



Previous Year Question Paper

**SET – KERALA**

**ZOOLOGY**

**PAPER - II**

**State Eligibility Test**

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*(Original Question Paper with Answer Key)*

**Kerala State Eligibility Test - KSET**



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**17835**

# 120 MINUTES

- Which among the following is not taken into account under the five kingdom classification?  
A) Plantae B) Animalia  
C) Viridae D) Monera  
**Ans. C**
- In DNA bar code analysis for molecular taxonomy, the material recommended for taxonomical studies in prokaryotes is  
A) 18S RNA B) 16S RNA  
C) Mitochondrial DNA D) Plasmid DNA  
**Ans. B**
- Genes coding for ----- is an example of polymorphic DNA in human beings.  
A) Histone proteins B) Cyclo-oxygenase  
C) Gonadal development D) Haemoglobin  
**Ans. D**
- Microsatellite DNA were first observed:  
A) When DNA fragments were separated by centrifugation  
B) In Drosophila  
C) When RAPD was carried out  
D) During DNA sequence analyses  
**Ans. A**
- In disputes concerning homonyms, according to the ICZN rules  
A) The homonym should be replaced with its synonym  
B) The 'senior' homonym must always be retained  
C) The 'senior' homonym can be replaced with the 'junior' homonym if it is scientifically more valid and appropriate.  
D) The 'junior' homonym should be given preference since, being more recent, it describes the taxon better.  
**Ans. C**
- Cladistic Taxonomy gives information on which of the following?  
1. Ancestral history 2. Divergence from a common ancestor  
3. Convergent evolution 4. Common traits across different Phyla  
  
A) 1, 2, 3 and 4 B) 1 and 2 only  
C) 1, 2 and 3 only D) 1, 3 and 4 only  
**Ans. B**
- Which among the following is considered as a direct descendent of dinosaurs?  
A) Aves B) Mammals  
C) Mammoths D) Rhinoceros  
**Ans. A**
- The wings of bats and birds are termed as (1) -----while their forelimbs are referred to as (2)---  
A) (1) Analogous structures (2) Homologous structures  
B) (1) Homologous structures (2) Analogous structures  
C) (1) Paralogous structures (2) Orthologous structures  
D) (1) Orthologous structures (2) Paralogous structures  
**Ans. A**

9. Replication in prokaryotes is known as:  
 A) D-loop replication B)  $\Phi$  replication  
 C) Reverse transcription D) Hoogsteen replication **Ans. B**
10. In immunology, 'CD' stands for  
 A) Cytological Difference B) Cluster of Differentiation  
 C) Cytological Determinant D) Complement Divergence **Ans. B**
11. The feeding organ lophophore is characteristically seen in which of the following?  
 1. Phoronida 2. Brachiopoda 3. Bryozoa  
 A) 1 only B) 3 only C) 1 and 2 only D) 1, 2 and 3 **Ans. D**
12. Find the correct match:  
 1. Placoid scale p. Dentine  
 2. Ganoid scale q. Carangidae  
 3. Elasmoid scale r. Sturgeons  
 4. Scutes s. Coelacanth  
 t. Eels  
 A) 1-p; 2-t; 3-q; 4-s B) 1-p; 2-s; 3-r; 4-t  
 C) 1-t; 2-r; 3-s; 4-q D) 1-p; 2-r; 3-s; 4-q **Ans. D**
13. Electoreception as a means of navigation and locating the position of its prey is seen in:  
 A) Elasmobranchs and bats B) Teleosts  
 C) Honey bees and bats D) Elasmobranchs and Monotremes **Ans. D**
14. Identify the limbless amphibian  
 A) Gongylophis B) Ichthyostega  
 C) Gegeneophis D) Nasikabatrachus **Ans. C**
15. A taxonomic clade considers:  
 A) Monophyletic groups alone  
 B) Paraphyletic groups alone  
 C) Polyphyletic groups alone  
 D) Monophyletic, paraphyletic and polyphyletic groups. **Ans. A**
16. Goose barnacles come under:  
 A) Crustacea B) Mollusca C) Aves D) Annelida **Ans. A**
17. Match the taxonomic arrangement:  
 1. Phylum r. Sporozoa  
 2. Class s. Protozoa  
 3. Sub-phylum t. Telosporea  
 4. Sub-class u. Coccidia  
 5. Genus v. Eucoccidia/(Haemosporidida)  
 6. Order w. Plasmodium  
 A) 1-s; 2-r; 3-t; 4-v; 5-u; 6-w. B) 1-s; 2-r; 3-v; 4-t; 5-w; 6-u.  
 C) 1-s; 2-t; 3-r; 4-u; 5-w; 6-v. D) 1-r; 2-u; 3-s; 4-t; 5-v; 6-w. **Ans. C**

