

AIPMT PRE- EXAMINATION PAPER 2012

Code-A

BIOLOGY

Time : - 3 Hours

Date : 01/04/12

Important Instructions:

1. The Answer Sheet is inside this Test Booklet. When you are directed to open the Test Booklet, take out the Answer Sheet and fill in the particulars on side-1 and side-2 carefully with blue/black ball point pen only.
2. The test is of 3 hours duration and Test Booklet contains 200 questions. Each question carries 4 marks. For each correct response, the candidate will get 4 marks. For each incorrect response, one mark will be deducted from the total scores. The maximum marks are 800.
3. Use Blue/Black Ball Point Pen only for writing particulars on this page marking responses.
4. Rough work is to be done on the space provided for this purpose in the Test Booklet only.
5. On completion of the test, the candidate must handover the Answer Sheet to the invigilator in the Room/Hall. The candidates are allowed to take away this Test Booklet with them.
6. The CODE for this Booklet is A. Make sure that the CODE printed on Side-2 of the Answer Sheet is the same as that on this Booklet. In case of discrepancy, the candidate should immediately report the matter to the Invigilator for replacement of-both the Test Booklets and the Answer Sheets.
7. The candidates should ensure that the Answer Sheet is not folded. Do not make any stray marks on the Answer Sheet- Do not write your roll no. anywhere else except in the specified space in the Test Booklet/ Answer Sheet.
8. Use of white fluid for correction is NOT permissible on the Answer Sheet.
9. Each candidate must show on demand his/her Admission Card to the Invigilator.
10. No candidate, without special permission of the Superintendent or Invigilator, would leave his/her seat.
11. The candidates should not leave the Examination Hall without handing over their Answer Sheet to the Invigilator on duty and sign the Attendance Sheet twice. Cases where a candidate has not signed the Attendance Sheet the second time will be deemed not to have handed over Answer Sheet and dealt with as an unfair means case.
12. Use of Electronic/Manual Calculator is prohibited.
13. The candidates are governed by all Rules and regulation of the Board with regard to their conduct in the Examination Hall. All cases of unfair means will be dealt with as per Rules and Regulations of the Board.
14. No part of the Test Booklet and Answer Sheet shall be detached under any circumstances.
15. The candidates will write the Correct Test Booklet Code as given in the Test Booklet/ Answer Sheet in the Attendance Sheet.

PART A — BIOLOGY

101. *Cycas* and *adiantum* resemble each other in having

- (1) Cambium
- (2) Vessels
- (3) Seeds
- (4) Motile sperms

Ans. [4]

102. Gymnosperms are also called soft wood spermatophytes because they lack

- (1) Thick - walled tracheids
- (2) Xylem fibres
- (3) Cambium
- (4) Phloem fibres

Ans. [1]

103. Maximum nutritional diversity is found in the group

- (1) Monera
- (2) Plantae
- (3) Fungi
- (4) Animalia

Ans. [1]

104. Which one of the following is common to multicellular fungi, filamentous algae and protonema of mosses

- (1) Mode of Nutrition
- (2) Multiplication by fragmentation
- (3) Diplontic life cycle
- (4) Members of kingdom plantae

Ans. [2]

105. Which statement is wrong for viruses

- (1) They have ability to synthesiz nucleic acids and proteins
- (2) Antibiotics have no effect on them
- (3) All are parasites
- (4) All of them have helical symmetry

Ans. [4]

106. Which one of the following is correct statement

- (1) Antheridiophores and archegoniophores are present in pteridophytes
- (2) Origin of seed habit can be traced in pteridophytes
- (3) Pteridophyte gametophyte has a protonemal and leafy stage
- (4) In gymnosperm female gametophyte is free living

Ans. [2]

107. Nuclear membrane is absent in

- (1) *Volvox*
- (2) *Nostoc*
- (3) *Penicillium*
- (4) *Agaricus*

Ans. [2]

- 116.** Best defined function of manganese in green plants is
(1) Nitrogen fixation (2) Water absorption
(3) Photolysis of water (4) Calvin cycle

Ans. [3]

- 117.** Water containing cavities in vascular bundles are found in
(1) *Cycas* (2) *Pinus*
(3) Sunflower (4) Maize

Ans. [4]

