

**SOLUTIONS & ANSWERS FOR KERALA MEDICAL ENTRANCE  
EXAMINATION-2012 – PAPER II  
VERSION – B1**

**[BIOLOGY]**

1. Ans: Keys  
Sol: Key is used for identification of plants and animals.
2. Ans: Slime mould  
Sol: Slime moulds show saprophytic mode of nutrition.
3. Ans: *Trypanosoma*  
Sol: *Trypanosoma* causes sleeping sickness.
4. Ans: c and d alone are correct.  
Sol: *Planaria* shows regeneration, *Hydra* shows budding.
5. Ans: d alone is correct  
Sol: Protistans are eukaryotic.
6. Ans: a-4 b-3 c-2 d-1  
Sol: All are correctly matched in option C.
7. Ans: Green, Red and Brown  
Sol: Phycoerythrin is seen in red algae and fucoxanthin in brown algae.
8. Ans: 2 and 3 only  
Sol: Chrysophytes have soap box like structures. Pellicle is present in euglenoids.
9. Ans: *Chlorella*  
Sol: *Chlorella* is a single cell protein.
10. Ans: *Laminaria*  
Sol: *Laminaria* is a brown algae.
11. Ans: Flagellum is absent.  
Sol: Flagellum is absent in the gametes of rhodophyceae.
12. Ans: Bryophytes  
Sol: Bryophytes require water for fertilization.
13. Ans: *Selaginella*  
Sol: *Selaginella* and *Lycopodium* are members of lycopsida.
14. Ans: The PEN (Primary Endosperm Nucleus) develops into endosperm.  
Sol: Endosperm development is a post fertilization event.
15. Ans: *Opuntia*.  
Sol: Phyllocade is flattened in *Opuntia*.
16. Ans: Irregular and asymmetric.  
Sol: Canna flower is irregular.
17. Ans: Zygomorphic, diadelphous and monocarpellary.  
Sol: Fabacean members are showing diadelphous androecium.
18. Ans: a and d alone are correct.  
Sol: Rhodophycean members have phycoerythrin pigment.
19. Ans: c alone is correct.  
Sol: *Sequoia* is a gymnosperm.
20. Ans: I and III.  
Sol: Vexillary aestivation is seen in Fabaceae.
21. Ans: Basal - Marigold  
Sol: Parietal placentation is seen in argemone.
22. Ans: a - 4 b - 3 c - 2 d - 1  
Sol: All the matchings are correct in option A.
23. Ans: Mesosome  
Sol: Mesosomes are invagination of plasma membrane in prokaryotes.
24. Ans: Plasmodesmata  
Sol: Plasmodesmata help in symplast.
25. Ans: Vinblastin  
Sol: Vinblastin and curcumin are drugs.

- 26. Ans:** b and c are wrong.  
**Sol:** Glycocalyx seen as a loose sheath is slime layer and tough is capsule.
- 27. Ans:** a - 4      b - 3      c - 2      d - 1  
**Sol:** All options are correctly matched in option B.
- 28. Ans:** c and d alone are correct  
**Sol:** Smooth endoplasmic reticulum is the site of lipid synthesis.
- 29. Ans:** 1 - c      2 - a      3 - d      4 - b  
**Sol:** All are correctly matched in option A.
- 30. Ans:** b and e are correct  
**Sol:** Crossing over takes place in Pachytene.
- 31. Ans:** 1 and 4 only  
**Sol:** Chromatin condenses to form chromosomes in prophase.
- 32. Ans:** T. W. Engelmann - Showed that the green substance is located within special bodies in plants.  
**Sol:** T. W. Engelmann demonstrated action spectrum.
- 33. Ans:** Capillarity and tensile strength.  
**Sol:** Capillarity and tensile strength help in ascent of sap.
- 34. Ans:** Iron and Magnesium  
**Sol:** Iron activates catalase enzyme.
- 35. Ans:** The bundle sheath cells contain the enzyme PEP case.  
**Sol:** Bundle sheath cells contain RuBisCO.
- 36. Ans:** Gibberellin, Auxin and cytokinin.  
**Sol:** Cytokinin promotes cell division.
- 37. Ans:** 2, 3 and 4 are relevant but 1 and 5 are irrelevant.  
**Sol:** Facilitated transport is passive downhill process.
- 38. Ans:** Manganese - Needed in the splitting of water to liberate oxygen during photosynthesis.  
**Sol:** Zinc is needed for auxin synthesis.
- 39. Ans:** c and d alone are correct.  
**Sol:** First stable product of C<sub>3</sub> cycle is PGA.
- 40. Ans:** 1. Mesophyll cell      2. Bundle sheath cell  
3. Fixation                      4. Regeneration  
5. Decarboxylation  
**Sol:** All are correctly marked in option D.
- 41. Ans:** a, b and d alone are correct.  
**Sol:** Respiratory quotient =  $\frac{\text{Volume of CO}_2 \text{ evolved}}{\text{Volume of O}_2 \text{ consumed}}$
- 42. Ans:** Prevents loss of water.  
**Sol:** Transpiration results in water lose.
- 43. Ans:** Cleistogamy  
**Sol:** Cleistogamy is seen in *Comelina*, *Viola*, *Oxalis*.
- 44. Ans:** a - 4      b - 3      c - 2      d - 1  
**Sol:** All are correctly matched in option E.
- 45. Ans:** Eyes, rhizome, bulbil, leaf bud and offset.  
**Sol:** All are correctly matched in option C.
- 46. Ans:** 1 - b      2 - c      3 - e      4 - d      5 - a  
**Sol:** All are correctly matched in option A.
- 47. Ans:** Promotes bolting  
**Sol:** Bolting is promoted by gibberellins.
- 48. Ans:** Diapause  
**Sol:** Hibernation is winter sleep and aestivation is summer sleep.
- 49. Ans:** If a predator is not efficient, then the prey population would become extinct.  
**Sol:** If predator is not efficient the prey population will increase.
- 50. Ans:** 1 - c      2 - d      3 - a      4 - b  
**Sol:** All are correctly matched in option A.
- 51. Ans:** Detritus is rich in lignin and chitin.  
**Sol:** Decomposition is quicker if detritus is rich in nitrogen and sugar.