18. Which among the following is the pair with the lowest and highest thresholds of hearing in terms of frequency of sound waves?  
 A) Humans and dogs B) Elephants and bats  
 C) Whales and dolphins D) Whales and bats **Ans. C**
19. With respect to Hemichordates and Annelids, which of the following statement is correct?  
 A) Pharyngeal gill slits are absent in Hemichordates while they are present in Annelids.  
 B) Heart is dorsal in Hemichordates while it is ventral in Annelids  
 C) Pharyngeal gill slits are present in Hemichordates while they are absent in Annelids.  
 D) Pharyngeal gill slits are absent in both **Ans. C**
20. *Lissachatina fulica* is the:  
 A) Edible snail B) Predatory insect of African snail  
 C) Marine slug D) African snail **Ans. D**
21. Which among the following is the correct combination of pests of agricultural plants?  
 A) Trichogramma; Spodoptera; Helicoverpa  
 B) Spodoptera; Callosobronchus; Coccinella  
 C) Plocaederus; Scirpophaga; Opisina  
 D) Trichogramma; Oryctes; Coleomegilla **Ans. C**
22. The nervous system of mammals is derived from:  
 A) Endoderm B) Mesoderm C) Ectoderm D) Mesogloea **Ans. C**
23. An inherited disorder of nucleotide metabolism is:  
 A) Huntington's disease B) Sickle cell anaemia  
 C) Cri-du-chat syndrome D) Lesh-Nyhan syndrome **Ans. D**
24. Which among the following is used as a fumigant to protect stored grains?  
 A) DDT B) Formaldehyde  
 C) Ethidium tetroxide D) Phosphine **Ans. D**
25. The commercial name of the hormone used to induce ovulation in fish for aquaculture practices is:  
 A) Nandrolone B) Ovalute C) Ovaprim D) Oxytocin **Ans. C**
26. In composite aquaculture, the selection of fishes is made on the basis of minimising the competition for space, food and compatibility. Which among the following is a suitable composition?  
 A) Etroplus, Channa, Mugil B) Mugil, Anabas, Carp  
 C) Catla, Rohu, Mrigal D) Clarias, Etroplus, Tilapia **Ans. C**
27. The rodents that commit mass suicide by drowning  
 A) Capybara B) Chinese hamsters  
 C) Lemmings D) Sewer rats **Ans. C**
28. The most important of all bio-geochemical cycles among the following is  
 A) Nitrogen cycle B) Carbon cycle  
 C) Water cycle D) Phosphorus cycle **Ans. C**

