

**SOLUTIONS & ANSWERS FOR KERALA MEDICAL ENTRANCE  
EXAMINATION-2013 – PAPER – 2  
VERSION – B1**

**[BIOLOGY]**

1. Ans: In plants, growth by cell division is seen only upto a certain stage.  
Sol: In plants, growth is continuous.
2. Ans: a – 4, b – 3, c – 2, d – 1  
Sol: All are correctly matched in the option A.
3. Ans: Cyanobacteria  
Sol: All the given characters are seen in cyanobacteria.
4. Ans: (i), (iii) and (iv) are correct  
Sol: Taxon represents different levels in taxonomic hierarchy.
5. Ans: Lichens do not grow in unpolluted areas.  
Sol: Lichens do not grow in polluted areas.
6. Ans: a – 4, b – 3, c – 2, d – 1  
Sol: All are correctly matched in the option A.
7. Ans: a – 4, b – 3, c – 2, d – 1  
Sol: All are correctly matched in the option D.
8. Ans: Order – Primata  
Sol: Man belongs to primata order.
9. Ans: They possess well differentiated vascular tissues.  
Sol: Bryophytes are non-vascular plants.
10. Ans: II and III are correct but I and IV are wrong  
Sol: Floridean starch is seen in rhodophyceae. Sporophyte is dominant in diplontic life cycle.
11. Ans: 1. Anther 2. Ovary 3. Microspore  
4. Zygote 5. Embryo  
Sol: All are correctly matched in the option A.
12. Ans: I and III are correct but II and IV are wrong  
Sol: Region of maturation is root hair region. Maize and sugarcane have stilt roots.
13. Ans: I and III are correct but II and IV are wrong  
Sol: Whorled phyllotaxy is seen in *Alstonia*. Buds seen in the axil of leaves and not in compound leaf.
14. Ans: *Sesbania* and belladonna  
Sol: *Sesbania* belongs to fabaceae and belladonna belongs to solanaceae.
15. Ans: Cucumber and Pumpkins  
Sol: Tendrils are the modification of axillary buds of stem.
16. Ans: a – 2, b – 1, c – 3  
Sol: All are correctly matched in the option A.
17. Ans: Parenchyma and sclerenchyma.  
Sol: Parenchyma is living and sclerenchyma is dead.
18. Ans: Zygomorphic, bisexual, sepals five and gamosepalous, petals five and papilionaceous, anthers ten and diadelphous, ovary superior and monocarpellary.  
Sol: Correct explanation is given for the floral formula of fabaceae in the option C.
19. Ans: Ten stamens, diadelphous and dithecous anther.  
Sol: *Pisum sativum* belongs to Fabaceae family.
20. Ans: a – 3, b – 1, c – 5, d – 2, e – 4  
Sol: All are correctly matched in the option D.
21. Ans: (a) and (b) alone are correct  
Sol: The first formed xylem is called protoxylem. Phloem fibres are made up of sclerenchymatous cells.
22. Ans: Periderms and secondary phloem only.  
Sol: Bark the refers to periderm and secondary phloem.
23. Ans: a – 4, b – 3, c – 2, d – 1  
Sol: All the matches in option B are correct.



