

1. The naturalist who independently conceived the idea of natural selection along with Darwin :
(A) Alfred Russel Wallace (B) Charles Lyell
(C) Joseph Hooker (D) John Henslow
2. The theory proposed by Stephen Jay Gould and Niles Eldredge to explain Evolution :
(A) Theory of Genetic drift (B) Theory of punctuated Equilibrium
(C) Theory of Genetic Equilibrium (D) Theory of Orthogenesis
3. A system of classification based on the phylogenetic relationships and evolutionary history of groups of organisms :
(A) Phenetics (B) Phyletics
(C) Cladistics (D) Phylogenetics
4. Eight kingdom classification was proposed by :
(A) R.H. Whittaker (B) Carl Woese
(C) Carolus Linnaeus (D) Cavalier Smith
5. Protein that was used to create the first phylogenetic tree based on molecular data :
(A) Cytochrome A (B) Cytochrome B
(C) Cytochrome C (D) Cytochrome D
6. Malaise traps are used to collect :
(A) Birds (B) Insects
(C) Mammals (D) Plankton
7. The loss of genetic variation that occurs when a new population is established by a very small number of individuals from a larger population is known as :
(A) Genetic stability principle (B) Hardy Weinberg Principle
(C) Speciation principle (D) Founder Principle
8. An example for Co evolution is :
(A) Evolution of bees and flowers they pollinate
(B) Evolution of horse and deer
(C) Evolution of marsupials and placental mammals
(D) Evolution of man and ape

9. The technique that uses rates of molecular changes to study phylogenetic relationship is :
- (A) Molecular taxonomy (B) Molecular clock
(C) Molecular genetics (D) Molecular Phylogeny
10. When the name of a species or subspecies is the repetition of the generic name e.g. *Apis apis* it is known as?
- (A) Homonym (B) Heteronym
(C) Synonym (D) Tautonym
11. Cyclic AMP is the second messenger of :
- (A) Testosterone (B) Catecholamine
(C) Progesterone (D) Insulin
12. The enzyme that convert Dihydroxy acetone phosphate to D glyceraldehyde 3 phosphate is :
- (A) Glyceraldehyde 3 phosphate dehydrogenase
(B) Enoyl coenzyme A hydratase
(C) Glycerol kinase
(D) Triose phosphate isomerase
13. Normal value of glomerular filtration rate is :
- (A) 10 ml/minute (B) 525 ml/minute
(C) 125 ml/minute (D) 750 ml/minute
14. Gastric inhibitory peptide is secreted by :
- (A) G cells of the stomach (B) L cells of the duodenum and jejunum
(C) Alpha cells of Pancreatic islands (D) K cells of duodenum and jejunum
15. At high concentration of substrate an uncompetitive inhibitor :
- (A) Lowers V_{max} and K_m
(B) Increases V_{max} and K_m
(C) Lowers V_{max} and increases K_m
(D) Increases V_{max} and K_m get unaltered
16. Diabetes insipidus is caused by the absence of the secretion of :
- (A) Insulin (B) Gastrin
(C) Antidiuretic hormone (D) estrogen
17. Depolarisation of SA node is mainly due to :
- (A) Influx of calcium ions (B) Influx of magnesium ions
(C) Efflux of calcium ions (D) Efflux of magnesium ions

18. Precursor for catecholamine hormones is :
- (A) Methionine (B) Alanine
(C) Tyrosine (D) Serine
19. Chitin is :
- (A) Heteropolysaccharide with glucuronic acid and Nacetyl glucosamine residues linked by beta 1 - 4 linkage
(B) Homopolysaccharide with D glucose residues linked by beta 1- 4 linkage
(C) Homopolysaccharide of D fructose residues linked by beta 1 - 2 linkage
(D) Homopolysaccharide with Nacetyl glucosamine residues linked by beta 1- 4 linkage
20. Human ABO blood group is determined by :
- (A) Antigenic property of lecithin of the membrane
(B) Antigenic property of oligosaccharide head group of glycosphingo lipid
(C) Antigenic properties of ethanolamines
(D) Antigenic properties of cholesterol of the membrane lipid
21. From the following, select the correct combination. The immunoglobulin class produced in a primary response to an antigen and the first immunoglobulin to be synthesized by the neonate are :
- (A) IgM, IgM (B) IgM, IgG
(C) IgM, IgA (D) IgM, IgD
22. In Graves' disease, auto-antibodies :
- (A) Bind to receptor for TSH
(B) Its action mimic the normal action of TSH
(C) Overstimulate the thyroid
(D) All the above
23. Which of the following is correct with respect to the function of complement system?
- (A) Lysis (B) Opsonization
(C) Clearance of immune complexes (D) All the above
24. Haptens are :
- (A) antigenic (B) immunogenic
(C) both antigenic and immunogenic (D) non-antigenic and non-immunogenic
25. Georges Köhler and Cesar Milstein are associated with:
- (A) transplantation (B) hybridoma technology
(C) vaccine development (D) complement system

