1. An electrochemical cell can behave like electrolytic cell when-
   A) $E_{cell} = 0$ B) $E_{cell} > E_{ext}$ C) $E_{ext} > E_{cell}$ D) $E_{cell} = E_{ext}$

2. The cell constant of a conductivity cell-
   A) changes with change of electrolyte   B) changes with change of concentration   C) changes with change of temperature   D) remain constant

3. Galvanized iron sheets are coated with-
   A) C   B) Cu   C) Zn   D) Ni

4. For a redox reaction to proceed in a cell, the emf must be-
   A) +ve   B) –ve   C)fixed   D) zero

5. 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) $S\ m^3\ mol^{-1}$

6. The unit of cell constant is-
   A) $ohm^{-1}\ cm^{-1}$ B) cm   C) $ohm^{-1}\ cm$ D) cm^{-1}

7. E^0_{cell} and ΔG^0 are related as -
   A) $\Delta G^0 = nF\ E^0_{cell}$ B) $\Delta G^0 =- nF\ E^0_{cell}$ C) $\Delta G^0 = nF\ E^0_{cell} =0$ D) none

8. Which of the following will increase the voltage of the cell whose reaction is $Sn + 2Ag^+ \rightarrow Sn^{2+} + 2Ag$ A) increase size of silver rod   B) increase conc. Of Sn2+ ion   C) increase conc. Of Ag+ ion   D) none

9. The emf of the cell, Cu / $Cu2^+$ (1M) // Ag^+ (1M) / Ag is 0.46v. The value of $E^0_{Cu2+/Cu}$ is-   A)-0.34 v   B) 1.26 v   C) -1.26 v   D) 0.34 v

10. KNO_3 is used to make salt bridge because-
    A) velocity of $K^+ > NO_3^-$ B velocity of $K^+ < NO_3^-$)   C) velocity of $K^+ = NO_3^-$ D) KNO_3 is highly soluble

11. The value of Λ^0 for NaCl, KBr and KCl are 126, 152 and 150 $Scm^2\ mol^{-1}$ respectively. The value of Λ^0 for NaBr is-
    A) 278   B) 976   C) 128   D)302 $Scm^2\ mol^{-1}$

12. For spontaneity of cell, which is correct-
    A) $\Delta G^0 = 0$, $E^0 =0$ B) $\Delta G^0 = -ve$, $E^0 =0$ C) $\Delta G^0 = +ve$, $E^0 =0$ D) $\Delta G^0 = -ve$, $E^0 =+ve$

13. Efficiency of a fuel cell is given by-
    A) $\Delta G/ \Delta S$ B) $\Delta G/ \Delta H$ C) $\Delta S/ \Delta G$ D) $\Delta H/ \Delta G$

14. What is reduction potential of $Fe^{3+}(0.02M) + 1e^- \rightarrow Fe^{2+} (2.0M)$? $E^0_{Fe3+/}\ E^0_{Fe2+} =0.771\ v$ A) 0.653v   B) 0.889 v   C) 0.683 v   D) 2.771 v

15. Which of the following relation is not correct-?

A) $\Lambda_m = K \times 1000/M$ B) $K = G \times a/l$ C) $K = G \times l/a$ D) $R = \ell \times l/a$

16.   Barr body of a mammal represents:

a. All heterochromatin in female cells.

b. All heterochromatin in male and female cells

c. The Y chromosome in the somatic cells of male

d. One of the two-X chromosomes in somatic cells of female

17.   A marriage between normal visioned man and colour-blind woman will produce which of the following type of offspring?

a)Normal sons and carrier daughters   b)Colour-blind sons and carrier daughter

c)Colour-blind sons and 50% carrier daughters

d)50% Colour-blind sons and 50% carrier daughters

18.   Down's syndrome is caused by an extra copy of chromosome number 21. What percentage of offspring produced by an affected mother and a normal father be affected by this disorder?

a)50%   b) 25%   c)100%   d)75%

19.   Complete linkage is observed in:

a)Male *Drosophila* sp.   b)Female *Drosophila* sp.   c)Female silkworm

d)None of these

20.   Genetics term was proposed by:

a)Mendel   b)Bateson   c)Morgan   d)Johannson

21.   Rr   rr progeny: Red (dominant) flowered heterozygous crossed with white flower:

a)350 ---- red: 350 ---- white   b)450 ----- red: 250 ---- white

c)380 ----red : 250 ---- white   d)None of the above

22.   Karyotype is:

a. Chromosome complement which is specific for each species of living organism

b. All organisms possessing same type of chromosomes

c. Division of nucleus

d. None of the above

23.   Grain colour in wheat is determined by three pairs of polygene. Following the cross AABBCC (dark colour) X aabbcc (light colour) in F_2 generation what proportion of the progeny is likely to resemble either parent?

a)Half   b)Less than 5 percent   c)One third   d)None of these

24.   Match the following:

1. *t*RNA   1. Linking of amino acids

2. *m*RNA   2. Transfer of genetic information

3. *r*RNA   3. Nucleolar organizing region

4. Peptidyl transferase   4. Transfer of amino acid from cytoplasm of ribosome

Codes:	A	B	C	D
a.	4	2	3	1
b.	1	4	3	2
c.	1	2	3	4
d.	1	3	2	4

25.   Genes present in the cytoplasm of eukaryotic cells, are found in:
   a. Mitochondria and inherited via egg cytoplasm
   b. Lysomoes and peroxisomes
   c. Golgi bodies and smooth endoplasmic reticulum
   d. Platids and inherited via male gamete

