Sharath Gore

Biology mock test 7 2022-23

Time : 45 Min	Bio : Full Portion Paper	Marks : 400

Hints and Solutions

101) Ans: **C)** Anaerobic to aerobic

102) Ans: **D)** All the above
Sol: Acceptor arm and C arm is the point of attachment of amino acid. Anticodon arm recognises the complementary codons on m – RNA. D or DHU arm is a stem loop structure consisting of dihydrouridine loop (D – loop).

103) Ans: **C)** Nearly 99 per cent of the glomerular filtrate is reabsorbed by the renal tubules
Sol: Urine formation comprises three main processes that are glomerular filtration, reabsorption and secretion, that takes place in different parts of the nephron. A comparison of the volume of the filtrate formed per day (180 litres per day) with that of the urine released (1.5 litres), suggest that nearly 99 per cent of the filtrate is reabsorbed by the renal tubules and the descending limb of loop of Henle is permeable to water but almost impermeable to electrolytes. The ascending limb is impermeable to water but allows transport of electrolytes actively or passively. Conditional reabsorption of Na^+ and water takes place in distal convoluted tubule. It is also capable of reabsorption of HCO_3^-.

104) Ans: **C)** Some bacteria

105) Ans: **C)** Nnitrogen base with pentose sugar
Sol: A nucleoside is formed through a N-glycosidic linkage by joining nitrogen base with pentose sugar.

106) Ans: **D)** Closing of eyes when strong light is flashed across them
Sol: Simple/unconditional reflexes are present in an individual right from birth. They are specific, predictable purposeful and have survival value, e.g., breast feeding and swallowing in newly born babies and blinking of eyes are examples of unconditioned reflexes. (a), (b) and (c) are the examples of conditional reflexes and are absent at birth but develop later in life through learning habit.

107) Ans: **A)** Irritability

108) Ans: **C)** Archesporial cells

109) Ans: **A)** Oxygen

110) Ans: **A)** methanogens

111) Ans: **A)** Rings of bud scale scars

112) Ans: **A)** epithelial
Sol: The secretion of tears, milk, sweat, and oil are functions of epithelial tissues.

113) Ans: **B)** Homothallic
Sol: Fern prothallus bears male and female sex organs both.

114) Ans: **D)** Provide many different types of molecules for absorption
Sol: Most of our foods are complicated chemical structure. In order to be absorbed and utilized by the body, they must be broken down into relatively simple molecules. The process by which the complex food materials are converted to simple molecules is known as digestion.

115) Ans: **B)** Punnett square was developed by a British scientist
Sol: Franklin Stahl along with Matthew Meselson proved semi-conservative mode of replication in DNA. Punnett square was developed by a British geneticist, Reginald C. Punnett. Spliceosome formations is part of post-transcriptional change in eukaryotes. Transduction was discovered by Joshua Lederberg and Norton Zinder in the bacterium Salmonella.

116) Ans: **B)** after entry of sperm but before fertilisation
Sol: Entry of sperm into the secondary oocyte induces the completion of the meiotic division of the secondary oocyte. The second meiotic division is unequal and results in the formation of a second polar body and a haploid ovum (ootid). Soon the haploid nucleus of the sperm and that of the ovum fuse together to form a diploid zygote.

117) Ans: **C)** Starch
Sol: Starch is made up of two components-amylose (water soluble) and amylopectin (water insoluble). Amylose to amylopectin ratio is 1:3.

118) Ans: **C)** Amphibian and algae
Sol: When fertilisation occurs outside the body of the organisms, this type of gametic fusion is known as external fertilisation or external syngamy. The external medium such as water is required for this type of fertilisation. So, in most aquatic organisms such as a majority of algae, fishes and amphibians, external fertilisation occurs.

119) Ans: **C)** nonrenewable resource

120) Ans: **D)** All the above

121) Ans: **C)** Cerebrum
Sol: Cerebrum is the highest centre of learning (intelligence and memory).

