Atomic Energy Central School No.4 Rawatbhata
Multiple Choice Questions Test (April May 2019-20)

MM: 100 **Class XII (Physics, Chemistry, Biology)** **Time 90 Minutes**

1 The rate of alpha particle falls on neutral sphere is 1012 per second. The time in which sphere gets charged by 2μc is ..... sec.

A) 2.25 B) 3.15 C) 6.25 D) 1.66

2 Two point charges repel each other with a force of 100 N. One of the charges is increased by 10% and other is reduced by 10%. The new force of repulsion at the same distance would be..... N.

A) 121 B) 100 C) 99 D) 89

3 . Two small conducting sphere of equal radius have charges +1μc and – 2μc respectively and placed at a distance d from each other experience force F1. If they are brought in contact and separated to the same distance, they experience force F2. The ratio of F1 to F2 is.....

A) –8 : 1 B) 1 : 2 C) 1 : 8 D) –2 : 1

4 Three charges, each of value Q, are placed at the vertex of an equilateral triangle. A fourth charge q is placed at the centre of the triangle. If the charges remain stationery then, q =.....

A) $Q/\sqrt{2}$ B) $Q/\sqrt{3}$ C) $-Q/\sqrt{2}$ D) $-Q/\sqrt{3}$

5 . Two equal negative charges –q are fixed at points (o, a) and (o, –a). A positive charge Q is released from rest at the point (2a, o) on the X - axis. The charge Q will.....

A) move to the origin and remain at rest there B) execute simple harmonic motion about the origin C) move to infinity D) execute oscillations but not simple harmonic motion

6 Four charges, each equal to –Q, are placed at the corners of a square and a charge +q isplaced at its centre. If the system is in equilibrium, the value of q is .....

A) $Q/4(1+2\sqrt{2})$ B) $-Q/4(1+2\sqrt{2})$ C) $-Q/2(1+2\sqrt{2})$ D) $Q/2(1+2\sqrt{2})$

7 Two point positive charges q each are placed at (–a, o) and (a, o). A third positive charge q_o isplaced at (o, y). For which value of y the force at q_o is maximum .....

A) a B) 2a C) $a/\sqrt{2}$ D) $a/\sqrt{3}$

8 Two identical charged spheres suspended from a common point by two massless strings oflength *l* are initially a distance d (d << *l*) apart because of their mutual repulsion. The chargebegins to leak from both the spheres at a constant rate. As a result the spheres approach eachother with a velocity υ . Then function of distance *x* between them becomes .....

A) $V \alpha x$ B) $V \alpha x^{-1/2}$ C) $V \alpha x^{-1}$ D) $V \alpha x^{1/2}$

9 A charged particle of mass 1 kg and charge 2μc is thrown from a horizontal ground at an angle 45^o with speed 20m/s. In space a horizontal electric field $E = 2 \times 10^7$ V/m exist.The range on horizontal ground of the projectile thrown is ..... .

A) 100 meter B) 50 meter C) 200 meter D) 0 meter

10 A n electric dipole is placed at an angle of 60^o with an electric field of intensity 10^5 NC^{-1}.It experiences a torque equal to $8\sqrt{3}$Nm. If the dipole length is 2cm then the charge on the dipole is ..... c.

A) -8×10^{3} B) 8.54×10^{-4} C) 8×10^{-3} D) $.85\times10^{-6}$

11 A sphere of radius R has a uniform distribution of electric charge in its volume. At a distance x from its centre, (for $x < R$), the electric field is directly proportional to .....

A) x B) x^{-1} C) x^{-2} D) x^2

12 Two Points P and Q are maintained at the Potentials of 10 v and –4 v, respectively. The work done in moving 100 electrons from P to Q is

A) 2.24×10^{-16} J B) -9.60×10^{-17} J C) -2.24×10^{-16} J D) 9.60×10^{-17} J

13 The electric Potential V at any Point o (x, y, z all in metres) in space is given by $V = 4x^2$ volt. The electric field at the point (1m, 0.2m) in volt/metre is .....

A) 8, along negative x - axis B) 8, along positives x - axis C) 16, along negative x - axis D) 16, along positives x - axis

14 Charges of $+3.33 \times 10^{-9}$C are placed at each of the four corners of a square of side 8cm. The potential at the intersection of the diagonals is ....

A) 150 √2 Volt B) 900 √2 Volt C) 1500 √2 Volt D) 3600 Volt

15 . Two identical balls having like charges and placed at a certain distance apart repel each other with a certain force. They are brought in contact and then moved apart to a distance equal to half their initial separation. The force of repulsion between them increases 4.5 times in comparison with the initial value. The ratio of the initial charges of the balls is.....