- 24. Ans:** Ribosomes are about 30nm by 50nm in size.  
**Sol:** Ribosomes are about 15nm by 20nm size
- 25. Ans:** (b) and (c) alone are correct.  
**Sol:** Endomembrane system includes ER, Golgi bodies, lysosome and vacuole. 70S ribosome present in Mitochondria.
- 26. Ans:** (b) and (d) only  
**Sol:** Amyloplast stores starch. Chlorophyll is present in thylakoids.
- 27. Ans:** Vacuoles  
**Sol:** All the given statements are the features of Vacuoles.
- 28. Ans:** (a) and (d) only  
**Sol:** All the options given in A are correct.
- 29. Ans:** Inulin is a polymer of glucose.  
**Sol:** Inulin is a polymer of fructose
- 30. Ans:** a – 3, b – 4, c – 2, d – 1  
**Sol:** All the matches in option A are correct.
- 31. Ans:** II and III only  
**Sol:** All the options in B are correct.
- 32. Ans:** Chamber A has higher water potential and water will move from A to B.  
**Sol:** Water molecules move from higher water potential to lower water potential.
- 33. Ans:** (i) and (iii) only  
**Sol:** Adhesion – attraction between water and wall of xylem. Cells burst in hypotonic solution.
- 34. Ans:** (ii) and (iii) alone are correct  
**Sol:** Sulphur is present in cysteine and methionine. Nitrification is carried by *Nitrosomonas* and *Nitrobacter*.
- 35. Ans:** 3 and 2 molecules of ATP respectively.  
**Sol:** NADH produces 3 molecules of ATP and FADH<sub>2</sub> produces 2 molecules of ATP.
- 36. Ans:** a – 4, b – 5, c – 1, d – 2, e – 3  
**Sol:** All matches in the option A are correct.
- 37. Ans:** (i), (iii) and (iv) only  
**Sol:** Calvin cycle occurs in mesophyll cells of C<sub>3</sub> plants.
- 38. Ans:** I and III only  
**Sol:** Glycolysis occurs in cytoplasm. Oxidative phosphorylation in cristae.
- 39. Ans:** Enzyme hexokinase catalyses the phosphorylation of glucose to glucose -6 phosphate.  
**Sol:** Incomplete oxidation of glucose takes place in glycolysis.
- 40. Ans:** Conversion of succinyl – CoA to succinic acid.  
**Sol:** GTP is synthesized during the conversion of succinyl CoA to succinic acid.
- 41. Ans:** Proton gradient  
**Sol:** Chemi - osmosis requires a membrane, a proton pump, proton gradient and ATPase.
- 42. Ans:** Boron, Magnesium and Molybdenum  
**Sol:** All the minerals given in option E are correct.
- 43. Ans:** a – 4, b – 3, c – 2, d – 1  
**Sol:** All the matches in the option E are correct.
- 44. Ans:** (c) and (d) only  
**Sol:** ABA stimulates closure of stomata, auxins promotes apical dominance and also used as a herbicide.
- 45. Ans:** It guides the entry of pollen tube into a synergid and discharge the male gamete.  
**Sol:** It guides the entry of pollen tube to a synergid cell.
- 46. Ans:** a – 2, b – 4, c – 1, d – 3  
**Sol:** All the matches in option A are correct.
- 47. Ans:** Buttercup  
**Sol:** Hetrophyllous development occurs due to the environment in buttercup plant.
- 48. Ans:** (b) and (e) are wrong.  
**Sol:** Pyramid of energy is always upright.



- 49. Ans:** A higher RBC (Red Blood Cell) count than people living in the plains.  
**Sol:** At higher altitudes RBC count increases.
- 50. Ans:** Mortality and Emigration  
**Sol:** Mortality and emigration decreases population density.
- 51. Ans:** I and II only  
**Sol:** Monarch butterfly and birds exhibit predation. *Ophrys* and wasp show mutualism and sexual deceit.
- 52. Ans:** Amensalism  
**Sol:** Antibiotic effect of penicillin is amensalism.
- 53. Ans:** 50 m deep below the earth's surface  
**Sol:** Radioactive waste disposal is one of the most important problematic issue.
- 54. Ans:** Platinum, Palladium and Radium  
**Sol:** Catalytic converters reduce poisonous emissions from automobiles.
- 55. Ans:** Easy to lay down pipelines for delivery  
**Sol:** CNG pipeline laying is the major issue regarding CNG supply.
- 56. Ans:** 30 – 35%  
**Sol:** 30 – 35% of salt content is there in sea water as measured it in parts per thousand.
- 57. Ans:** N<sub>2</sub>O and methane  
**Sol:** N<sub>2</sub>O accounts 6%, methane 20%, CFCs 14% and CO<sub>2</sub> 60 % in green house effect.
- 58. Ans:** Plasmid DNA – Vector  
**Sol:** Plasmid DNA is used as vector.
- 59. Ans:** Six bases pairs.  
**Sol:** RENS generally preferred six base sequences of palindrome.
- 60. Ans:** Human insulin is being commercially produced from a transgenic species of *Agrobacterium tumifaciens*.  
**Sol:** Human insulin is commercially produced from the transgenic species of *E.coli*.
- 61. Ans:** Insect eating.  
**Sol:** Darwin's finches exhibit adaptive radiation.
- 62. Ans:** Devonian  
**Sol:** Palaeozoic era consists the periods like silurian, devonian and carboniferous.
- 63. Ans:** Genetic recombination helps in maintaining Hardy - Weinberg equilibrium.  
**Sol:** Genetic recombination may affect Hardy - Weinberg equilibrium.
- 64. Ans:** Ctenophora  
**Sol:** Ctenophora bears eight external rows of ciliated comb plates which help in locomotion.
- 65. Ans:** 1 – b, – i, 2 – c – ii, 3 – e – iii,  
 4 – a – v, 5 – d – iv  
**Sol:** All matches given in option C is correct.
- 66. Ans:** III, IV and V only are correct.  
**Sol:** Pelvic fins of male shark bears claspers.
- 67. Ans:** Flame cells – Defense  
**Sol:** Flame cells help in osmoregulation and excretion.
- 68. Ans:** Prostomium contains the mouth.  
**Sol:** Mouth is present in the peristomium.
- 69. Ans:** Touch  
**Sol:** Sensory papillae is associated with touch.
- 70. Ans:** a – phallic gland, b – small tubules,  
 c – vas deferens, d – ejaculatory duct,  
 e – right phallomere.  
**Sol:** All the parts given in option A is correctly identified.
- 71. Ans:** 1, 3 and 5 alone are correct  
**Sol:** Hind limbs of frog end in five digits.
- 72. Ans:** 2, 3 and 4 alone are wrong  
**Sol:** Cartilage has solid and pliable matrix.
- 73. Ans:** Modified polysaccharides.  
**Sol:** Modified polysaccharides accumulate between cells and fibres and act as matrix.