122) Ans: **A)** Ginger, cucumber
Sol: Rhizomes are main underground, non-green, store food stems and take part in perennation. They have buds for formation of new aerial shoots during favourable conditions. e.g., ginger, turmeric, etc. Stem tendrils of cucumber are modified aerial stems. They are thread-like sensitive structures which can coil around the main support and help the plant in climbing.

123) Ans: **B)** Mitochondria

124) Ans: **D)** Both A and B
Sol: Pollination does not guarantee the transfer of the right type of pollen (compatible pollen). If the pollen is of the wrong type (incompatible type), then the pistil rejects the pollen by preventing the procees such as pollen germination on the stigma or pollen tube growth in the style.

125) Ans: **B)** history and development of race along with variations
Sol: The tern evolution was coined by Herbert Spencer, an English philosopher which means unrolling or unfolding of nature that brings about an orderly change from one form or condition to another resulting in descendants becoming different from ancestors. Thus, it is history and development of race along with variations.

126) Ans: **B)** Archegonium
Sol: Female sex organ is called archegonium which is flask shaped with a tubular neck and a swollen venter.

127) Ans: **B)** Plasmodium falciparum - a protozoan pathogen causing the most serious type of malaria.
Sol: Plasmodium falciparum is a protozoan parasite, one of the species of Plasmodium that causes malaria in humans. Being digenetic, its life cycle is complete in two hosts - man and mosquito.

128) Ans: **D)** Ovules

129) Ans: **B)** change in turgor pressure of guard cells

130) Ans: **B)** algae
Sol: Syngamy refer to the complete and permanent fusion of male and female gametes to form the zygote. When fertilization occurs outside the body of the organism it is called external fertilization or external syngamy. In majority of algae, external fertilization occurs. Whereas in lower fungi, planogametic copulation occur where external fertilization is involved.

131) Ans: **A)** inspiratory capacity +expiratory reserve volume

132) Ans: **A)** Zoological park
Sol: National park is an example of in-situ conservation.

133) Ans: **C)** Circular nodes
Sol: Corm is annual, vertically growing thick, condensed swollen, spherical or sub spherical underground stem. It bears circular nodes, sheathing leaf bases and scale leaves.

134) Ans: **B)** Emulsify fats for digestion
Sol: The chief function of bile is emulsification of fats and make easily digestion of fats.

135) Ans: **D)** Genetic fingerprinting
Sol: Polymerase chain reaction is used to amplify a DNA fragment to obtain its large quantity. PCR is helpful in DNA fingerprinting in such cases where the culprit has to be identified from a very small blood, semen or other cell sample from a crime scene. RFLP (Restriction fragment length polymorphism) referes to the occurrence of different cleavage sites for restriction enzymes in the DNA of different individuals of the same species and RFLPs have provided geneticists with a powerful set of genetic markers for gene mapping and gene tracking. It is used in DNA fingerprinting.

136) Ans: **A)** Cycas stem

137) Ans: **A)** typhoid
Sol: Typhoid is caused by Salmonella typhi. The organisms of the disease are present in the stool. They may be present in urine. They can, therefore, be carried by water and contaminated food. Their spread through water can give rise to severe epidemics. Polio is caused by Enterovirus. TB is caused by Mycobacterium tuberculosis. Tetanus is caused by Clostridium tetani.

138) Ans: **C)** Increase glucose metabolism

139) Ans: **D)** None of the above
Sol: 51 amino acids of insulin are arranged in two polypeptide chains, chain A having 21 amino acids and chain B having 30 amino acids and the two polypeptide chains are interconnected by two disulphide bridges.

140) Ans: **B)** Allopolyploidy
Sol: Allopolyploidy has triticale is an example. Polyploidy is the phenomenon of having more than two sets of chromosomes or genomes. Allpolyploidy has developed through hybridization between two species followed by doubling of chromosomes. Triticale is the first man-made allopolyploid developed by crossing wheat (Triticum turgidum) and rye (Secale cereal).

