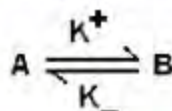


1. There are various types of bonds in chemistry like metallic bond, Ionic bond, Wandervall and hydrogen bond. Among the following the weakest bond is

- a. Ionic
b. Metallic
c. Hydrogen
d. Wandervalls

2. Consider the following chemical reaction in which rate of forward reaction (K^+) is 1/sec and rate of backward reaction is 10^{-7} sec



If reaction starts with one atom of substrate A, then what would be the concentration of B at equilibrium?

- a. 1
b. 10^7
c. 10^{-7}
d. 10^9

3. Find the oxidation state of Mn in $KMnO_4$

- a. -1
b. -7
c. -7
d. -1

4. In routine lab practice for dilution of concentrated sulphuric acid generally it is advised to add drops of sulphuric acid in water instead of water in concentrated sulphuric acid because

- a. Pure Sulphuric acid is very costly
b. It is an endothermic reaction
c. It is an exothermic reaction
d. Latent heat of water is low

5. If equal volumes of solid, liquid or vapour state of water is filled in thermos bottles, of which state of matter will possess maximum mean kinetic energy

- a. Solid
b. Liquid
c. Vapour
d. All will have same

6. In plants water is transported from roots to shoots via

- a. Xylem
b. Phloem
c. Aerenchyma
d. Symplast

7. Among the following organelles where you will NOT find the process of transcription of genes

- a. Nucleolus
b. Chloroplast
c. Mitochondria
d. Plasma membrane

8. Most common reason for genetic change from one generation to next generation among humans is

- a. Mutation
b. Segregation
c. Recombination
d. Environmental

9. In females which hormone is related with regulation of estrous cycle

- a. Cortisol
b. Insulin
c. Progesterone
d. ACTH

10. The speed of nerve impulse in humans is

- a. $10 \mu\text{m/sec}$
b. 10 mm/sec
c. 10 m/sec
d. 10 km/sec

11. If a 0.5 Km asteroid from space hits the earth. Among the following in which area of world would be least likely impact on life-

- a. Sahara desert
b. South east Asia
c. North America
d. Mid pacific Ocean

12. The major cause behind the damage of historical buildings like Tajmahal is

- a. Atmospheric Ozone
b. Presence of Sulphuric acid in environment
c. Increased CO_2 concentration
d. Polluted water in rivers

13. Half life of Uranium-238 is 4.468×10^9 years. At present in any rock the concentration of ^{238}U is equal to concentration of Pb, then the age of rock will be

- a. 4.468×10^9 years
b. 4.468×10^{10} years
c. 2.234×10^9 years
d. 1.117×10^9 years

14. The main reason behind earth's magnetic field

- a. Presence of Diamagnetic iron in earth's core
b. Matter present on Earth crust
c. Motion of iron in liquefied core
d. Due to impact of asteroids

15. The main reason for presence of circum-pacific ocean seismic belt is

- a. Union of Continent and Oceanic Plates
b. Subduction of oceanic plates into continental plates
c. Sea floor spreading
d. More human disturbance

16. If p implies q and q implies r. It is given that q is true it means-

- a. both p and q are true
b. both p and q are false
c. p is true and q false
d. p is false and q is true

17. On sudden power failure, information of which memory will be NOT lost in computer-

- a. RAM and CD
b. Floppy and Hardisk
c. PRAM and ROM
d. Floppy and EP-RAM

18. How many values of integer with sign magnitude can be stored in 8 bits

- a. -511 to +511
b. 255 and 0
c. -127 to +127
d. -128 to -128

19. Among the following which language is more near to one which is used by computer for execution of its programs

- a. C
b. BASIC
c. Assembly language
d. SQL

PART-B

1. Activity of Receptor tyrosine kinase is regulated by

- a. Phosphorylation
b. **dephosphorylation**
c. Methylation
d. Acetylation

2. Which of the following cell possess poly morpho nucleus

- a. B-cells
b. **Neutrophils**
c. Macrophage
d. Erythrocyte

3. DNA fragmentation is a characteristic feature of

- a. **Cell Death**
b. Mutation
c. Cancer growth
d. Cell division

4. Complete photosynthetic apparatus of chloroplast necessary for photosynthesis is coded by

- a. Nuclear gene
b. chloroplast gene
c. **Nuclear and chloroplast gene**
d. Chloroplast and mitochondrial genes

5. Characteristic feature of k-selected species is

- a. High intrinsic rate of growth
b. Small size and large number of offsprings
c. **Lager age at first reproduction**
d. Short life span