- 74. Ans:** 2, 3 and 5 alone are correct.  
**Sol:** A recessive parental trait is expressed only in its homozygous condition.
- 75. Ans:** i - e ii - a, iii - b iv - c v - d  
**Sol:** All matches given in option B are correct.
- 76. Ans:** I and III alone are correct  
**Sol:** Sickle cell anaemia is an autosomal recessive trait.
- 77. Ans:** 3 alone is correct  
**Sol:** Two nucleotides are linked through 3' - 5' phosphodiester linkage to form a dinucleotide.
- 78. Ans:** DNase  
**Sol:** DNase is DNA degrading enzyme and thereby inhibiting the transformation process.
- 79. Ans:** i - c ii - a, iii - f iv - e v - d  
**Sol:** All matches given in option D are correct.
- 80. Ans:** II and III alone are wrong  
**Sol:** The possibility of female becoming haemophilic is extremely rare.
- 81. Ans:** The additional sequences of mRNA that are not translated are present only at the 5' end.  
**Sol:** UTR's are present at both 5' and 3' ends.
- 82. Ans:** RNA being a catalyst is non-reactive and stable.  
**Sol:** RNA being a catalyst is more reactive and less stable.
- 83. Ans:** Intervening sequences appear in mature RNA.  
**Sol:** Introns or Intervening sequences do not appear in mature or processed RNA.
- 84. Ans:** i, ii and v only  
**Sol:** Okazaki fragments are produced during replication process.
- 85. Ans:** Methionine  
**Sol:** AUG codes for methionine (met) and it also acts as the initiator codon.
- 86. Ans:** II, VI, V, III, I and IV  
**Sol:** Option B gives correct sequence of steps in DNA fingerprinting.
- 87. Ans:** tRNA  
**Sol:** tRNA has an amino acid acceptor end to which it binds to amino acids.
- 88. Ans:**  $^{15}\text{N}$   
**Sol:** The heavy isotope used for proving semi-conservative method of replication is  $^{15}\text{N}$ .
- 89. Ans:** 1 and 4 alone are correct  
**Sol:** In the presence of lactose, repressor is inactivated.
- 90. Ans:** Ribozyme  
**Sol:** 23S rRNA in bacteria act as Ribozyme.
- 91. Ans:** Repetitive sequences are stretches of RNA.  
**Sol:** Repetitive sequences are stretches of DNA sequences.
- 92. Ans:** Frenulum - Attaches the tongue to the floor of buccal cavity  
**Sol:** Rugae are irregular folds of mucosa seen in the stomach.
- 93. Ans:** i - b ii - a, iii - d iv - c  
**Sol:** All the matches given in option B are correct.
- 94. Ans:** It is the site of diffusion of oxygen and carbon dioxide.  
**Sol:** Diffusion of oxygen and carbon dioxide occurs in the exchanging part of respiratory system.
- 95. Ans:**  $\text{O}_2$  transported by RBC - about 97% in the blood  
**Sol:** Nearly 20 - 25 percent of  $\text{CO}_2$  is transported by RBCs.
- 96. Ans:** ii and iv only  
**Sol:** Inactive fibrinogen is converted into fibrin.
- 97. Ans:** i - c ii - d, iii - a, iv - e, v - b  
**Sol:** All the matches given in option C are correct.
- 98. Ans:** i - c ii - d, iii - a, iv - b  
**Sol:** All the matches given in option E are correct.
- 99. Ans:** II, IV and V alone are correct  
**Sol:** Ascending limb of Henle's loop is impermeable to water.