141) Ans: **B)** Xanthomonas oryzae

142) Ans: **C)** P-iii, Q-iv, R-i, S-ii

143) Ans: **D)** detritus is rich in lignin and chitin
Sol: Decomposition is an oxygen-requiring process. Decomposition rate is controlled by chemical composition of detritus and climatic factors. In a specific climate condition, decomposition rate is slower if detritus is rich in lignin and chitin, and quicker, if detritus is rich in nitrogen and water-soluble substances like sugars.

144) Ans: **A)** Escherichia coli

145) Ans: **A)** Low pO_2, high pCO_2, high H^+
Sol: Shift of oxygen hemoglobin dissociation curve to right indicates dissociation of oxygen from haemoglobin. The oxygen-haemoglobin curve is shifted to right in the certain conditions given as: (i) Decrease the partial pressure of oxygen. (ii) Increase in partial pressure of carbon dioxide (Bohr effect). (iii) Increase in hydrogen ion concentration and decrease in pH (acidity). (iv)Increased body temperature (v) Excess of 2, 3 diphosphoglycerate (DPG).

146) Ans: **C)**

$$ADP + \text{Inorganic } PO_4 \xrightarrow{\text{Light energy}} ATP$$

Sol: $$ADP + \text{Inorganic } PO_4 \xrightarrow{\text{Light energy}} ATP$$

147) Ans: **C)** Fibrous joint
Sol: Fibrous joint would allow no movements. Fibrous/ immovable joints are the joints in which no movement occurs between the bones concerned. White fibrous tissue is present between the ends of the bones. Fibrous joint occurs between the bones of the skull known as sutures and the joints between the teeth and the maxilla, and teeth and the mandible.

148) Ans: **B)** The portion of myofibril between two successive 'Z' line.
Sol: The sarcomere comprises A-b and half of each adjacent I-band. Sarcomere is the functional unit of myofibril.

149) Ans: **C)** Non-medicated IUDs-Lippes loop
Sol: IUDs are of 3 types:
1. Non-medicated IUDs: Lippes loop.
2. Cu Releasing IUDs: Cu-T, Cu-7, Multiload 375
3. Hormone-releasing IUDs: Progestasert, LNG-20

150) Ans: **C)** Emulsifies

151) Ans: **A)** Jellyfish and starfish - Radial symmetry

152) Ans: **C)** A= r; B= q; C= p; D= s

153) Ans: **B)** Angiosperms and gymnosperms

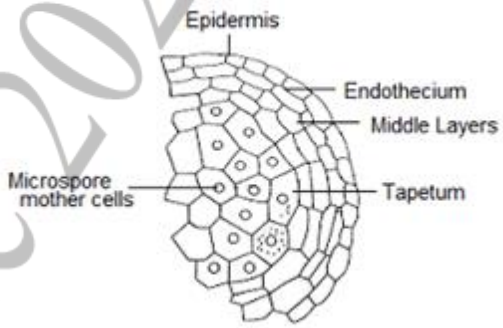
154) Ans: **B)** Fungi
Sol: Fungi is a large kingdom of over 72,000 species. They are achlorophyllous, heterotrophic, spore forming, non- vascular, eukaryotic organisms. It consist of chitin or fungal cellulose in their walls and possess glycogen as food reserve. They are major decomposers of many ecosystems and are associate of many organisms.

155) Ans: **C)** quincuncial

156) Ans: **D)** Wildlife safari parks
Sol: Ex-situ conservation is conversion of selected rare of threatened animals and plants in places outside their natural homes. It includes offsite collections like botanical gardens, zoological parks, wildlife safari parks, gene banks, etc.

157) Ans: **A)** Axon
Sol: The myelin sheath surrounding the axon is interrupted at regular intervals by forming Nodes of Ranvier.

158) Ans: **C)** a-epidermis, bendothecium, c-middle layers,
e-tapetum, d-microspore mother cell



Sol:

159) Ans: **D)** Vascular cambium
Sol: Vascular cambium is made up of lateral meristem.

