 yr

198. Consider the ground state of Cr atom (Z = 24). The numbers of electrons with azimuthal quantum numbers, ℓ =1 and 2, are respectively:

a) 12, 4   b) 12, 5   c) 16, 4   d) 16, 5

199. Boric acid is an acid because its molecule :

a) Contains replaceable H^+ ion   b) Gives up a proton

c) Accepts OH^- from water releasing proton

d) Combines with proton from water molecule

200. The main difference in C - X bond of a haloalkane and a haloarene is

a) C - X bond in haloalkanes is shorter than haloarenes.

b)

in haloalkanes the C attached to halogen in C - X bond is Sp^3 hybridised while in haloarenes it is Sp^2 hybridised.

c)

C - X bond in haloarenes acquires a double bond character due to higher electronegativity of X than haloalkanes.

d)

haloalkanes are less reactive than haloarenes due to difficulty in C - X cleavage in halo alkanes.