6. Correct statement regarding the effect of ozone on biosphere is

- a. Both atmospheric and stratospheric ozone is beneficial
b. Both atmospheric and stratospheric ozone is harmful
c. **Atmospheric ozone is harmful but stratospheric ozone is beneficial**
d. Atmospheric ozone is beneficial but stratospheric ozone is harmful

7. During evolution, if a single species give rise to many descendants of different phylogenetic taxons, it is termed as

- a. **clade**
b. cline
c. cluster
d. clone

8. Biological species concept cannot be applied on

- a. Allopatric species
b. Sympatric species
c. **Species producing viable hybrids**
d. Species of aquatic ecosystem

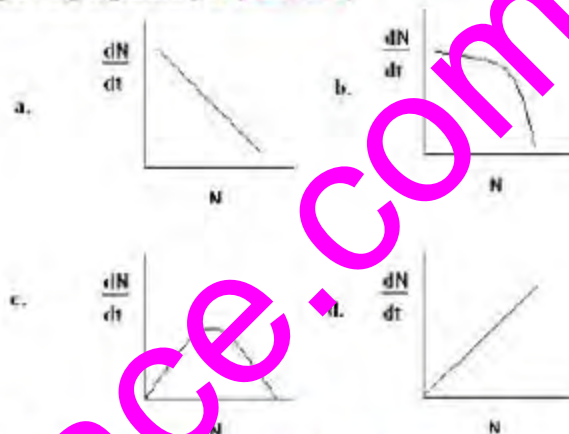
9. Increase in amount of the following is NOT a consequence of sewage effluents in river system

- a. Microbial load
b. Phosphate level
c. **Dissolved Oxygen**
d. Cynaobacterial density

10. In grasslands ergot feeds follows grazing cows. Cow during grazing exposes insects from grasses to ergots. This is an example of

- a. **Commensalism**
b. parasitism
c. Ammensalism
d. Mutualism

11. Curve which best explains the a population growing logistically is (**Answer c**)



12. The main species which produces both oil and dye is

- a. *Sesamum indicum*
b. *Canavalia gladiosa*
c. *Crotalaria tinctorius*
d. *Ricinus communis*

13. Differences at species and sub species level and gene flow between populations is best illustrated by

- a. **Allozymes**
b. Amino acid sequence
c. Double diffusion serology
d. Isoelectric focusing

14. Biodiversity hot spots are characterized on the basis of

- a. Endemic flowering plants and threat perception
b. **Endemic flowering plants**
c. Species of flowering plants
d. Threat perception

15. Sustainable harvesting for a fish population growing logistically is done at

- a. Above carrying capacity
b. At carrying capacity
c. **At half of the carrying capacity**
d. At lowest level

16. Consider the following assumptions

- i. All known living organisms possess parasites
ii. A single host species can harbor more than one type of parasites
iii. Parasites are species specific

From above information it can be concluded that

- a. Species of host organism is more than parasites
b. **Species of parasites is more than host organisms**
c. Number of parasites is equal to number of hosts
d. no valid conclusion can be drawn

17. Dichlorophenyl dimethyl urea (DCMU) inhibits photosynthesis at photosystem during

- a. $\text{phe} \rightarrow \text{Q}_A$ b. $\text{Q}_A \rightarrow \text{Q}_B$
c. $\text{Cyt } b_6 \rightarrow \text{PC}$ d. $\text{Q}_B \rightarrow \text{Cyt } b_6$

18. The bacteria can be best stored under starvation at 4°C then at 37°C because

- a. Membrane freezes
b. **Overall metabolic activity is lowered**
c. Increases enzyme efficiency
d. Large mortality so low competition

19. Which of the following index does not show relative abundance of species

- a. Shanon-weaver b. Simpson
c. Brillion d. **Species richness**

20. In caryophyllales the type of sieve tube plastid is

- a. **Type-III P** b. Type-S
c. Type-C d. Type-A

21. Cardiac muscles can not be tetanized because

- a. Resistant to tetanus toxin
b. autorythmicity
c. **Long Refractory period**
d. highly evolved muscles

22. Correct order for increasing order of primary productivity is

- a. **Ocean-Desert-Tropical deciduous forest-Tropical rain forest**
b. Desert-Tropical deciduous-Ocean-Tropical rain forest
c. Tropical rain forest-Ocean-Tropical deciduous-Deserts
d. Tropical deciduous-Desert-Ocean-Tropical rain forest