- 118.** Closed vascular bundles lack
(1) Cambium (2) Pith
(3) Ground tissue (4) Conjunctive tissue

Ans. [1]

- 119.** Placentation in Tomato and lemon is
(1) Marginal (2) Axile
(3) Parietal (4) Free central

Ans. [2]

- 120.** Companion cells are closely associated with
(1) Trichomes (2) Guard cells
(3) Sieve elements (4) Vessel elements

Ans. [3]

- 121.** Vexillary aestivation is characteristic of the family
(1) Solanaceae (2) Brassicaceae
(3) Fabaceae (4) Asteraceae

Ans. [3]

- 122.** Phyllode is present in
(1) Australian Acacia (2) *Opuntia*
(3) *Asparagus* (4) *Euphorbia*

Ans. [1]

- 123.** The common bottle cork is a product of
(1) Xylem (2) Vascular Cambium
(3) Dermatogen (4) Phellogen

Ans. [4]

- 124.** Which one of the following is wrong statement
- (1) Phosphorus is a constituent of cell membranes, certain nucleic acids and all proteins
 - (2) *Nitrosomonas* and *Nitrobacter* are chemoautotrophs
 - (3) *Anabaena* and *Nostoc* are capable of fixing nitrogen in free- living state also
 - (4) Root nodule forming nitrogen fixers live as aerobes under free living conditions
- Ans. [1]**
- 125.** How many plants in the list give below have composite fruits that develop from an inflorescence
Walnut, poppy, radish, fig, pineapple, apple, tomato, mulberry
- (1) Two
 - (2) Three
 - (3) Four
 - (4) Five
- Ans. [2]**
- 126.** Cymose inflorescence is present in
- (1) *Trifolium*
 - (2) *Brassica*
 - (3) *Solanum*
 - (4) *Sesbania*
- Ans.[3]**
- 127.** Which one of the following is correctly matched
- (1) Potassium - Readily immobilisation
 - (2) Bakane of rice seedlings - F skoog
 - (3) Passive transport of nutrients - ATP
 - (4) Apoplast - Plasmodesmata
- Ans.[1]**
- 128** A process that makes important difference between C₃ and C₄ plants is
- (1) Photosynthesis
 - (2) Photorespiration
 - (3) Transpiration
 - (4) Glycolysis
- Ans.[2]**
- 129.** The correct sequence of cell organelles during photorespiration is
- (1) Chloroplast, mitochondria, peroxisome
 - (2) Chloroplast, - vacuole - peroxisome
 - (3) Chloroplast, - Golgiboidies - mitochondria
 - (4) Chloroplast, Rough Endoplasmic reticulum- Dictyosomes
- Ans.[1]**
- 130.** The coconut water and the edible part of coconut are equivalent to
- (1) Mesocarp
 - (2) Embryo
 - (3) Endosperm
 - (4) Endocarp
- Ans.[3]**

131. The gynoecium consists of many free pistils in flowers of

- (1) *Papaver* (2) *Michelia*
(3) *Aloe* (4) Tomato

Ans.[2]

132. Which one of the following is correctly matched

- (1) *Chlamydomonas* - Conidia (2) yeast - Zoospores
(3) Onion - Bulb (4) Ginger - Sucker

Ans.[3]

133. Both, autogamy and geitonogamy are prevented in

- (1) Castor (2) Maize
(3) Papaya (4) Cucumber

Ans.[3]

134. Even in absence of pollinating agents seed setting is assured in

- (1) *Salvia* (2) Fig
(3) *Commellina* (4) *Zostera*

Ans.[3]

135. Which one of the following areas in India, is a hotspot of biodiversity

- (1) Sunderbans (2) Western Ghats
(3) Eastern Ghats (4) Gangetic plain

Ans.[2]

136. Which one of the following is not a functional unit of an ecosystem

- (1) Productivity (2) Stratification
(3) Energy flow (4) Decomposition

Ans.[2]

1 The upright pyramid of number is absent in

- (1) Lake (2) Grassland
(3) Pond (4) Forest

Ans.[4]

138. Which one of the following is not a gaseous biogeochemical cycle in ecosystem

- (1) Nitrogen Cycle (2) Carbon Cycle
(3) Sulphur Cycle (4) Phosphorus Cycle

Ans.[4]