160) Ans: **C)** Disaccharides

161) Ans: **D)** the name of the scientist devised the test

162) Ans: **B)** Rupture of fenestra rotunda

163) Ans: **B)** a particular pollutant
Sol: Unwanted sound is called noise and it is measured in terms of decible (dB). Generally sound above 80 dB is noise.

164) Ans: **C)** Somatic
Sol: Somatic mutation/variation is not hereditary.

165) Ans: **C)** Vascular bundles are scattered
Sol: In monocot like sugarcane, maize, etc. because of absence of cambium secondary growth is not found. So removal of bark (phloem) is not possible so that ringing experiment is not possible.

166) Ans: **A)** A-(iii) B-(ii) C-(i) D-(iv)

167) Ans: **B)** platypus
Sol: Duck-billed platypus is an egg laying mammal. It is found in the rivers in Eastern Australia and Tasmania. It is a beaver like monotreme about

50-60 cm long and well adapted to live in water. Usually, two eggs are laid at a time. The female curls around them for incubation and remains inactive for about two weeks. Newly hatched young ones are very immature, naked, blind, and each is 2.5 cm long.

168) Ans: **B)** Tertiary consumers
Sol: Tertiary consumers or secondary carnivores are larger carnivores which prey upon primary carnivores. Due to magnification, their concentration increases in a food chain from producers to top consumers. So, among producers, and primary, secondary and tertiary consumers; tertiary consumers will have highest concentration of pollutants because they will be present at the top of food chain.

169) Ans: **A)** Without chlorophyll and possessing chitinised wall

170) Ans: **B)** Cytokinin
Sol: Coconut milk stimulates cell division as it is a rich source of cytokinin which are the plant growth hormone, basic in nature and promote cytokinesis (cell division) either alone or in conjunction with auxin. In plant tissue culture experiments coconut milk is widely used in nutrient medium.

171) Ans: **D)** All of these

172) Ans: **A)** House fly
Sol: Housefly (Musca domestica) belongs to Family Muscidae.

173) Ans: **D)** All of the above
Sol: Organic faming is raising crops through use of biofertiliser, manures and resistant varieties.

174) Ans: **C)** 4 : 1
Sol: From a diploid, primary spermatocyte, four haploid spermatozoa are produced through the process of meiosis. While, from a diploid primary oocyte, only one haploid ovum is formed, rest are polar bodies. So, the ratio between male gametes and female gametes produced from respective primary sex cells is 4 : 1.

175) Ans: **A)** Apex of ventricles
Sol: A mass of specialized fibres, the bundle of His arises from AV node within myocardium of ventricles and passes downwards into the inter ventricular septum and this bundle then divides left and right bundle branches one going to each ventricle. Further the branches divide into a network of fine fibres known as purkinje fibres.

176) Ans: **A)** Temin and Baltimore
Sol: Temin and Baltimore (1972) discovered Reverse transcription (Teminism) in retroviruses. For this work, Temin, Baltimore and Dulbecco were given Nobel prize (1975).

177) Ans: **D)** Thalassemia differs from sickle cell anaemia in that The former is a qualitative problem of synthesising an incorrectly functioning globin while the latter is a quantitative problem of synthesising too few globin molecules.
Sol: Sickle cell anaemia differs from thalassemia in that the former is a qualitative problem of synthesising an incorrectly functioning globin while the latter is a quantitative problem of synthesising too few globin molecules.

178) Ans: **A)** always upright

179) Ans: **A)** Microtubules

180) Ans: **D)** chordata.
Sol: The term metamerism refers to a linear repetition of parts in an animal body. It occurs in three highly organized phyla: Annelida, Arthropoda and Chordata. Each segment is called a metamere, or somite. Segmentation often affects both external and internal structures. Such a condition is called metameric segmentation. In chordates, the segmentation is apparent only in the embryonic stage. In the adult chordates, segmentation is visible in the internal structures, such as vertebrae, ribs, nerves and blood vessels.