26. If *E.coli* is grown in a minimal medium containing glucose and lactose :
- It use glucose first
 - It use lactose first
 - It use both glucose and lactose together
 - All are correct
27. Which of the following is correct :
- gram positive bacteria can have peptidoglycan upto 10% of cell wall
 - gram negative bacteria can have peptidoglycan upto 90% of cell wall
 - gram positive bacteria can have peptidoglycan upto 90% of cell wall
 - both gram positive and negative bacteria can have peptidoglycan upto 50% of cell wall
28. Lysozyme sensitive bond is :
- $\beta(1, 1)$ glycosidic bond present in peptidoglycan
 - $\beta(1, 2)$ glycosidic bond present in peptidoglycan
 - $\beta(1, 3)$ glycosidic bond present in peptidoglycan
 - $\beta(1, 4)$ glycosidic bond present in peptidoglycan
29. Lipopolysaccharide is characteristic feature of :
- gram positive bacteria
 - gram negative bacteria
 - both (A) and (B)
 - none of the above
30. Dipicolinic acid is associated with :
- bacterial cell
 - bacterial flagella
 - bacterial surface
 - bacterial spore
31. The first eukaryotic organism whose complete DNA is sequenced :
- Chlamydomonas
 - Sacharomyces cerevisiae
 - Pseudomonas
 - Caenorhabditis elegans
32. The first amino acid synthesized during protein synthesis :
- Tyrosine
 - Proline
 - Methionine
 - Tryptophan
33. The heat stable DNA polymerase used in Polymerase Chain Reaction :
- T7 DNA Polymerase
 - Thermo Polymerase
 - Taq DNA Polymerase
 - Poly (A) Polymerase
34. The insert capacity of plasmid vectors :
- 0.1 – 10 kb
 - 10 – 20
 - 35 – 45
 - 80 – 100

35. The blotting technique used to detect RNA :
- (A) Western Blot (B) Southern Blot
(C) Northern Blot (D) Eastern Blot
36. A molecular marker utilizing restriction enzymes :
- (A) RAPD (B) AFLP
(C) Micro satellite (D) RFLP
37. Which one is not a DNA staining reagent aiding DNA visualization :
- (A) Ethidium bromide (B) Sybr Green
(C) Hoechst stain (D) Methyl red
38. The theory behind si-RNA therapy :
- (A) Correction of gene mutation with an oligonucleotide
(B) Blocking translation of mRNA from a mutant gene with an oligonucleotide
(C) Providing needed protein synthesized by blood cells
(D) Removal of toxic molecules
39. The enzyme that degrades double stranded DNA :
- (A) DNase I (B) Mung Bean nuclease
(C) S1 nuclease (D) RNase H
40. Identify a recombinant vaccine :
- (A) MMR vaccine (B) BCG
(C) Polio (D) Hepatitis B vaccine
41. U-rich mRNAs participate in pre-mRNA splicing are :
- (A) U1, U2, U3, U4, U5 (B) U1, U3, U5, U7, U5, U9
(C) U2, U4, U6, U8, U10 (D) U1, U2, U4, U5, U6
42. Extent of interference can be measured by coefficient of co-incidence. Therefore :
- (A) $C = \frac{\text{Expected frequency of double cross overs}}{\text{Observed frequency of double cross overs}} \times 100$
(B) $C = \frac{\text{Expected frequency of double cross overs}}{\text{Observed frequency of double cross overs}}$
(C) $C = \frac{\text{Observed frequency of double cross overs}}{\text{Expected frequency of double cross overs}}$
(D) $C = \frac{\text{Observed frequency of double cross overs}}{\text{Expected frequency of double cross overs}} \times 100$