A) 4 : 1 B) 6 : 1 C) 3 : 1 D) 2: 1

16 A point charge q is situated at a distance r from one end of a thin conducting rod of length L having a charge Q (uniformly distributed along its length). The magnitude of electric force between the two is.....

A) $2kqQ/ r(r + L)$ B) $kqQ /r(r + L)$ C) $kqQ/ r(r – L)$ D) $kQ /r(r + L)$

17 Two point charges of +16μc and –9μc are placed 8 cm apart in air. ..... Distance of a point from –9μc charge at which the resultant electric field is zero.

A) 24 cm B) 9 cm C) 16 cm D) 35 cm

18 An inclined plane making an angle of 30^o with the horizontal is placed in an uniform electric field E = 100 Vm–1. A particle of mass 1 kg and charge 0.01 c is allowed to slide down from rest from a height of 1m. If the coefficient of friction is 0.2 the time taken by the particle to reach the bottom is ..... sec.

A) 2.337 B) 4.337 C) 5 D) 1.337

19 A small sphere whose mass is 0.1 gm carries a charge of 3×10^{-10} C of a silk fibre 5 cm long. The other end of the fibre is attached to a large vertical conducting, which has a surface charge of 25×10^{-25} Cm^{-2} on each side. When the system is freely hanging the angle fibre makes with vertical is.....

A)) 41.8^0 B) 45^0 C) 40.8^0 D) 45.8^0

20 A Semicircular rod is charged uniformly with a total charge Q coulomb. The electric field intensity at the centre of curvature is.....

A) $2KQ/ \pi r^2$ B) $3KQ /\pi r^2$ C) $KQ /\pi r^2$ D) $4KQ/ \pi r^2$

21 Two uniformly charged spherical conductors A and B having radius 1mm and 2mm are separated by a distance of 5 cm. If the spheres are connected by a conducting wire then in equilibrium condition, the ratio of the magnitude of the electric fields at the surfaces of spheres A and B is.....

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

22 In Millikan's oil drop experiment an oil drop carrying a charge Q is held stationary by a p.d. 2400 v between the plates. To keep a drop of half the radius stationary the potential difference had to be made 600 v. What is the charge on the second drop?

A) $3Q/2$ B) $Q/4$ C) Q D) $Q/2$

23 . Equal charges q are placed at the vertices A and B of an equilateral triangle ABC of side a. The magnitude of electric field at the point c is.....

A) Kq/a^2 B) $3Kq/a^2$ C) $2Kq/a^2$ D) $q/\pi\epsilon$ 2 t a

24 A Charge q is placed at the centre of the open end of cylindrical vessel. The flux of the electric field through the surface of the vessel is.....

A) $q/\in_0$ B) $q/2\in_0$ C) $2q/\in_0$ D) Zero

25 An infinitly long thin straight wire has uniform linear charge density of 1/3 c/m . Then, the magnitude of the electric intiensity at a point 18 cm away is..... NC^{-1}

A) 0.66×10^{11} B) 1.32×10^{11} C) 0.33×10^{11} D) 3×10^{11}

26 . A long string with a charge of λ per unit length passes through an imaginary cube of edge l. The maximum possible flux of the electric field through the cube will be.....

A) $\sqrt{3}\lambda l/\epsilon_0$ B) $\lambda l/\epsilon_0$ C) $\sqrt{2}\lambda l/\epsilon_0$ D) $6\lambda l^2/\epsilon_0$

27 Three charges 2q, –q, –q are located at the vertices of an equilateral triangle. At the centre of the triangle.

A) The Field is Zero but Potential is non - zero B) The Field is non - Zero but Potential is zero C) Both field and Potential are Zero D) Both field and Potential are non- Zero

28 In the electric field of a point charge q, a certain charge is carried from point A to B, C, D and E. Then the work done....

A) Is least along the Path AB B) Is least along the Path AD C) Is Zero along all the Path AB, AC, and D) Is least along AE

29 . Three concentric spherical shells have radii a, b and c (a < b < c) and have surface charge densities σ, – σ and σ respectively. If V_A, V_B and V_C denote the Potentials of the three shells, then for c = a + b, we have

A) $V_C = V_B = V_A$ B) $V_C = V_B \neq V_A$ C) $V_C \neq V_B \neq V_A$ D) $V_C = V_A \neq V_B$

30 Two charged spheres of radii R1 and R2 having equal surface charge density. The ratio of their potential is ...

A) R_2/R_1 B) $(R_2/R_1)^2$ C) $(R_1/R_2)^2$ D) $R1/R_2$

31 If a charged spherical conductor of radius 10cm has potential v at a point distant 5 cm from its centre, then the potential at a point distant 15cm from the centre will be .....