23. Silica cells are present in the member of family

- a. Annonaceae b. **Poaceae**
c. Orchidaceae d. Lamaceae

24. Type III survivorship curve is shown by

- a. Birds b. **Pelagic fishes**
c. Humans d. Phytophagous insects

25. The dwarfing gene which was responsible for green revolution is involved in signal transduction of over expression of

- a. **Gibberlic acid** b. Cytokinin
c. Abscicic acid d. Ethylene

26. Anemia due to lack of hemoglobin is associated with

- a. **Iron deficiency** b. Calcium deficiency
c. Vitamin B6 d. Vitamin B12

27. Among the following hypothalam peptide hormone which is smallest

- a. GnRH b. CRH
c. **TRH** d. GH-RH

28. According to present concept the main cause of extinction of dinosaurs was

- a. **Meteorite striking** b. Competition
c. Environment change d. Unknown

29. Fat soluble vitamins involved in bone formation and blood clotting are

- a. **Vit D and Vit K** b. Vit B and Vit E
c. Vit D and Vit B d. Vit A and Vit K

30. In *E. coli* lac operon is positively as well as negatively regulated. It means

- a. *E. coli* depends only on glucose
b. Depends only on lactose
c. **Can use both glucose and lactose simultaneously**
d. Use lactose only when glucose is absent

31. Replication of transposons increases their copy number by replicating its copies and inserting into new position while keeping its copy at original place. The enzyme involved in this process are

- a. Transposase
b. Transposase and Integrase
c. **Transposase and Resolvase**
d. Transposase, Resolvase and Integrase

32. Generally limiting factor for primary productivity in aquatic ecosystem is

- a. Nitrogen b. **Phosphorus**
c. Sulphur d. Carbon

33. During opening of stomata which ions are transported from neighboring cells to guard cells

- a. **K^+ ion** b. Cl^- ion
c. Na^+ ion d. Ca^{++} ions

34. Inhibitor of RNA polymerase during elongation of transcription in both prokaryotes and eukaryotes is

- a. Rifamcin b. α -amanitin
c. Streptomycin d. **Acridomycin-D**

35. C-value paradox suggest us about

- a. Colinearity between genome size and complexity of organism
b. **Non-colinearity between genome size and complexity of organism**
c. Dosage compensation
d. Number of chromosomes

36. Concentration of urine in mammals depends on

- a. Glomerulus's
b. **Length of Henley's loop**
c. Osmotic pressure of blood
d. Size of organism

37. If organism is triploid, then hardy-weinberg theorem applicable will be

- a. $(p+q)^3$ b. $(p+q)^2$
c. $(p+q+r)^3$ d. $(p+q+r)^2$

38. During the process of selection if number of individuals are more in heterozygote state as compare to both homozygote, under such condition

- a. **Both alleles will coexist in population**
b. Only dominant alleles will exist
c. Only recessive alleles will exist
d. Both the alleles will be lost

39. In honey bee queen and workers are diploid while male are haploid. If a queen honey bee is fertilized with equal number of sperms from two different males, then genetic relatedness in progeny will be

- a. 0.75 b. 0.5
c. **0.46** d. 0.25

40. If mutation changes codon in such a way that there is no effect on functioning and overall structure of protein. This type of mutation is termed as

- a. **Silent** b. Mis-sense
c. Transition d. Frameshift

41. Which statement is true about nucleosome model of chromatin in eukaryotes

- a. It consist of one unit each of H_2A , H_2B , H_3 , H_4 and 200 bp of DNA
b. **It consist of two unit each of H_2A , H_2B , H_3 , H_4 and 200 bp of DNA**
c. It consist of H_1 and 200 bp DNA
d. It consist of histone and non-histone proteins

42. Genetically identical nuclei are present in embryo sac of type

- a. **Polygonum** b. Adoxa
c. Plumbago d. Fratillium

43. YAC behaves similar to normal chromosomes because it possess

- a. Centromere
b. Centromere and telomere
c. Telomere and ARS
d. **Centromere, telomere and ARS**

44. Angiosperms originated during

- a. Upper cretaceous b. **mid cretaceous**
c. Lower Jurassic d. Carboniferous

45. Paternal grandfather is hemophilic, what is probability of his grandson to be hemophilic

- a. $\frac{1}{2}$ b. $\frac{1}{4}$
c. $\frac{1}{8}$ d. **0**

46. Lipid phase transition and movement can be studies using

- a. **ESR**
b. NMR
c. Electron microscopy
d. Phase contrast microscopy

47. Split genes are present in

- a. All eukaryotes
b. **Most of eukaryotes and some archaea**
c. Most of eukaryotes and some eubacteria
d. All organisms