43. During replication in E.Coli the unwinding of DNA is catalyzed by :
- (A) DNA Helicase (B) SSDNA Binding protein
(C) DNA topoisomerase (D) DNA polymerase
44. 47 xxy in man indicates :
- (A) Down's syndrome (B) Klinefelter syndrome
(C) Turner syndrome (D) Cri-du-chat syndrome
45. Trichothiodystrophy is associated with :
- (A) Structural gene mutation
(B) Defect in nucleotide excision repair
(C) Defect in DNA metabolism
(D) Defect in mismatch repair mechanism
46. Calcium plays an important role in cortical granule reaction. Upon fertilization the level of Ca^{+} :
- (A) Increases (B) Decrease
(C) Remains same (D) Decreases with increase in K^{+}
47. _____ is a maternally expressed polypeptide that may control the fate of EMS blastomere in C.elegans :
- (A) PAL - 1 (B) PIE - 1
(C) SKN - 1 (D) MOM - 2
48. Identify the correct statement from the following :
- (A) Mutation of CSX gene results in heart attack
(B) Reiger syndrome is a mutation phenotype of the gene $PITx_3$
(C) Mutation of WTI gene in man results in congenital cataract
(D) Greig syndrome is a mutation phenotype of the gene SOX9
49. Which group of genes identified by Nusslein Volhard and Carroll is responsible for the final stages of segmentation in Drosophila embryo?
- (A) Morphogen gradient gene (B) Gap gene
(C) Pair rule genes (D) Segment polarity gene
50. Which of the following series of events represents the path of vertebrate development?
- (A) Blastula, cleavage, neurulation, cell migration, gastrulation, organogenesis, growth
(B) Blastula, cleavage, gastrulation, neurulation cell migration, organogenesis, growth
(C) Cleavage, blastula, gastrulation, neurulation, cell migration, growth
(D) Cleavage, gastrulation, blastulation, neurulation, cell migration, growth

51. A keystone species :
- (A) Exert great influence on structure of ecosystem
 (B) Exert great influence on functioning of ecosystem
 (C) Both (A) and (B)
 (D) None of the above
52. System for the control of hunger and thirst are linked with the _____ of the brain :
- (A) Pituitary (B) Hypothalamus
 (C) Thalamus (D) All the above
53. The frequency distribution for nominal /ordinal data :
- (A) Bar chart (B) Histogram
 (C) Frequency polygon (D) All the above
54. Principle of competitive exclusion was given by :
- (A) E. P. Odum (B) G. F. Gause
 (C) J. H. Conell (D) E. F. Clements
55. Which of the following is true :
- (A) In a wild life sanctuary human activities are not allowed
 (B) In a national park human activities are not allowed
 (C) Both (A) and (B)
 (D) None
56. Zero population growth occurs when :
- (A) Death rate equals birth rate and net migration is zero
 (B) Death rate is greater than birth rate and net migration is zero
 (C) Death rate is lesser than birth rate and net migration is zero
 (D) All the above
57. Classical conditioning is reinforced when the _____ follows the :
- (A) Conditioned Stimulus, Unconditioned Stimulus
 (B) Unconditioned Response, Conditioned Response
 (C) Conditioned Stimulus, Conditioned Response
 (D) Unconditioned Stimulus, Conditioned Stimulus
58. A stable community of a sere is :
- (A) Seral community (B) Lithosere
 (C) Climax community (D) Xerosere
59. Which of the following is not true for green house gases :
- (A) CO₂, methane, CFC (B) CO₂, methane, Ozone
 (C) CO₂, water vapour, CFC (D) CO₂, nitrous oxide, Oxygen
60. The following is not a major cause of species extinction :
- (A) Habitat loss (B) Hunting and poaching
 (C) Fire (D) Exotic species