A) 1V/3 B) 3V/2 C) 3V D) 22V/3

32 Electric potential at any point is $V = -5x + 3y + \sqrt{15}z$, then the magnitude of the electric field is ..... N/C.

A) $3\sqrt{2}$ B) $4\sqrt{2}$ C) 0 D) $5\sqrt{2}$

33 . A simple pendulum of period T has a metal bob which is negatively charged. If it is allowed to ascillate above a positively charged metal plate, its period will.....

A) Remains equal to T B) Less than T C) Infinite D) Greater than T

34 Which of the following units is useful in relating concentration of solution with its vapour pressure?

A) Mole fraction B) ppm C) Mass percentage D) Molality

35 Maximum amount of a solid solute that can be dissolved in a specified amount of a given liquid solvent does not depend upon:

A) Temperature B) Nature of solute C) Pressure D) Nature of solvent

36 Which of the following aqueous solutions should have the highest boiling point?

A) 1M NaOH B) 1M Na_2SO_4 C) 1M NH_4NO_3 D) 1M KNO_3

37 The value of Van't Hoff factors for KCl, NaCl and K_2SO_4 respectively are:

A) 2,2 & 2 B) 2,2 & 3 C) 1,1 & 2 D) 1,1 & 1

38 Value of Henry's constant K_H is:

A) Increase with increase in temperature B) Decrease with increase in temperature C) Remains constant D) First increase then decrease

39 The boiling point of a solvent containing a non-volatile sulute:

A) Is depressed B) Is elevated C) Does not change D) none

40 The molality of pure water is:

A) 55.5 B) 20 C) 18 D) 10

41 Which of the following concentrations is not affected by temperature:

A) Normality B) Molality C) Molarity D) Formality

42 The number of moles of NaCl in 3 litres of 3M solution is:

A) 1 B) 3 C) 9 D) 27

43 The amount of solute required to prepare 10 litres of decimolar solution is:

A) 0.01mole B) 0.2mole C) 0.05mole D) 1.0mole

44 One kilogram of water contains 4.0g of NaOH. The concentration of the solution is best expressed as:

A) 0.1molal B) 0.1molar C) decinormal D) About 0.1mole

45 Isotonic solutions are the solution having the same:

A) Surface tension B) Vapour pressure C) Osmotic pressure D) Viscosity

46 Which of the following is not a colligative property?

A) Depression in FP B) Elevation in BP C) Osmotic pressure D) Lowering of vapour pressure

47 An aqueous solution containing 6.0 g of urea in 500 ml of solution has a density equal to 1.05 g/cm^3. If the molar mass of urea is 60, then molality of solution is:

A) 0.20 B) 0.19 C) 0.10 D) 1.20

48 Which pair will not form an ideal solution?

A) C_2H_5Br & C_2H_5I B) C_6H_5Br&C_6H_5I C) C_6H_6 & $C_6H_5CH_3$ D) C_2H_5I & C_2H_5OH

49 The Van't Hoff factor for 0.1 M $Ba(NO_3)_2$solution is 2.74. The degree of dissociation is:

A) 91.3% B) 87% C) 100% D) 74%

50 Camphor is often used in molecular mass determination because:

A) High cryoscopic constant B) It is volatile C) It is solvent for organic substances D) It is readily available

51 The mole fraction of methanol in its 4.5 molal aqueous solution is:

A) 0.250 B) 0.125 C) 0.100 D) 0.075

52 The difference between the electrode potentials of two electrodes when no current is drawn through the cell is called:

A) Cell potential B) Cell emf C) Potential difference D) Cell voltage

53 An electrochemical cell can behave like an electrolytic cell when:

A) $E_{cell} = 0$ B) $E_{cell} > E_{ext}$ C) $E_{ext} > E_{cell}$ D) $E_{cell} = E_{ext}$

54 The quantity of charge required to obtain one mole of aluminium from Al2O3 is:

A) 1F B) 6F C) 3F D) 2F

55 Molar conductivity of ionic solution depends on:

A) Pressure B) Distance between electrodes C) Concentration of solution D) Surface area of electrodes

56 The SI unit of molar conductivity is:

A) $S\ m^2\ mol^{-1}$ B) $S\ m^{-1}\ mol^{-1}$ C) $S\ m^2 mol$ D) $S\ m^3\ mol^{-1}$

