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Answer Sheet No. \_\_\_\_\_

Sig. of Candidate. \_\_\_\_\_

Sig. of Invigilator. \_\_\_\_\_

## BIOLOGY HSSC-II

### SECTION – A ( Marks 17)

Punjab Text Book Board

Old/Revised Syllabus

Version Number 

|   |   |   |   |
|---|---|---|---|
| 1 | 7 | 0 | 1 |
|---|---|---|---|

Time allowed: 25 Minutes

**NOTE:** Section-A is compulsory. All parts of this section are to be answered on the question paper itself. It should be completed in the first 25 minutes and handed over to the Centre Superintendent. Deleting/overwriting is not allowed. Do not use lead pencil.

Q. 1 Circle the correct option i.e. A / B / C / D. Each part carries one mark.

- (i) Synthesis of nitrogenous wastes like  $NH_3$ , urea and uric acid is the function of:  
A. Kidney      B. Liver      C. Stomach      D. Spleen
- (ii) Metanephridia are excretory structure in:  
A. Planaria      B. Earthworm      C. Cockroach      D. Man
- (iii) The movement in response to touch is called:  
A. Phototropism      B. Chemotropism      C. Thigmotropism      D. Geotropism
- (iv) Muscle fatigue is caused by:  
A.  $CO_2$       B. Accumulation of Lactic acid  
C. Ethyl alcohol      D. Fumaric acid
- (v) Which one of the following is responsible for delay in ageing of fresh leaf crops as well as keeping flowers fresh?  
A. Ethene      B. Absciscic acid      C. Cytokinins      D. Auxins
- (vi) In humans, how many pairs of cranial nerves are there:  
A. 10      B. 12      C. 14      D. 20
- (vii) Gastrin is the hormone produced by the:  
A. Liver      B. Pancreas      C. Stomach      D. Kidney
- (viii) Evolution of pollen tube is an important step in land adaptation by the:  
A. Bryophytes      B. Thallophytes      C. Spermatophytes      D. Pteridophytes
- (ix) How many nucleotides are present in a codon?  
A. One      B. Two      C. Three      D. Four
- (x) Who experimentally proved that DNA replicates in a semi-conservative manner?  
A. Watson and Crick      B. Meselson Stahl  
C. Hershey and Martha Chase      D. Karl Correns
- (xi) Branch of Biology which deals with the study of ageing is called:  
A. Parasitology      B. Gerontology      C. Teratology      D. Ecology
- (xii) Non-Disjunction takes place during:  
A. Mitosis      B. Budding      C. Meiosis      D. Binary fission
- (xiii) Certain genes do not settle peacefully on their loci, they keep on hopping on different loci on the same chromosome or other chromosomes and hence are called as:  
A. Lost genes      B. Fixed genes      C. Jumping genes      D. Migrated genes
- (xiv) Severe Combined Immunodeficiency Syndrome (SCID) is treated by:  
A. Radiotherapy      B. Chemotherapy      C. Physiotherapy      D. Gene therapy
- (xv) Who presented the book "The Origin of Species"?  
A. Wallace      B. Mendel      C. Darwin      D. Lamarck
- (xvi) In xerosere succession which is the third stage?  
A. Crustose lichen stage      B. Moss stage  
C. Foliage stage      D. Herbaceous stage
- (xvii) Grassland present in the temperate climates are also called as:  
A. Tundra      B. Desert      C. Prairies      D. Coniferous forest

For Examiner's use only:

Total Marks:

17

Marks Obtained:



# BIOLOGY HSSC-II

Punjab Text Book Board  
Old / Revised Syllabus

Time allowed: 2:35 Hours

Total Marks Sections B and C: 68

NOTE: Answer any fourteen parts from Section 'B' and any two questions from Section 'C' on the separately provided answer book. Use supplementary answer sheet i.e. Sheet-B if required. Write your answers neatly and legibly.