181) Ans: **A)** anuria
Sol: Anuria is the complete suppression of urine formation by the kidney. In this case most of the nephrons are destroyed. Uremia is the presence of an excessive amount of urea in the blood. Deamination is the removal of ammonia from amino acids.

182) Ans: **B)** G.F. Gause

183) Ans: **B)** Family
Sol: A genus is a group of closely related species. Genus is defined as a category that contains either one species or a monophyletic groups of species, and is separable from other genera by a decided discontinuity gap. A family represents a group of closely related genera. Similarly order is a group of closely related families.

184) Ans: **C)** O_2 concentration
Sol: High temperature, light and CO_2 concentration affect opening and closing of stomata while O_2 concentration has negligible effect on stomatal opening and closing

185) Ans: **A)** Acropetally
Sol: Flowers are arranged in acropetal succession means older flowers are towards the base and younger ones are towards the apex of the peduncle.

186) Ans: **B)** Nitrogen fixation
Sol: Molybdenum is required for the functioning of enzyme nitrogenase in the leguminous plants and helps in biological nitrogen fixation.

187) Ans: **B)** Production of hydrolyzing enzymes
Sol: Aleurone layer of endosperm has released α-

amylase and protease hydorlytic enzyme also promotes seed germination.

188) Ans: **A)** Initiate heart beat
Sol: SA node is a pacemaker of the heart and it is a small mass of specialized muscle cells in the mammalian heart, found in the wall of the right atrium near the openings for the vena cava. The cells initiate and maintain the heart beat.

189) Ans: **A)** IAA

190) Ans: **A)** mineral movement will be blocked
Sol: Decomposers are saprotrophs which decompose the organic remains by secreting extracellular digestive enzymes. They are also known as mineralisers as they release minerals trapped in organic remains. So in the absence of microorganisms the flow of minerals will stop.

191) Ans: **C)** Intraveinal injection of insulin
Sol: The oral dose of insulin is degenerated by the hydrolysing action of enzymes in the stomach.

192) Ans: **D)** Eukaryotes and prokaryotes
Sol: Jumping genes or transposons genes are found in both prokaryotes as well as eukaryotes. These were discovered by Mc clintock in case of maize.

193) Ans: **A)** Crop yield loss due to attack by Bacillus thuringiensis bacterium is reduced.
Sol: Bacillus thuringiensis (Bt for short) is a soil bacterium produces proteins that kill certain insects such as lepidopterans (tobacco budworm, armyworm), coleopterans (beetles) and dipterans (flies, mosquitoes). Bacillus thuringiensis forms some protein crystals. These crystals contain a toxic insecticidal protein.

194) Ans: **B)** Heterosporous condition
Sol: Heterosporous condition (Produce of two kind of spores i.e., Megaspore and microspore) found in selaginella and Homosporous conditions (Produce one kid of spore) found in pteris (fern).

195) Ans: **B)** Number of cells increase and size of cells decrease
Sol: Cleavage is a series of rapid mitotic divisions of the zygote which convert the single celled zygote into a multicellular structure known as blastula or blastocyst. This process is not characterized by cell growth, so number of cells increases but their size decreases and hence no enlargement of the embryo is observed.

196) Ans: **A)** Male accessory glands

197) Ans: **A)** In chlorophyll 'a' there is CH_3 group whereas in 'b' it is -CHO group

198) Ans: **B)** It conducts water and minerals efficiently
Sol: Heartwood is the non-functional part of secondary xylem, hence, it does not conduct water and minerals.

199) Ans: **C)** Oxytocin
Sol: Neurohypophysis (pars nervosa or posterior lobe) is with two types of groups of neurosecretory cells, called nuclei which secrete nanopeptide hormones -oxytocin and vasopressin and it is stored in the end knobs of the axons present in posterior lobe of pituitary and are released in blood when required, therefore these are also known as neurohypophyseal hormones.

200) Ans: **D)** Phagocytic barrier
Sol: Phagocytic barrier has Kupffer's cells of liver are an example. Phagocytic barriers (cellular barriers) bring about phagocytosis of invading microbes.