57 If the conductivity and conductance of a solution is same then its cell constant is equal to:

A) 1 B) 0 C) 10 D) 1000

58 E^{υ}_{cell} and ΔG^{υ} are related as:

A) $\Delta G^0 = nFE^0_{cell}$ B) $\Delta G = -nFE^0 cell$ C) $\Delta G^0 = -nFE^0 cell$ D) $\Delta G^0 = -nFE^0 cell = 0$

59 Rust is a mixture of :

A) FeO& $Fe(OH)_3$ B) FeO& $Fe(OH)_2$ C) Fe_2O_3& $Fe(OH)_3$ D) Fe_3O_4& $Fe(OH)_3$

60 The emf of the cell $Cu_{(s)} | Cu^{2+}$ (1M) || Ag^+ (1M) | Ag is 0.46 V. The standard REP of Ag^+/Ag is 0.80 V. The standard REP of Cu^{2+}/Cu is:

A) - 0.34 V B) 1.26 V C) -1.26 V D) 0.34 V

61 Consider the following E^{υ} values, E^{υ} ($Fe^{3+}|Fe^{2+}$) = +0.77 V, E^{υ} ($Sn^{2+}|Sn$) = - 0.14 V. Under standard conditions, the potential for the reaction:
$Sn_{(s)} + 2Fe^{3+}_{(aq)} \rightarrow 2Fe^{2+}_{(aq)} + Sn^{2+}_{(aq)}$ is:

A) 0.91 V B) 1.04 V C) 1.68 V D) 0.63 V

62 The limiting molar conductivities $\wedge^0$ for NaCl, KBr and KCl are 126, 152 ans 150 $S\ cm^2\ mol^{-1}$ respectively. The $\wedge 0$ for NaBr is:

A) 278 S cm2 mol-1 B) 976 S cm2 mol-1 C) 128 S cm2 mol-1 D) 302 S cm2 mol-1

63 For spontaneity of a cell, which is correct?

A) $\Delta G = 0, E^0 = 0$ B) ΔG = - ve, $E^0 = 0$ C) ΔG = +ve, $E^0 = 0$ D) ΔG = -ve, E^0 = +ve

64 A hydrogen gas electrode is made by dipping platinum wire in a solution of HCl of pH =10 and by passing hydrogen gas around the platinum wire at one atm pressure. The oxidation potential of electrode would be?

A) 0.118 V B) 1.18V C) 0.059 V D) 0.59 V

65 When 0.1 mol MnO_4^{2-} is oxidized, the quantity of electricity required to completely oxidize MnO_4^{-1} is:

A) 96500 C B) 2x96500 C C) 9650 C D) 96050 C

66 When the same quantity of electricity is passed for half an hour, the amount of Cu and Cr deposited are 0.375 and 0.30 respectively. Ratio of electrochemical equivalent of Cu and Cr is:.

A) 0.8 B) 1.25 C) 2.5 D) 1.62

67 The residual persistent nucellus is known as:

A) Perisperm B) Pericarp C) Integuments D) None of these

68 Which one from the following statement is incorrect:

A)In birds and mammal internal fertilization takes place

B) Colostrums contains antibodies and nutrients

C) Polyspermy is prevented by the chemical changes in the egg surface

D) In the human female implantation occurs almost seven days after fertilization

69 Identify the odd one from the following:

A) Labia minora B) Fimbriae C) Infundibulum D) Isthmus

70 Division of human egg is:

A) Holoblastic,equal B) Meroblastic C) Holoblastic, unequal D) None of these

71 The numbers of chromosomes in mature gamete gets halved during:

A) Meiosis II B) Formation of first polar body

C) Formation of second polar body D) Division of secondary oocyte and spermatocyte

72 Plants with ovaries having one or a few ovules, are generally pollinated by:

A) Bees B) Butterflies C) Birds D) Wind

73 Ovulation in the human female normally takes place during the menstrual cycle:

A) At the beginning of proliferative phase B) At the end of proliferative phase C) At the mid of secretory phase D) Just before the end of secretory

74 Acrosome is a type of:

A) Lysosome B) Flagellum C) Ribosome D) Basal body

75 Which part of ovary in mammals acts as an endocrine gland after ovulation:

A) Vitelline membrane B) Graffian follicle C) Stroma D) Germinal epithelium

76 Withdrawal of which of the following hormones is immediate cause of menstruation?

A) Estrogen B) FSH C) FSH-RH D) Progesterone

77 Layers of an ovum from outside to inside are:

A)Corona radiata, zona pellucid and vitelline membrane
B) Zona pellucida, corona radiata and vitelline membrane
C) Vitelline membrane, zona pellucida and corona radiata
D) Zona pellucid, vitelline membrane and corona radiata

78 Which one of the following is the most likely reason of not occurring regular menstruation cycle in females?

A) Fertilization of ovum
B) Maintenance of hypertrophical endometrial lining
C) Retention of corpus luteum
D) Maintenance of high concentration of sex hormones in blood

79 The first movement of the foetus and appearance of hair on its head are usually observed during which month of pregnancy?