26.   Select the incorrect statement from the following:
   a. Linkage is an exception to the principle of independent assortment in heredity
   b. Galactosemia is an inborn error of metabolism
   c. Small population size results in random genetic drift in a population
   d. Baldness is a sex limited trait

27.   Which of the following genotype does not produce an sugar polymer on the surface of the RBC?
   a)$I^A I^A$ b) $I^B I$ c)i i   d) $I^A I^B$ e) $I^B I^B$

28.   A woman is married for the second time. Her husband was ABO blood type A, and her child by that marriage was type O. Her new husband is type B and their child is AB. What is woman's ABO genotype and blood type?
   a)$I^A I^O$;blood type A   b)$I^A I^B$;blood type AB   c)$I^B I^O$;blood type B
   d)$I^O I^O$;blood type O

29. Inheritance of flower colour is an example of incomplete dominance which is seen in:
   a)Pisum   b)Solanum   c)Hibiscus   d)Antirrhinum

30.   Mutation can be introduced with:
   a)Infra red radiations   b)IAA   c)Ethylene   d)Gamma radiation

31. The plates of a parallel capacitor are charged up to 100 V. If 2 mm thick plate is inserted between the plates, then to maintain the same potential difference, the distance between the capacitor plates is increased by 1.6mm the dielectric constant of the plate is
(A) 5   (B) 4   (C) 1.25   (D) 2.5

32. For the circuit shown in figure the charge on4µF capacitor is
(A) 20µc   (B) 40µc   (C) 30µc   (D) 54µc

33. The capacitors of capacitance 4µF, 6µF and 12µF are connected first in series and then in parallel. What is the ratio of equivalent capacitance in the two cases?
(A) 2: 3   (B) 11: 1   (C) 1: 11   (D) 1 : 3

34. Large number of capacitors of rating 10µF/200V V are available. The minimum number of capacitors required to design a 10µF/700V capacitor is
(A) 16   (B) 8   (C) 4   (D) 7

35. A variable condenser is permanently connected to a 100 V battery. If capacitor is changed from 2µF to 10µF. Then energy changes is equal to

(A) 2×10^{-2}J   (B) 2.5×10^{-2}J   (C) 6.5×10^{-2}J (D) 4×10^{-2}J

36. Two positive point charges of 12μc and 8μc are placed 10 cm apart in air. The work done to bring them 4 cm closer is

(A) Zero   (B) 4.8 J   (C) 3.5 J   (D) 5.8 J

37. 1000 similar electrified rain drops merge together into one drop so that their total charge remains unchanged. How is the electric energy affected?

(A) 100 times   (B) 200 times   (C) 400 times   (D) 102 times

38. A parallel plate capacitor is made by stocking n equally spaced plates connected alternately. If the capacitance between any two plates is x, then the total capacitance is,

(A) nx (B) nx^2 (C) nx (D) $(n-1)x$

39. Two air capacitors A = 1μF B = 4 μF are connected in series with 35 V source. When medium of dielectric constant K = 3 is introduced between the plates of A, change on the capacitor changes by

(A) 16 μc   (B) 32 μc   (C) 28 μc   (D) 60 μc

40. A parallel plate condenser with dielectric of constant K between the plates has a capacity C and is charged to potential V volt. The dielectric slab is slowly removed from between the plates and reinserted. The network done by the system in this process is

(A) Zero   (B) $(K-1)$ cv^2 /2   (C) $(K-1)$ cv^2 (D) cv^2 $(K-1)$/K

41. A battery is used to charge a parallel plate capacitor till the potential difference between the plates becomes equal to the electromotive force of the battery. The ratio of the energy stored in the capacitor and work done by the battery will be

(A) 1/2   (B) 2   (C) 1   (D) ¼

42. Two spherical conductors A and B of radii 1mm and 2mm are separated by a distance of5mm and are uniformly charged. 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 sphere of A and B is

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

43. A parallel plate capacitor of capacitance 5μF and plate separation 6 cm is connected to a 1 V battery and charged. A dielectric of dielectric constant 4 and thickness 4 cm is introduced between the plates of the capacitor. The additional charge that flows into the capacitor from the battery is

(A) 2μc   (B) 5μc   (C) 3μc   (D) 10μc

44. 64 identical drops of mercury are charged simultaneously to the same potential of 10 volt. Assuming the drops to be spherical, if all the charged drops are made to combine to form one large drop, then its potential will be

(A) 100 V   (B) 320 V   (C) 640 V   (D) 160 V

45. Two metal plate form a parallel plate capacitor. The distance between the plates is d. A metal sheet of thickness d/2 and of the same area is introduced between the plates. What is the ratio of the capacitance in the two cases?

(A) 4: 1   (B) 3 : 1   (C) 2 : 1   (D) 5 : 1

Answer Key

1	2	3	4	5	6	7	8	9	10
c	d	c	a	a	d	b	b	d	c
11	12	13	14	15					
c	d	b	a	b					
16	17	18	19	20	21	22	23	24	25
d	b	a	b	b	a	a	b	a	a
26	27	28	29	30	31	32	33	34	35
d	c	a	d	d	A	B	C	A	D
36	37	38	39	40	41	42	43	44	45
D	A	D	C	A	A	B	B	D	C