29. An antibiotic peptide containing D-amino acids seen only in bacteria is  
A) Gramicidin B) Penicillin C) Streptomycin D) Mannose **Ans. A**
30. According to the Neutral Theory of Evolution, “the random nature of mutational processes will in time change a protein in such ways that do not significantly affect its function”. The interpretations that can be made from this hypothesis is/ are that:
1. Genetic mutations in coding sequences are always evident in the expressed products.
  2. Unless mutations affect the functional domains and motifs of proteins its impact on the evolutionary process is insignificant.
  3. Neutral mutations do not affect an organism’s ability to survive
- A) Statements 1, 2 and 3 are true  
B) Statements 1 and 2 only are true  
C) Statements 2 and 3 only are true  
D) Statements 1 and 3 only are true **Ans. C**
31. In cultural evolution theory, an idea, behaviour or style that spreads from person to person is known as:  
A) Replicator B) Habit  
C) Fixed action pattern D) Meme **Ans. D**
32. Find the combination which is not favourable to Hardy-Weinberg equilibrium.
1. Small population
  2. Closed population
  3. Random mating
  4. Selection pressure
- A) 2 and 3 only B) 1 and 4 only C) 3 and 4 only D) 1 and 3 only **Ans. B**
33. Choose possible outcomes of bottle-neck effect from the following:
1. Loss of favourable mutations
  2. Fixation of deleterious mutations
  3. Random distribution of genes
  4. Heterosis
- A) 1 and 3 only B) 1 and 2 only C) 3 and 4 only D) 2 and 4 only **Ans. B**
34. Terrestrial Hermit Crabs come under the family:  
A) Diogenidae B) Coenobitidae  
C) Paguridae D) Artemiidae **Ans. B**
35. Biomagnification of DDT occurs because of its propensity to:  
A) Be soluble in lipids  
B) Form complexes with lipids  
C) Form complexes with protein  
D) Form complexes with carbohydrates **Ans. A**
36. Medical laboratory kits that test for pregnancy look for:  
A) Progesterone B) Oestrogen  
C) Chorionic gonadotropin D) Oxytocin **Ans. C**

37. **Assertion:** The pyramid of energy can never be inverted.  
**Reason 1:** Much of the biomass in any trophic level dies off without being eaten  
**Reason 2:** Primary producers cannot be exhausted  
**Reason 3:** Rate of conversion of biomass into the next trophic level is very small
- A) The assertion is false  
B) The assertion is true and reason 1 sustains the assertion  
C) The assertion is true and reason 2 sustains the assertion  
D) The assertion is true and reason 3 sustains the assertion **Ans. D**
38. Which among the following is commensalism?  
A) Tree frog and trees                      B) Domestication of cattle  
C) Probiotics in the human gut            D) Microfilaria in humans **Ans. A**
39. Identify the correct objective(s) of the Kyoto Protocol  
1. Fight global warming by reducing greenhouse gas concentrations  
2. It puts the obligation to reduce current emissions on developed countries on the basis that they are historically responsible for the current levels of greenhouse gases  
3. Regulate international trade in endangered species of Wild Life  
4. Assignment of liabilities for damages caused in case of nuclear accidents
- A) 1 and 2 only                                      B) 1, 2 and 3 only  
C) 1, 2, 3 and 4                                    D) 3 and 4 only **Ans. A**
40. Which among the following is not situated in Kerala?  
A) Pushpagiri Wildlife Sanctuary  
B) Aralam Wildlife Sanctuary  
C) Chinnar Wildlife Sanctuary  
D) Shendurney Wildlife Sanctuary **Ans. A**
41. Navigation by migrating salmon is oriented on the basis of:  
A) The position of the sun  
B) The relative position of the sun and its natal river  
C) The relative position of the sun and the Earth's magnetic field  
D) Magnetoreception and sense of smell **Ans. D**
42. The animal credited with the longest migration is:  
A) Eel    B) Salmon  
C) Arctic Tern                                        D) Leatherback turtles **Ans. C**
43. The El Nino:  
A) Is a warm current that flows eastward from the Tropics to the coasts of Peru and Ecuador  
B) Is a warm current that flows westward from the Tropics to the coasts of India and Sri Lanka  
C) Is a warm current that flows northward from the Tropics to the cold coasts of North America  
D) Is a cold current that flows southward from the Arctic to the warm coasts of Peru and Ecuador **Ans. A**