139. Which one of the following is a wrong statement
- (1) Greenhouse effect is a natural Phenomenon
 - (2) Eutrophication is a natural phenomenon in freshwater bodies
 - (3) Most of the forests have been lost in tropical areas
 - (4) Ozone in upper part of atmosphere is harmful to animals

Ans.[4]

140. The highest number of species in the world is represented by

- (1) Algae
- (2) Lichens
- (3) Fungi
- (4) Mosses

Ans.[2]

141. Yeast is used in the production of

- (1) Bread and beer
- (2) Cheese and butter
- (3) Citric acid and lactic acid
- (4) Lipase and pectinase

Ans.[1]

142. Which one of the following microbes forms symbiotic association with plants and helps them in their nutrition

- (1) *Glomus*
- (2) *Trichoderma*
- (3) *Azotobacter*
- (4) *Aspergillus*

Ans.[1]

143. A single strand of nucleic acid tagged with a radioactive molecule is called

- (1) Plasmid
- (2) Probe
- (3) Vector
- (4) Selectable marker

Ans.[2]

144. A patient brought to a hospital with myocardial infarction is normally immediately given

- (1) Cyclosporin - A
- (2) Statins
- (3) Penicillin
- (4) Streptokinase

Ans.[4]

145. A nitrogen - fixing microbe associated with *Azolla* in rice fields is

- (1) *Frankia*
- (2) *Tolypothrix*
- (3) *Spirulina*
- (4) *Anabaena*

Ans.[4]

146. Which one is a true statement regarding DNA polymerase used in PCR

- (1) It is isolated from a virus
- (2) It remains active at high temperature
- (3) It is used to ligate introduced DNA in recipient cell
- (4) It serves as a selectable marker

Ans.[2]

	Genus Name	Two characters	Phylum
(1)	<i>Asterias</i>	(a) Spiny skinned (b) Water vascular system	Echinodermata
(2)	<i>Sycon</i>	(a) Pore bearing (b) Canal system	Porifera
(3)	<i>Periplaneta</i>	(a) Jointed appendages (b) Chitinous exoskeleton	Arthropoda
(4)	<i>Pila</i>	(a) body segmented (b) Mouth with Radula	Mollusca

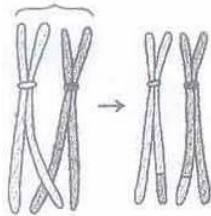
Ans. [3]

154. Select the the correct statement from the following regarding cell membrane

- (1) Lipids are arranged in bilayer with polar heads towards the inner part
- (2) Fluid mosaic model of cell membrane was proposed by singer and Nicolson
- (3) Na^+ and K^+ ions move across cell membrane by passive transport
- (4) Proteins make up 60 to 70% of the cell membrane

Ans. [2]

155. Given below is the representation of a certain event at a particular stage of a type of cell division which is this stage



- (1) Prophase of Mitosis
- (2) Both prophase and metaphase of mitosis
- (3) Prophase I during meiosis
- (4) Prophase -II during meiosis

Ans. [3]

156. Which one out of A - D given below correctly represents the structural formula of the basic amino acid

A	B	C	D
$\begin{array}{c} \text{NH}_2 \\ \\ \text{H}-\text{C}-\text{COOH} \\ \\ \text{CH}_2 \\ \\ \text{CH}_2 \\ \\ \text{C} \\ // \quad \backslash \\ \text{O} \quad \text{OH} \end{array}$	$\begin{array}{c} \text{NH}_2 \\ \\ \text{H}-\text{C}-\text{COOH} \\ \\ \text{CH}_2 \\ \\ \text{OH} \end{array}$	$\begin{array}{c} \text{CH}_2\text{OH} \\ \\ \text{CH}_2 \\ \\ \text{CH}_2 \\ \\ \text{NH}_2 \end{array}$	$\begin{array}{c} \text{NH}_2 \\ \\ \text{H}-\text{C}-\text{COOH} \\ \\ \text{CH}_2 \\ \\ \text{CH}_2 \\ \\ \text{CH}_2 \\ \\ \text{CH}_2 \\ \\ \text{NH}_2 \end{array}$

Options :

- (1) A (2) B
(3) C (4) D

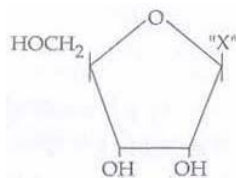
Ans. [4]