A) Four month B) Fifth month C) Sixth month D) Third month

80 The coconut water from tender coconut represents:

A) Free nuclear proembryo. B) Free nuclear endosperm. C) Endocarp. D) Fleshy mesocarp.

81 Change in GnRH pulse frequency in females is controlled by circulating levels of:

A) Progesterone only B) Progesterone and inhibin C) Estrogen and progesterone D) Estrogen and inhibin

82 Seed formation without fertilization in flowering plants involves the process of:

A) Somatic hybridization B) Apomixes C) Sporulation D) Budding

83 Which of the following statements is not correct?

A) LH and FSH decrease gradually during the follicular phase.
B) LH triggers secretion of androgens from the Leyding cells
C) FSH stimulates the sertolli cells which help in spermiogenesis
D) LH triggers ovulation in overy

84 Which one of the following pairs is wrongly matched, while the remaining three are correct?

A) *Bryophyllum* –Leaf buds B) *Penicilium* --- Conidia C) *Agave* --- Bulbils D) *Water hyacinth*--- Runner

85 Vegetative propagation in *Pistia* occurs by:

A) Stolon B) Offset C) Runner D) Sucker

86 Both autogamy and geitonohgamy are prevented in:

A) Papaya B) Cucumber C) Caster D) Maize

87 Vegetative propagation in mint occurs by:

A) Runner B) Offset C) Rhizome D) Sucker

88 *Hydra* reproduced asexually through:

A) Fragmentation B) Budding C) totipotancy D) Pleutipotency

89 During oogenesis, each diploid oocyte produces:

A) Four functional ova B) Two functional eggs and two polar bodies
C) Four functional polar bodies D) One functional egg and three polar bodies

90 The fleshy edible part of an apple is:

A) Thalamus B) Nucellus C) Ovary D) Endosperm

91 What is common between vegetative reproduction and apomixes?

A) Both occur round the year B) Both produce progeny identical to parent
C) Both are applicable to only dicot plants D) Both bypass the flowering plant

92 The "eyes" of the potato tubers are:

A) Root buds B) Flower buds C) Shoot buds D) Axillary buds

93 In angiosperms, functional megaspore develop into:

A) Endosperm B) Pollen sac C) Embryo sac D) Ovule

94 Which one of the following is surrounded by a callose wall?

A) Male gamete B) Egg C) Pollen grain D) Microspore mother cell

95 What is the function of germ pore:

A) Absorption of water for seed germination B) Initiation of pollen tube C) Release of male gametes D) Meiosis II

96 The fertilization in which male gamete are carried though pollen tube is known as:

A) Syngamy B) Porogamy C) Siphonogamy D) Chalazogmy

97 In which one of the following pollination is autogamous?

A) Geitonogamy B) Xenogamy C) Chasmogamy D) Cleistogamy

98 Morula is a developmental stage:

A) Between implantation and parturition B) Between the zygote and blastocyte C) Between the blastocyte and gastrula D) After implantation

99 Which of the following is hormonal releasing intra uterine devices (IUD)

A) multoload-375 B) LNG -20 c) cervical cap D) vault

100 Shortest life span of

A) Mayfly B) human C) Housefly D) fruitfly

Answer Key XII PCB

1	2	3	4	5	6	7	8	9	10
C	C	A	B	D	B	C	B	C	C
11	12	13	14	15	16	17	18	19	20
A	A	A	C	D	B	A	D	C	A
21	22	23	24	25	26	27	28	29	30
C	D	C	D	C	A	B	C	D	D
31	32	33	34	35	36	37	38	39	40
D	C	B	A	C	B	B	A	B	A
41	42	43	44	45	46	47	48	49	50
B	C	D	A	C	D	B	D	B	A
51	52	53	54	55	56	57	58	59	60
D	B	C	C	C	A	A	C	C	D
61	62	63	64	65	66	67	68	69	70
A	C	D	D	C	B	A	c	A	A
71	72	73	74	75	76	77	78	79	80
B	D	b	A	B	D	A	A	b	B
81	82	83	84	85	86	87	88	89	90
C	B	B	D	B	A	D	B	D	A
91	92	93	94	95	96	97	98	99	100
B	C	C	d	B	C	D	B	b	A