44. The major component of the food of baleen whales is  
A) Squids B) Euphausia superba  
C) Artemia sp D) Clupeids **Ans. B**
45. Osphradium is a sensory organ of:  
A) Crustaceans B) Insects  
C) Molluscs D) Annelids **Ans. C**
46. Which statement(s) is/are correct for topoisomerases?  
1. They create double strand breaks in DNA  
2. They are capable of repairing double strand breaks in DNA  
3. They are involved in chromosomal cross-over during meiosis  
4. They are involved in repairing DNA-helix distorting damage caused by UV light  
A) 1, 2 and 3 only B) 1, 2 and 4 only  
C) 2 and 4 only D) 1 and 2 only **Ans. A**
47. Which of the following are the factor(s) that influence(s) motivation?  
1. Satiation 2. Biological Drives  
3. Operant conditioning 4. Classical conditioning  
A) 1 and 2 only B) 2 only  
C) 1, 2, 3 and 4 D) 3 and 4 only **Ans. C**
48. The identical bold colouration patterns exhibited by members of the poisonous Heliconiinae butterflies is an example of  
A) Mullerian mimicry B) Batesian mimicry  
C) Auto mimicry D) Camouflaging **Ans. A**
49. The primary requirement for ethological imprinting in birds is  
A) The eggs should be incubated artificially  
B) It should occur within the critical period immediately after hatching  
C) The arbitrary stimulus/ object should resemble the mother  
D) It requires habituation **Ans. B**
50. Identify the incorrect combination:  
A) Hemichordata - Balanoglossus – Tornaria  
B) Mollusca - Mytilus – Bipinnaria  
C) Crustacea - Penaeus – Nauplius  
D) Trematoda – Fasciola - Miracidium **Ans. B**
51. The function of the follicular dendritic cells in the lymph nodes is to:  
A) Support memory B-cells  
B) Coordinate the maturation of B-cells  
C) Coordinate the maturation of T-cells  
D) Deletion of de-activated B and T cells **Ans. A**

52. Which among the following functions as an opsonin?  
A) Antibodies B) Macrophages  
C) B-lymphocytes D) T-lymphocytes **Ans. A**
53. A component of the blood vascular system wherein it starts in capillaries and ends in capillaries is:  
A) Portal system B) Lymphatic system  
C) Sinuses and sinusoids D) Spleen **Ans. A**
54. The peristaltic movement of the alimentary canal in man is controlled by  
A) Gastrin B) Secretin  
C) Meissner's plexus D) Leptin **Ans. C**
55. Identify the correct assortment of hormones secreted by the kidneys  
A) Rennin, calcitonin, erythropoietin  
B) Angiotensin, erythropoietin, calcitriol  
C) Calcitonin, thrombopoietin, renin  
D) Calcitriol, erythropoietin, thrombopoietin **Ans. D**
56. Consider the following statements:  
1. The concentration of chloride ions in the venous blood is lower than in the arteries, which is compensated by the presence of bicarbonate ions.  
2. Mutations of the anion exchanger protein 'Band 3' leads to acidosis of blood
- The physiological process that is relevant to the above statements is:
- A) Haldane effect B) Hamburger phenomenon  
C) Bohr effect D) Counter current system **Ans. B**
57. The natural anticoagulant that regulates blood coagulation is:  
A) Thromboxane A<sub>2</sub> B) Factor VIII  
C) Protein C D) Calcium **Ans. C**
58. Abnormal lowering of the human heart rate is known as:  
A) Tachycardia B) Infarction  
C) Bradycardia D) Arrhythmia **Ans. C**
59. Identify the correct match:  
A) Flame cells – loop of Henle'  
B) Nephrons – arachnids  
C) Metanephridia – organ of Bojanus  
D) Malpighian tubules – protonephridia **Ans. C**
60. Which among the following is/ are vital stain(s)?  
1. Trypan blue 2. Propidium iodide  
3. Gram's stain 4. Janus green  
A) 1, 2, 3 and 4 B) 3 only  
C) 1 and 4 only D) 1, 2 and 4 only **Ans.D**