157. What is true about ribosomes

- (1) These are found only in eukaryotic cells
(2) These are self - splicing introns of some RNAs.
(3) The prokaryotic ribosomes are 80 S, where 'S' stands for sedimentation coefficient.
(4) There are composed of ribonucleic acid and proteins

Ans. [4]

158. Given below is the diagrammatic representation of one of the categories of small molecular weight organic compounds in the living tissues. Identify the category shown and the one blank component 'X' in it



Category	Component
(1) Nucleotide	Adenine
(2) Nucleoside	Uracil
(3) Cholesterol	Guanin
(4) Amino acid	NH ₂

Ans. [2]

159. Ribosomal RNA is actively synthesized in

- (1) Nucleoplasm (2) Ribosomes
(3) Lysosomes (4) Nucleolus

Ans. [4]

160. F₂ generation in a Mendelian cross showed that both genotypic and phenotypic ratios are same as 1 : 2 : 1. It represents a case of
- (1) Monohybrid cross with complete dominance
 - (2) Monohybrid cross with incomplete dominance
 - (3) Co - dominance
 - (4) Dihybrid cross

Ans. [2]

161. What was the most significant trend in the evolution of modern man (*Homo sapiens*) from his ancestors

- (1) Increasing cranial capacity
- (2) Upright posture
- (3) Shortening of jaws
- (4) Binocular vision

Ans. [1]

162. If one strand of DNA has the nitrogenous base sequence as ATCTG, what would be the complementary RNA stand sequence

- (1) AACTG
- (2) ATCGU
- (3) TTAGU
- (4) UAGAC

Ans. [4]

163. Which one of the following options gives one correct example each of convergent evolution and divergent evolution

	Convergent evolution	Divergent evolution
(1)	Bones of forelimbs of vertebrates	Wings of butterfly and birds
(2)	Thorns of Bougainvillia and tendrils of cucurbita	Eyes of Octopus and mammals
(3)	Eyes of octopus and mammals	Bones of forelimps of vertebrates
(4)	Thorns of Bougainvillia and ten drils of cucurbita	Wings of butterflies and birds

Ans. [3]

164. A normal - visioned man whose father was colour blind, marries a woman whose father was also colour - blind. They have their first child as a daughter. What are the chances that this child would be colour blind

- (1) 25%
- (2) 50%
- (3) 100%
- (4) Zero percent

Ans. [4]

165. Select the correct statement regarding the specific disorder of muscular or skeletal system

- (1) *Myasthenia gravis* - Auto immune disorder which inhibits sliding of myosin filaments
- (2) *Gout*- inflammation of joints due to extra deposition of calcium
- (3) *Muscular dystrophy* - age related shorting of muscles
- (4) *Osteoporosis* - decrease in bone mass and higher chances of fractures with advancing age

Ans. [4]

- 166.** A certain road accident patient with unknown blood group needs immediate blood transfusion. His one doctor friend at once offers his blood. What was the blood group of the donor
- (1) Blood group O (2) Blood group A
(3) Blood group B (4) Blood group AB
- Ans. [1]**
- 167.** The maximum amount of electrolytes and water (70 - 80 percent) from the glomerular filtrate is reabsorbed in which part of the nephron
- (1) Proximal convoluted tubule
(2) Descending limb of loop of Henle
(3) Ascending limb of loop of Henle
(4) Distal convoluted tubule
- Ans. [1]**
- 168.** The human hind brain comprises three parts, one of which is
- (1) Cerebellum (2) Hypothalamus
(3) Spinal (4) Corpus callosum
- Ans. [1]**
- 169.** Which one of the following pairs of hormones are the examples of those that can easily pass through the cell membrane of the target cell and bind to a receptor inside is (mostly in the nucleus)
- (1) Somatostatin, oxytocin (2) Cortisol, testosterone
(3) Insulin, glucagon (4) Thyroxin, Insulin
- Ans. [2]**
- 170.** The Leydig cell as found in the human body are the secretory source of
- (1) Glucagon (2) Androgens
(3) Progesterone (4) Intestinal mucus
- Ans. [2]**
- 171.** Select the correct statement from the ones given below with respect to *Periplaneta americana*
- (1) There are 16 very long Malpighian tubules present at the junctions of midgut and hindgut
(2) Grinding of food is carried out only by the mouth parts
(3) Nervous system located dorsally, consists of segmentally arranged ganglia joined by a pair of longitudinal connective
(4) Males bear a pair of short thread like anal styles
- Ans. [4]**
- 172.** Anxiety and eating spicy food together in an otherwise normal human, may lead to
- (1) Diarrhoea (2) Vomiting
(3) Indigestion (4) Jaundice
- Ans. [3]**