## SECTION – B (Marks 42)

Q. 2 Answer any FOURTEEN parts. The answer to each part should not exceed 3 to 4 lines. (14 x 3 = 42)

- (i) What is Pyrexia?
- (ii) What is Sciatica?
- (iii) Write a short note on Neurons?
- (iv) What do you know about gastrulation?
- (v) What was the work of Hans Dietrich?
- (vi) What are the various stages of interphase?
- (vii) What is phenylketonuria?
- (viii) What do you know about tumors?
- (ix) Describe briefly Mongolism?
- (x) What do you understand from cystic fibrosis?
- (xi) How is sexual dimorphism exhibited in *Drosophila*?
- (xii) What is ecology? Differentiate between Autecology and Synecology.
- (xiii) What do you know about the biotic components of an ecosystem?
- (xiv) Which idea is known as endosymbiont hypothesis?
- (xv) Why the trees are called environmental buffers?
- (xvi) What are cerebral hemispheres?
- (xvii) Write short note on uremia?
- (xviii) What is partial dominance?
- (xix) What is the percentage of different types of haemophilia?

## SECTION – C (Marks 26)

Note: Attempt any TWO questions. All questions carry equal marks.

( 2 x 13 = 26 )

- |      |    |                                                                                      |       |
|------|----|--------------------------------------------------------------------------------------|-------|
| Q. 3 | a. | Explain Locomotion in <i>Paramecium</i> .                                            | (05)  |
|      | b. | What is learning behavior? Describe in detail the various types classified by Thorpe | (08)  |
| Q. 4 | a. | What are biogeochemical cycles? Describe the nitrogen cycle in detail.               | (2+7) |
|      | b. | Classify the chromosomes depending upon the location of centromere.                  | (04)  |
| Q. 5 | a. | Define Mendel's law of independent assortment. Explain it with an example.           | (2+6) |
|      | b. | Describe the factors affecting gene frequency.                                       | (05)  |

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Answer Sheet No. \_\_\_\_\_

Sig. of Candidate. \_\_\_\_\_

Sig. of Invigilator. \_\_\_\_\_

## BIOLOGY HSSC-II

### SECTION – A ( Marks 17)

Punjab Text Book Board

Old/Revised Syllabus

Version Number 

|   |   |   |   |
|---|---|---|---|
| 1 | 7 | 0 | 5 |
|---|---|---|---|

Time allowed: 25 Minutes

NOTE: Section-A is compulsory. All parts of this section are to be answered on the question paper itself. It should be completed in the first 25 minutes and handed over to the Centre Superintendent. Deleting/overwriting is not allowed. Do not use lead pencil.

Q. 1 Circle the correct option i.e. A / B / C / D. Each part carries one mark.

- (i) Heat shock proteins are synthesized by the plants of:  
A. Temperate region B. Arctic region  
C. Antarctic region D. Oceans
- (ii) Which one of the following is a uricotelic?  
A. Parrot B. Amoeba C. Man D. Paramecium
- (iii) The band which can polarize the visible light is called:  
A. A-Band B. I-Band C. H-Zone D. M-Line
- (iv) Tube feet help in the locomotion of:  
A. Amoeba B. Jelly fish C. Birds D. Star fish
- (v) Which one of the following can be sprayed on tree crops to regulate fruit drop at the end of the season?  
A. Gibberellins B. Cytokinins C. Ethene D. Absciscic acid
- (vi) The processes conducting impulses away from cell body are called:  
A. Dendrites B. Axons C. Nissl's granules D. Schwann Cell
- (vii) High levels of Aluminium may contribute to the onset of the:  
A. Parkinson's disease B. Epilepsy  
C. Alzheimer's disease D. Typhoid
- (viii) Reproductive cycle found in all female mammals except human female is called:  
A. Menstrual cycle B. Oestrous cycle  
C. Biogeochemical cycle D. Nitrogen cycle
- (ix) Hans Spemann and Hilde Mangold carried out research work on:  
A. Aging B. Embryonic induction  
C. Regeneration D. Cancer
- (x) The gene causing the white eye trait in *Drosophila* resides only on:  
A. X-Chromosome B. Y-Chromosome  
C. Autosome D. Mesosome
- (xi) Okazaki fragments are synthesized on:  
A. Leading strand B. Lagging strand  
C. Heavy strand D. Light strand
- (xii) Mendel devised a cross which is used to test the genotype of an individual showing a dominant phenotype is called a:  
A. Single cross B. Double cross C. Test cross D. Back cross
- (xiii) Internal programme of events and sequence of morphological changes by which cell commits suicide is collectively called as:  
A. Necrosis B. Apoptosis C. Glycolysis D. Pinocytosis
- (xiv) Genes can be isolated from the chromosomes by cutting them using special enzymes called:  
A. Transcriptase B. Reverse Transcriptase  
C. Restriction Endonuclease D. Polymerase
- (xv) Organisms that have a foreign gene inserted into them are called:  
A. Transformed organisms B. Transduced organisms  
C. Transgenic organisms D. Endangered organisms
- (xvi) Coniferous forests located at high altitude are called as:  
A. Alpine B. Boreal C. Prairies D. Deciduous forests
- (xvii) What are called as environmental buffers?  
A. Fungi B. Trees C. Rivers D. Mountains