61. The biochemical that inhibits transmission of impulses in spinal neurons is:  
A) Acetylcholine                      B) Glycine  
C) Nicotine                              D) MSG  
**Ans. B**
62. The major component in activated sludge is:  
A) Diatomaceous earth              B) Saprotrophic bacteria  
C) Activated charcoal                D) Chemical oxidants  
**Ans. B**
63. The oldest surviving lepidosaurian reptile is:  
A) Iguana                                B) Sphenodon  
C) Chameleon                         D) Turtles  
**Ans. B**
64. The sharp vision of birds of prey is attributed to the presence of:  
A) Nictitating membrane            B) Tapetum  
C) Pecten                                D) Vision in the UV range  
**Ans. C**
65. Expression levels of a large number of genes can be simultaneously studied by:  
A) Polyacrylamide gel electrophoresis  
B) Microarray analysis  
C) DNA fingerprinting  
D) Confocal microscopy  
**Ans. B**
66. The immune related rejection of the human foetus does not occur because  
A) The placenta has its origin from the mother's uterine tissue  
B) The placenta does not have any antigenic proteins  
C) MHC antigens are not expressed in the cells of the placenta  
D) The placenta does not come in close contact with the uterine tissue  
**Ans. C**
67. Cytoplasmic control of nuclear activity is most evident in:  
A) Embryonic stem cells              B) Adult stem cells  
C) Undividing somatic cells          D) Prokaryotes  
**Ans. A**
68. In hymenoptera, female offspring produced by thelytoky occurs by:  
A) Fusion of proto-eggs from the same meiotic set  
B) Fusion of proto-eggs from different meiotic sets  
C) Development of unfertilised eggs  
D) Development of fertilised eggs  
**Ans. A**
69. An example for a passive vaccine is:  
A) Tetanus toxoid vaccine            B) Anti-tetanus toxoid vaccine  
C) MMR vaccine                        D) Hepatitis B vaccine  
**Ans. B**
70. Which among the following is not a function of the corpus luteum?  
A) Secretion of the progesterone  
B) Secretion of oxytocin  
C) Secretion of menstrual hormones  
D) Secretion of inhibin  
**Ans. B**

71. The feathers seen around the beaks and wyes of birds are known as:  
A) Down feathers B) Contour feathers  
C) Barbicels D) Rictals  
**Ans. D**
72. Communicable diseases of viral origin seen in areas where unsafe drinking water and bad sanitation prevail are  
A) AIDS, Plague and Hepatitis A  
B) Malaria, Cancer and Dengue Fever  
C) Hepatitis A, Dengue Fever and Chikungunya  
D) Hepatitis A, Hepatitis B and Hepatitis C  
**Ans. C**
73. The acrosome of the sperm originates from:  
A) Endoplasmic reticulum B) Polar bodies  
C) Golgi complex D) Sertoli cells  
**Ans. C**
74. In gel-filtration chromatography, the optimum amount of a sample that can be loaded into the column to get a good resolution is dependent on:  
A) Width of the column B) Length of the column  
C) Pore size of the gel D) Rate of flow  
**Ans. A**
75. The dye used for visualising DNA in agarose gels is:  
A) Aceto-orceine B) Aceto-carmin  
C) Ethidium bromide D) Coomassie Brilliant Blue  
**Ans. C**
76. Consider the following statements with respect to EEG and MRI  
**Statement 1:** EEG does not use ionising radiations while MRI uses ionising radiations  
**Statement 2:** EEG reads the electrical activity of the neuronal cells while MRI depends on high energy radio-frequency emitted by hydrogen atoms from the tissue  
Select the correct option from below:  
A) Both statements are correct and they supplement each other.  
B) Statement 1 is correct while statement 2 is wrong  
C) Statement 1 is wrong since both EEG and MRI do not use ionising radiations while statement 2 is correct.  
D) Both statements are wrong since both EEG and MRI uses ionising radiation  
**Ans. C**
77. The shift in wavelength caused by the phase plate ring in phase-contrast microscopy is:  
A)  $\lambda$  B)  $\lambda/2$  C)  $\lambda/3$  D)  $\lambda/4$   
**Ans. D**
78. In a spectrophotometer, the path-length of the light beam is kept constant by:  
A) Keeping the distance between the light source and the cuvette constant  
B) Keeping the distance between the light source and the detector constant  
C) Using cuvettes of identical dimensions for standard and samples  
D) Maintaining the exact wavelength of the incident light  
**Ans. C**
79. In a medium containing both glucose and lactose, the growth curve of E.coli will be:  
A) Retarded B) Monophasic  
C) Biphasic D) Exponential only  
**Ans. C**