48. Sucrose doesnot occur in anomeric form while its hydrolyzed product glucose and fructose have anomers. The reason is

- a. C_1 of glucose and C_1 of fructose are bonded in glycosidic linkage
b. **C_1 of glucose and C_2 of fructose are bonded in glycosidic linkage**
c. Sucrose is polysaccharide
d. Sucrose is not soluble in water

49. Large finches of three different size of beaks-large, intermediate and small feeds on seeds size with bimodal distribution (large and small). Under such condition natural selection will favor

- a. Intermediate
b. Large
c. **Large and Small**
d. Large and Intermediate

50. All of the mendelian alleles for different traits showed

- a. Epitasis
b. Co dominance
c. Incomplete dominance
d. **Dominance and recessiveness**

51. UV-B induced damage of DNA by formation of pyrimidine dimmers are repaired by photolase on activation by

- a. UV-C light b. Green light
c. **Blue light** d. IR light

52. If two bacterial culture are growing exponentially with different in their intrinsic rate of growth. The difference in population of both will differ

- a. Increase linearly
b. Decrease linearly
c. **Increase exponentially**
d. Decrease exponentially

53. Translocation of photosynthate in plants occurs through

- a. Xylem b. **Phloem**
c. Cambium d. Endodermis

54. During evolution first multicellular organisms appeared during

- a. 1 billion years ago b. 2 billions
c. 600 millions d. 200 millions

55. The amount of radiation hitting the retina per second is 2×10^6 Js of wavelength 600 \AA . The number of photons received per second by eye is ($h=6.64 \times 10^{-34} \text{ sec}^{-1}$)

- a. 6000 b.
c. d.

56. The most probable amino acid occurring at bends and turns of polypeptide is

- a. Proline b. Leucine
c. Phenyl alanine d. Tryptophan

57. Among the following which statement is correct regarding the promoter of the gene

- a. It is always located upstream of transcription start site
b. It is located downstream of translation start site
c. Different promoter elements are recognized by different RNA polymerase
d. Promoters are recognized due to their different secondary structures

58. Which of the following types of cells would you expect to contain a high density of cytoplasmic intermediate filaments?

- a. Amoeba b. Sperm
c. Epithelial cells d. Plant cells

59. Sodium laural sulphate(SDS) denatures protein by changing their

- a. primary structure
b. primary and secondary structure
c. secondary and tertiary structure
d. secondary, tertiary and quaternary structure

60. Among the following which is responsible for nerve action potential

- a. Influx of Na^+ and K^+ ions
b. Outflux of Na^+ and K^+ ions
c. Influx of Na^+ and outflux of K^+ ions
d. Outflux of Na^+ and influx of K^+ ions

61. Which molecule is continuously transported from nucleus to cytoplasm

- a. DNA b. RNA
c. Histone d. Ribosomes

62. In severe combined immunodeficiency (SCID) syndrome there is

- a. low number of neutrophils
b. low number of T or B cells
c. Low macrophages
d. Low amount of IgG

63. In human somatic cell number of kinetochores at mitosis is

- a. 23 b. 44
c. 46 d. 92

64. In meiosis crossing over occur during

- a. Prophase-I b. Prophase-II
c. Metaphase d. Anaphase

65. The order of reaction catalyzed by enzyme at low substrate concentration is

- a. first order b. Pseudo first order
c. Second order d. Zero order

66. If the K_m of enzyme for substrate A is 1×10^{-5} and for substrate B is 4×10^{-5} it means

- a. Enzyme has more affinity for substrate A than substrate B
b. Enzyme has more affinity for substrate B than substrate A
c. Enzyme has equal affinity for substrate A and substrate B
d. Enzyme is non-specific

67. In sexually reproducing organisms which is most important barrier for speciation

- a. geographical b. Reproductive
c. Temporal d. Ethological

68. Source of energy for Urey and Miller experiment was

- a. Electric spark b. UV
c. Glycine d. ATP

69. Which national park is not correctly matched with its organism

- a. Ranthambore-Bengal Tiger
b. Rajaji-Hollock gibbon
c. Kanchanjanga-Rhinoceros
d. Bandipur-Elephant

70. Change in allele frequency at species or below species level is termed as

- a. Microevolution b. Macroevolution
c. Mega evolution d. Silent evolution