- 100.Ans:** 1, 3 and 4 alone are correct.  
**Sol:** In the centre of each 'I' band there is an elastic fibre called Z line.
- 101.Ans:** Scapula  
**Sol:** The dorsal flat triangular body of scapula has an elevated ridge called spine. Which project as expanded process called acromion.
- 102.Ans:** Nitrogenous wastes  
**Sol:** Nitrogenous wastes are absent in dialyzing fluid.
- 103.Ans:** Nerve impulses are generated and transmitted by efferent fibres to the auditory cortex of the brain.  
**Sol:** Nerve impulses are generated and transmitted by afferent fibres to the auditory cortex of the brain.
- 104.Ans:** Somatostatin secreted by hypothalamus stimulates the secretion of somatotrophic hormone.  
**Sol:** Somatostatin secreted by hypothalamus inhibits in secretion of somatotrophic hormone.
- 105.Ans:** Regulates the diurnal rhythm.  
**Sol:** Melatonin play an important role in the regulation of diurnal rhythm of our body.
- 106.Ans:** Fall in glomerular filtration rate  
**Sol:** Renin converts angiotensinogen in blood to angiotensin I.
- 107.Ans:** 1 and 3 only are correct  
**Sol:** Expiration takes place only when intra - pulmonary pressure is higher than the atmospheric pressure.
- 108.Ans:** Platelets  
**Sol:** Megakaryocytes are special cells in the bone marrow.
- 109.Ans:** Impulse transmission across an electrical synapse is faster than across a chemical synapse.  
**Sol:** Electrical current can flow directly from one neuron to other across synapse.
- 110.Ans:** Opsin  
**Sol:** Light induces dissociation of retinal from opsin.
- 111.Ans:** II and III only  
**Sol:** Receptors associated with aortic arch and carotid artery recognize changes in CO<sub>2</sub> and H<sup>+</sup> ions.
- 112.Ans:** Haploid spermatids  
**Sol:** The spermatid are transformed into sperm by the process called spermiogenesis.
- 113.Ans:** Intra - uterine device  
**Sol:** IUD increases phagocytosis of sperm within the uterus.
- 114.Ans:** Myasthenia gravis  
**Sol:** Myasthenia gravis is an autoimmune disorder affecting neuromuscular junction.
- 115.Ans:** Alexander von Humboldt  
**Sol:** The relation between species richness and area for a variety of taxa (angiosperm plants) turns out to be a rectangular hyperbola.
- 116.Ans:** Habitat loss and fragmentation, over exploitation, alien species invasion, co-extinction.  
**Sol:** The accelerated rate of species extinction that the world is facing now largely due to human activities.
- 117.Ans:** IgA  
**Sol:** This is a type of passive immunity.
- 118.Ans:** II alone is correct.  
**Sol:** Secretion of interferons is a cytokine barrier of innate immunity.
- 119.Ans:** 1 - d, - v,      2 - a - iv,      3 - e - i,  
4 - b - ii,      5 - c - iii  
**Sol:** All matches in option D are correct.
- 120.Ans:** Cocaine  
**Sol:** It has potent stimulating action on CNS, producing a sense of euphoria and increased energy.