80. A disease caused by chromosomal jumping translocations in humans:  
A) Hodgkins lymphoma      B) Chronic myelogenous leukemia  
C) Giant cell carcinoma      D) Cervical cancer  
**Ans. B**
81. The cAMP cascade that leads to glycogenolysis is triggered by:  
A) Insulin      B) Glucagon  
C) Ribulose-bis-phosphate      D) Phosphoenolpyruvate  
**Ans. B**
82. The sting gland of the wasp is a modified  
A) Sternal plates      B) Ovipositor  
C) Tergum      D) Mandibles  
**Ans. B**
83. The fate of the last 3-carbon fragments of odd chain fatty acids undergoing beta oxidation is  
A) Entry into the Kreb's cycle as acetyl-CoA  
B) Entry into Kreb's cycle as propionyl-CoA  
C) Conversion to 6-carbon glucose by dimerisation  
D) Entry into Kreb's cycle as succinyl-CoA  
**Ans. D**
84. Excess amino acids absorbed from the diet is:  
A) Stored in the liver      B) Stored in the muscles  
C) Deaminated by the liver      D) Converted to urea by the kidneys  
**Ans. C**
85. The resolving power of a compound microscope is limited by the wavelength of light and:  
A) Magnifying power of the eye piece  
B) Magnifying power of the objective  
C) Numerical aperture  
D) Focal length of the objective  
**Ans.C**
86. The extend of the error bar in a graphical representation of data indicates  
A) The mean value  
B) The size of the population  
C) The extent of variation within the raw data  
D) The degree of correlation between the two variables  
**Ans. C**
87. The graph you would expect when the co-relation constant between two variables is 1, is:  
A) A straight line parallel to the X axis  
B) A straight line parallel to the Y axis  
C) A straight line at  $45^0$  to the X axis starting from the origin  
D) A sigmoidal graph starting from the origin  
**Ans. C**
88. The Chi-square test is used to analyse  
A) Relationships between two dependent variables  
B) Relationship between two independent variables  
C) Differences between observed and expected values  
D) Differences between mean and median  
**Ans. C**

89. Trisomy of chromosome 21 in humans causes  
A) Patau syndrome                      B) Down syndrome  
C) Jacobsen syndrome                D) Edward syndrome **Ans. B**
90. With respect to the Genic balance theory, which of the following statements are true in *Drosophila*?  
1. Sex of the offspring is determined by a ratio of the number of X chromosomes to that of the number of sets of autosomes  
2. The X chromosome contains genes with female characteristics while the autosomes contain genes with the male characteristics  
3. The Y chromosome does not have any role in sex determination  
A) 1, 2 and 3 are true                      B) 1 and 3 only are true **Ans. A**  
C) 1 alone is true                              D) 2 and 3 only are true
91. An exact clone of a eukaryote can be obtained by:  
A) Artificial insemination  
B) Embryonic stem cell cloning  
C) Intra-cytoplasmic gamete injection **Ans. B**  
D) IVF
92. This hormone acts on all cells in the human body, influences metabolic rate, affects protein synthesis and plays a major role in hibernating animals. The hormone is  
A) Adrenalin      B) Thyroxine      C) Oxytocin      D) Glucagon **Ans. B**
93. The F<sub>0</sub>-F<sub>1</sub> component of ATP synthase - a molecular motor - is driven by:  
A) Electrons      B) Protons      C) GTP      D) NADP **Ans. B**
94. With respect to the transport of glucose across cell membranes which of the following is/ are true:  
1. GLUT 1 is involved in the transport across erythrocyte membrane  
2. GLUT 2 is involved in the transport across membranes of intestinal cells and liver cells.  
3. GLUT 3 is involved in the transport across neuronal membrane while GLUT 4 is involved in the transport across striated muscle membrane  
A) 1 alone is true                              B) 2 alone is true  
C) 1, 2 and 3 are true                        D) 2 and 3 only are true **Ans. C**
95. The major component of the eukaryote cytoskeleton is:  
A) Dynein      B) Kinesin      C) Calcium      D) Tubulin **Ans. D**
96. Guillain-Barré syndrome is an abnormal condition arising out of  
A) Mutations in mitochondrial DNA  
B) Sex-linked inheritance  
C) Auto-immune reactions **Ans. C**  
D) Chromosomal aberrations