- 52. Ans:** Tree and Sea ecosystem.  
**Sol:** A pyramid of number become inverted if the producers are less in number.
- 53. Ans:** Lichens  
**Sol:** Lichens secrete acids which degrade rocks.
- 54. Ans:** Net primary productivity and secondary productivity respectively.  
**Sol:**  $NPP = GPP - R$
- 55. Ans:** b and c are correct.  
**Sol:** In Delhi the entire public transport were converted into CNG.
- 56. Ans:** Cutting trees and increasing the growth of human population.  
**Sol:** Deforestation increases global warming.
- 57. Ans:** Water (0.003 ppm), zooplankton (0.04 ppm), small fish (0.5 ppm), large fish (2 ppm), fish eating birds (25 ppm).  
**Sol:** All are correctly matched in option B.
- 58. Ans:** 5' - GAATTC - 3'  
 3' - CTTAAG - 5'  
**Sol:** This is the restriction site for EcoRI.
- 59. Ans:** Introducing isolated gene from marrow cells producing ADA into the cells at early embryonic stages.  
**Sol:** Permanent cure for ADA deficiency is gene therapy at early embryonic stage.
- 60. Ans:** Separation and isolation of DNA fragments.  
**Sol:** Gel electrophoresis is separation of DNA fragments based on charge and sizes.
- 61. Ans:** (i) and (iv) alone are correct  
**Sol:** When more individuals of a population acquire a mean character value, it is called stabilizing.
- 62. Ans:** (i)-c (ii)-d (iii)-a (iv)-b  
**Sol:** Theory of biogenesis was proposed by Louis Pasteur.
- 63. Ans:** *Pteranodon*  
**Sol:** *Pteranodon* was the flying dinosaur.
- 64. Ans:** Radial symmetry - Coelenterates  
**Sol:** Aschelminthes are pseudocoelomates.
- 65. Ans:** *Testudo*  
**Sol:** *Testudo* is poikilothermic.
- 66. Ans:** (i)-d (ii)-b (ii)-c (iv)-a  
**Sol:** All the given organisms belong to phylum Coelenterata.
- 67. Ans:** (i) alone is wrong.  
**Sol:** Circulatory system in arthropods is of open type.
- 68. Ans:** Taste receptors  
**Sol:** Specialised chemoreceptors located on the anterior part of the earthworms are taste receptors.
- 69. Ans:** Hepatic caeca  
**Sol:** Digestive juice in cockroaches is secreted by hepatic caeca.
- 70. Ans:** Sinus venosus  
**Sol:** Sinus venosus receives blood through the vena cava in frog.
- 71. Ans:** There are ten cranial nerves only.  
**Sol:** There are ten pairs of cranial nerves in frog.
- 72. Ans:** (i), (ii) and (v) alone are wrong.  
**Sol:** Biceps are voluntary and striated.
- 73. Ans:** Cartilage - Areolar tissue  
**Sol:** Cartilage is a specialised connective tissue.
- 74. Ans:** Males produce two different types of gametes.  
**Sol:** In XO type of sex determination, some sperms carry X chromosomes and some others have no sex chromosomes at all.
- 75. Ans:** (iii) and (v) alone are wrong  
**Sol:** Two nucleosides are linked through 3' - 5' phosphodiester linkage.
- 76. Ans:** Alfred Sturtevant.  
**Sol:** Alfred Sturtevant was the first to construct chromosome map.