- 173.** Which one of the following is the correct statement for respiration in humans ?
- (1) Workers in grinding and stone-breaking industries may suffer, from lung fibrosis
 - (2) About 90% of carbon dioxide (CO₂) is carried by haemoglobin as carbamino haemoglobin
 - (3) Cigarette smoking may lead to inflammation of bronchi
 - (4) Neural signals from pneumotoxic centre in pons region of brain can increase the duration of inspiration

Ans. [1]

- 174.** What is correct to say about the hormone action in humans ?
- (1) In females, FSH first binds with specific receptors on ovarian cell membrane
 - (2) FSH stimulates the secretion of estrogen and progesterone
 - (3) Glucagon is secreted by β - cells of islets of langerhans and stimulates glycogenolysis
 - (4) Secretion of thymosins is stimulated with aging

Ans. [1]

- 175.** *Pheretima* and its close relatives derive nourishment from :
- (1) Soil insects
 - (2) Small pieces of fresh fallen leaves of maize, etc
 - (3) Sugarcane roots
 - (4) Decaying fallen leaves and soil organic matter

Ans. [4]

- 176.** Compared to those of humans, the erythrocytes in frog are :
- (1) Very much smaller and fewer
 - (2) Nucleated and without haemoglobin
 - (3) Without nucleous but with haemoglobin
 - (4) Nucleated and with haemoglobin

Ans.[4]

- 177.** Which one is the most abundant protein in the animal world ?
- (1) Collagen
 - (2) Insulin
 - (3) Trypsin
 - (4) Haemoglobin

Ans.[1]

- 178.** Which part of the human ear plays no role in hearing as such but is otherwise very much required ?
- (1) Vestibular apparatus
 - (2) Ear ossicles
 - (3) Eustachian tube
 - (4) Organ of corti

Ans.[1]

- 179.** A person entering an empty room suddenly finds a snake right in front on opening the door. Which one of the following is likely to happen in his neuro-hormonal control system ?
- (1) Hypothalamus activates the parasympathetic division of brain
 - (2) Sympathetic nervous system is activated releasing epinephrin and norepinephrin from adrenal cortex
 - (3) Sympathetic nervous system is activated releasing epinephrin and norepinephrin from adrenal medulla
 - (4) Neurotransmitters diffuse rapidly across the cleft and transmit a nerve impulse

Ans.[3]

- 180.** In a normal pregnant woman, the amount of total gonadotropin activity was assessed. The results expected was :
- (1) High levels of FSH and LH in uterus to stimulate endometrial thickening
 - (2) High level of circulating HCG to stimulate estrogen and progesterone synthesis
 - (3) High level of circulating FSH and LH in the uterus to stimulate implantation of the embryo
 - (4) High level of circulating HCG to stimulate endometrial thickening

Ans.[2]

- 181.** The test-tube baby programme employs which one of the following techniques ?
- (1) Gamete intra fallopian transfer (GIFT)
 - (2) Zygote intra fallopian transfer (ZIFT)
 - (3) Intra cytoplasmic sperm injection (ICSI)
 - (4) Intra uterine insemination (IUI)

Ans. [2]

- 182.** Signals for parturition originate from :
- (1) Placenta only
 - (2) Fully developed foetus only
 - (3) Both placenta as well as fully developed foetus
 - (4) Oxytocin released from maternal pituitary

Ans. [3]

- 183.** Which one of the following statements is false in respect of viability of mammalian sperm ?
- (1) Viability of sperm is determined by its motility
 - (2) Sperms must be concentrated in a thick suspension
 - (3) Sperm is viable for only up to 24 hours
 - (4) Survival of sperm depends on the pH of the medium and is more active in alkaline medium

Ans. [3]

- 184.** The extinct human who lived 1,00,000 to 40,000 years ago, in Europe, Asia and parts of Africa, with short stature, heavy eye brows, retreating fore heads, large jaws with heavy teeth, stocky bodies, a lumbering gait and stooped posture was :