97. Which among the following are true with respect to the fluid-mosaic model of the cell membrane?
1. The constituents of the membrane are in constant motion but are limited by the cytoskeleton and the extracellular matrix
  2. The proteins embedded in the phospholipid layer appear and disappear according to the functional state of the cell
  3. The model demonstrates that integrity of the membrane is not influenced by Van der Waals forces and hydrophobic interactions
- A) Statements 1, and 3 only are true  
B) Statements 1, 2 and 3 are true  
C) Statements 1 and 2 only are true  
D) Statement 1 alone is true
- Ans. C**
98. The multiple pass channels in the plasma membranes are formed by:
- A) Type I trans-membrane proteins.  
B) Type II trans-membrane proteins.  
C) Type III trans-membrane proteins.  
D) Type IV trans-membrane proteins.
- Ans. D**
99. Dopamine, the neurotransmitter signal released by nerve cells is a derivative of:
- A) Glutamine    B) Tyrosine    C) Histidine    D) Glycine
- Ans. B**
100. The metallic component of the prosthetic group of DNA polymerase is:
- A) Manganese    B) Copper    C) Magnesium    D) Iron
- Ans. C**
101. Bence-Jones proteins occur in the urine of patients with:
- A) Kwashiorkor    B) Phenylketonuria  
C) Multiple myeloma    D) Alkaptonuria
- Ans. C**
102. The underlying cause of the heritable disorder osteogenesis imperfecta (brittle bone disease) is due to the changes in:
- A) Oestrogen levels  
B) Collagen structure  
C) Dietary levels of Vitamin C  
D) Calcium metabolism
- Ans. B**
103. The mechanical properties of silk which is one among the stronger natural fibres is dependent on:
- A) Presence of keratin    B) Presence of beta sheets  
C) Absence of beta sheets    D) Alternation of beta sheets with alpha sheets
- Ans. B**
104. Which among the following respiratory pigments do not contain a haem group?
1. Leghaemoglobin
  2. Haemerythrin
  3. Chlorocruorin
  4. Haemocyanin
- A) 1 and 3 only    B) 1, 2 and 4 only  
C) 2 and 4 only    D) 3 and 4 only
- Ans. C**