77. Ans: Glutamic acid by valine at sixth position of beta chain of haemoglobin.  
Sol: Sickle cell anaemia is due to point mutation.
78. Ans: When the small subunit of the ribosome encounters a mRNA the process of translation begins.  
Sol: UTRs are present before start codon and after stop codon.
79. Ans: Stop codons.  
Sol: UAA, UAG, UGA are the stop codons.
80. Ans: a-ii b-iv c-iii d-i  
Sol: Hershey and Chase experiment was an unequivocal proof that DNA is the genetic material.
81. Ans: Sutton and Boveri  
Sol: Sutton and Boveri proposed chromosomal theory of inheritance.
82. Ans: DNA polymerase  
Sol: The enzyme DNA polymerase catalyse the polymerization of deoxynucleotides.
83. Ans: Sigma  
Sol: Sigma factor is also known as initiation factor.
84. Ans: 2 / 16  
Sol: 2 out of 16 offsprings show the genotype, RrYY.
85. Ans: RNA polymerase III.  
Sol: RNA polymerase III is responsible for transcription of tRNA, 5SrRNA and Sn RNAs.
86. Ans: Promotor  
Sol: Promotor in the transcription unit defines the template and coding strands.
87. Ans: Genotype                      Phenotype  
                                6                                  4  
Sol: There are 6 genotypes and 4 phenotypes.
88. Ans: AUG  
Sol: AUG acts as start codon and codes for the aminoacid methionine.
89. Ans: DNA finger printing involves identifying similarities in repetitive DNA.  
Sol: DNA fingerprinting involves identifying differences in repetitive DNA.
90. Ans: Transacetylase, repressor protein, permease,  $\beta$ -galactosidase.  
Sol: Lactose is transported into the cells through the action of permease.
91. Ans: 1  
Sol: In human, most number of genes are located on chromosome 1.
92. Ans: Mucosa  
Sol: Mucosa lines the lumen of human alimentary canal.
93. Ans: Intrinsic factor  
Sol: Parietal cell secrete HCl and intrinsic factor.
94. Ans: DCT  
Sol: The part of a nephron which open into the collecting duct is DCT.
95. Ans: Midbrain  
Sol: Midbrain receives and integrates visual, tactile and auditory inputs.
96. Ans: Adrenal medulla  
Sol: Epinephrine is secreted by adrenal medulla.
97. Ans: Digestive system  
Sol: Glisson's capsule covers the hepatic lobules.
98. Ans: 3 %  
Sol: The amount of O<sub>2</sub> transported in a dissolved state through plasma is approximately 3%.
99. Ans: (iv) alone is correct  
Sol: SAN is located on the right upper corner of the right atrium.
100. Ans: Meromyosins  
Sol: Thick filaments are polymerized proteins of meromyosins.
101. Ans: ANF  
Sol: Atrial natriuretic factor is secreted by atrial wall.

- 102.Ans:** Lipases and nucleases are not present in pancreatic juice.  
**Sol:** Lipases and nucleases are present in pancreatic juice.
- 103.Ans:** Utilisation of CO<sub>2</sub> by cells for catabolic reactions.  
**Sol:** Utilisation of O<sub>2</sub> by cells for catabolic reactions.
- 104.Ans:** Carbonic anhydrase  
**Sol:** Carbonic anhydrase is essential for the transport of CO<sub>2</sub> as bicarbonates.
- 105.Ans:** In a standard ECG, a person is connected to the machine with three electrical leads.  
**Sol:** Of the three electrical leads, two are connected to each wrist and one to the left ankle.
- 106.Ans:** In ureotelic organisms, ammonia is not a product of metabolism.  
**Sol:** In ureotelic organisms ammonia is converted to urea in the liver.
- 107.Ans:** (iii) and (iv) alone are wrong  
**Sol:** Patella covers the knee ventrally.
- 108.Ans:** Osteoporosis  
**Sol:** Decreased levels of estrogen is a common cause for osteoporosis.
- 109.Ans:** Portion of myofibril between two successive 'Z' lines.  
**Sol:** In a muscle the functional unit of contraction is sarcomere.
- 110.Ans:** Presence of ketone bodies in urine is an indicator of diabetes mellitus.  
**Sol:** Glycosuria and ketonuria are indicators of diabetes mellitus.
- 111.Ans:** 1-d-iii 2-c-iv 3-b-I 4-a-ii  
**Sol:** Pineal gland is known as biological clock.
- 112.Ans:** Only during pregnancy.  
**Sol:** hCG, hPL and relaxin are produced only during pregnancy.
- 113.Ans:** GIFT - Transfer of embryos with more than 8 blastomeres into the fallopian tube.  
**Sol:** GIFT is the transfer of gametes into the fallopian tube.
- 114.Ans:** Primary spermatocytes.  
**Sol:** Primary spermatocytes divides meiotically to produce two secondary spermatocytes.
- 115.Ans:**  $\log S = \log C + Z \log A$   
**Sol:** Species area relationship is explained by Alexander Von Humbott.
- 116.Ans:** Carrot grass - Lantana  
**Sol:** Carrot grass is *Parthenium*.
- 117.Ans:** By inbreeding purelines cannot be evolved.  
**Sol:** Inbreeding results in pure lines.
- 118.Ans:** Biofortification  
**Sol:** Golden rice is a biofortified rice.
- 119.Ans:** Passive immunity  
**Sol:** Passive immunity gives immediate immune responses.
- 120.Ans:** Streptokinase  
**Sol:** Clot buster is used to remove blood clots.