- (1) Cro-magnan humans
- (2) *Ramapithecus*
- (3) *Homo habilis*
- (4) Neanderthal human

Ans. [4]

189. Identify the possible link "A" in the following food chain

: Plant → insect → frog → "A" → Eagle

- (1) Cobra
- (2) Parrot
- (3) Rabbit
- (4) Wolf

Ans. [1]

190. Which one of the following is an example of carrying out biological control of pests/diseases using microbes ?

- (1) Bt-cotton to increase cotton yield
- (2) Lady bird beetle against aphids in mustard
- (3) *Trichoderms sp.* against certain plant pathogens
- (4) Nucleopolyhedrovirus against white rust in *Brassica*

Ans. [3]

191. Widal Test is carried out to test :

- (1) HIV/AIDS
- (2) Typhoid fever
- (3) Malaria
- (4) Diabetes mellitus

Ans. [2]

192. Cirrhosis of liver is caused by the chronic intake of

- (1) Tobacco (Chewing)
- (2) Cocaine
- (3) Opium
- (4) Alcohol

Ans. [4]

193. Which one of the following is not a property of cancerous cells whereas the remaining three are ?

- (1) They divide in an uncontrolled manner
- (2) They show contact inhibition
- (3) They compete with normal cells for vital nutrients
- (4) They do not remain confined in the area of formation

Ans. [2]

194. Motile zygote of *Plasmodium* occurs in

- (1) Human RBCs
- (2) Human liver
- (3) Gut of female Anopheles
- (4) Salivary glands of Anopheles

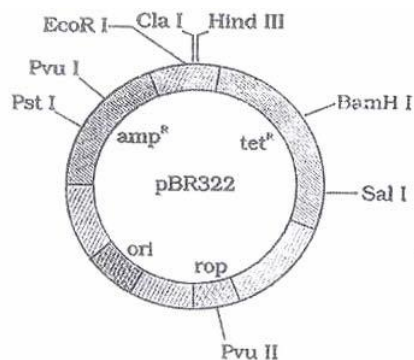
Ans. [3]

195. In which one of the following options the two examples are correctly matched with their particular type of immunity ?

	Examples	Type of immunity
(1)	Saliva in mouth and tears in eyes	Physical barriers
(2)	Mucus coating of epithelium lining the urinogenital tract and the HCl in stomach	Physiological barriers
(3)	Polymorphonuclear leukocytes and monocytes	Cellular barriers
(4)	Anti-tetanus and anti-snake bite injections	Active immunity

Ans. [3]

196. The figure below is the diagrammatic representation of the E.Coli vector pBR 322. Which one of the given options correctly identifies its certain component(s) ?



- (1) Hind III, EcoRI-selectable markers
- (2) amp^R, tet^R-antibiotic resistance genes
- (3) ori- original restriction enzyme
- (4) rop-reduced osmotic pressure

Ans.[2]

197. Measuring biochemical oxygen demand (BOD) is a method used for
- (1) Measuring the activity of *Saccharomyces cerevisiae* in producing curd on a commercial scale
 - (2) Working out the efficiency of R.B.Cs. about their capacity to carry oxygen
 - (3) Estimating the amount of organic matter in sewage water
 - (4) Working out the efficiency of oil driven automobile engines

Ans.[3]

198. The most abundant prokaryotes helpful to humans in making curd from milk and in production of antibiotics are the ones categorised as :

- (1) Chemosynthetic autotrophs
- (2) Heterotrophic bacteria
- (3) Cyanobacteria
- (4) Archaeobacteria

Ans.[2]

199. People who have migrated from the plains to an area adjoining Rohtang Pass about six months back :

- (1) Suffer from altitude sickness with symptoms like nausea, fatigue, etc.
- (2) Have the usual RBC count but their haemoglobin has very high binding affinity to O₂.
- (3) Have more RBCs and their haemoglobin has a lower binding affinity to O₂
- (4) Are not physically fit to play games like football

Ans.[3]

200. *Monascus purpureus* is a yeast used commercially in the production of :

- (1) Citric acid
- (2) Blood cholesterol lowering statins
- (3) Ethanol
- (4) Streptokinase for removing clots from the blood vessels

Ans.[2]