105. Which among the following is not involved in regulating carbohydrate metabolism in humans?  
A) Glucagon      B) Calcitonin      C) Somatostatin      D) Cortisol  
**Ans. B**
106. Which among the following is a precursor for steroid hormones?  
A) Cholesterol      B) Tyrosine      C) Glycerol      D) Glutamine  
**Ans. A**
107. Consider the following statements:  
**Assertion:** Consumption of methanol results in blindness and death  
**Reason 1:** Methanol affects nerve function by inhibiting acetylcholine esterase resulting in blindness and death  
**Reason 2:** Methanol is converted to formaldehyde and formates by the liver which causes blindness and death  
**Reason 3:** Methanol is converted to hydrogen cyanide by the Hydrochloric acid in the stomach which causes blindness and death
- A) The assertion and reason 1 are true and the reason explains the assertion  
B) The assertion and reason 2 are true and the reason explains the assertion  
C) The assertion and reason 3 are true and the reason explains the assertion  
D) The assertion is true but none of the reasons explains the assertion  
**Ans. B**
108. In which of the following conditions the bacterial growth curve becomes a plateau and then dips?  
1. Nutrients are exhausted      2. Waste products become inhibitors.  
3. pH becomes acidic.      4. It reaches Hayflick limit.
- A) 1, 2, 3 and 4 are true      B) 1, 2 and 3 only are true  
C) 1 and 2 only are true      D) 4 alone is true  
**Ans. C**
109. The most conserved protein among the following as revealed by phylogenetic analyses is:  
A) Haemoglobin      B) Cytochrome c  
C) Histone      D) Fibrinogen  
**Ans. C**
110. The correct sequence of steps to be followed in a microarray experiment to quantify gene expression is  
A) Sample → protein → Reverse transcription → cDNA → labelling → coupling to DNA probe → scanning and quantification.  
B) Sample → mRNA → Reverse transcription → cDNA → labelling → coupling to DNA probe → washing → scanning and quantification.  
C) Sample → DNA → PCR → coupling to DNA probe → washing → scanning and quantification.  
D) Sample → mRNA → cDNA → rDNA → plasmid clone → labelling → coupling to protein probe → washing → scanning and quantification.  
**Ans. B**



111. With respect to BLAST, which of the following are true?
1. The BLAST algorithm is heuristic
  2. The target sequence is larger than the query sequence
  3. The target sequence is smaller than the query sequence
  4. It aligns sequences only from secondary databases
- A) 1, 2 and 4 only                      B) 1 and 3 only  
C) 1 and 2 only                         D) 2 and 4 only
- Ans. C**
112. Computing the structure of a protein from a given amino acid sequence depends on:
- A) Carboxyl group of each amino acid in the protein
  - B) Presence and number of glycine in the protein
  - C) R group and bond angles of each amino acid in the protein
  - D) Amino group of each amino acid in the protein
- Ans. C**
113. A database which contains data that have been checked and vouched for accuracy is known as:
- A) Secondary database                      B) Curated database
  - C) Primary database                        D) Purged database
- Ans. B**
114. Sequencing of proteins reveal that:
- A) L-form of amino acids alone is seen in proteins.
  - B) Both L and D-form of amino acids are seen in proteins.
  - C) D-form of amino acids alone is seen in amino acids.
  - D) Structure of a protein is stable only when it contains D-form of amino acids.
- Ans. A**
115. Zwitter ions are molecules that bear:
- A) No charged groups.
  - B) Negatively charged polarities on opposite ends.
  - C) Charged groups of opposite polarity.
  - D) Charged groups of similar polarity.
- Ans. C**
116. This protein which loses its function when it associates with its substrate is known as a 'suicidal enzyme'. Which is it?
- A) Cytochrome oxidase                      B) Beta-galactosidase
  - C) DNA methyl transferase                      D) Lipxygenase
- Ans. C**
117. Which among the following will enable you to visualise a proteinaceous ligand binding to its cell surface receptor?
- A) ELISA    B) Polarised light microscopy
  - C) Immunohistochemistry                      D) Confocal microscopy with DAPI stain
- Ans. C**
118. The first and definitive proof that DNA is the genetic material was given by
- A) Gregor Johann Mendel                      B) Avery, McLeod and McCarty
  - C) Watson and Crick                            D) Hershey and Chase
- Ans. B**

119. The genetic disease caused by insufficiency of the enzyme hexosaminidase is
- A) Cri-du-chat syndrome
  - B) Tay-Sachs disease
  - C) Severe combined immunodeficiency syndrome
  - D) Xeroderma pigmentosum

**Ans. B**

120. The end product of glucose metabolism in an oxygen starved muscle is
- A) Creatine phosphate
  - B) CO<sub>2</sub>
  - C) Lactic acid
  - D) Bicarbonate ions

**Ans. C**

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