For Examiner's use only:

Total Marks:

17

Marks Obtained:



# BIOLOGY HSSC-II

Punjab Text Book Board  
Old / Revised Syllabus

Time allowed: 2:35 Hours

Total Marks Sections B and C: 68

NOTE: Answer any fourteen parts from Section 'B' and any two questions from Section 'C' on the separately provided answer book. Use supplementary answer sheet i.e. Sheet-B if required. Write your answers neatly and legibly.

## SECTION – B (Marks 42)

Q. 2 Answer any FOURTEEN parts. The answer to each part should not exceed 3 to 4 lines. (14 x 3 = 42)

- (i) What are the genetic causes for the deformities of skeleton.
- (ii) What do you know about "Rigor Mortis"?
- (iii) What are effectors?
- (iv) What is the function of germinating pollen grain?
- (v) What are meristems?
- (vi) What is the structure of a typical nucleotide?
- (vii) What is metastasis?
- (viii) Differentiate between dominance and epistasis.
- (ix) What is punnett square?
- (x) What is gel electrophoresis?
- (xi) What is particle gun?
- (xii) What vital roles do soil play?
- (xiii) What is important turning point for the evolutionary theory?
- (xiv) Who said that plant cells are totipotent? What do you mean by this terminology?
- (xv) Define:  
a) Clone b) Probe c) Chimaeric DNA
- (xvi) Differentiate between food chain and food web.
- (xvii) What are the principle stages of Nitrogen cycle?
- (xviii) What is ozone layer?
- (xix) What are various parts of limbic system?

## SECTION – C (Marks 26)

Note: Attempt any TWO questions. All questions carry equal marks. (2 x 13 = 26)

- Q. 3 a. What is nerve impulse? Describe in detail the process of propagation of nerve impulse. (2+7)  
b. Describe the repair process of a simple fracture of bone. (04)
- Q. 4 a. Who introduced the one-gene/one-enzyme hypothesis? Describe in detail with the concluding remarks. (2+7)  
b. What is the role of Cytoplasm in development? Discuss this aspect with reference to a fertilized egg of an ascidian. (1+3)
- Q. 5 a. Define contractility. Describe the Sliding Filament Model in detail. (1+7)  
b. How is excretion in Cockroach carried out? (05)



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Answer Sheet No. \_\_\_\_\_

Sig. of Candidate. \_\_\_\_\_

Sig. of Invigilator. \_\_\_\_\_

## BIOLOGY HSSC-II

### SECTION – A ( Marks 17)

Time allowed: 25 Minutes

(National Book Foundation)

Version Number 1 7 0 3

**NOTE:** Section–A is compulsory. All parts of this section are to be answered on the question paper itself. It should be completed in the first 25 minutes and handed over to the Centre Superintendent. Deleting/overwriting is not allowed. Do not use lead pencil.

**Q. 1** Circle the correct option i.e. A / B / C / D. Each part carries one mark.

- (i) Which of the following is used as denaturation agent in PCR technique?  
A. DNA helicase B. Taq polymerase C. Heat D. NaOH
- (ii) Which of the following is the precipitate produced by sewage treatment?  
A. Sludge B. Detritus C. Humus D. Gyle
- (iii) The inspiratory center which involves in the control of breathing is located in:  
A. Ventral part of medulla B. Both right and left lungs  
C. Dorsal part of medulla D. Lateral part of medulla
- (iv) The freshwater animals can actively uptake salts from external dilute medium with the help of special salt cells called:  
A. Glomerulus B. Bowman's capsule  
C. Rectal glands D. Ionocytes
- (v) The cartilage matrix is covered by a dense layer of collagen fibers called:  
A. Periosteum B. Perichondrium  
C. Chondrocyte D. Osteoblast
- (vi) Which of the following is the composition of thick myofilaments?  
A. Actin, tropomyosin and troponin B. Tubulin and RNA  
C. Actin, myosin and troponin D. Actin, myosin and tropomyosin
- (vii) Which of the following is **NOT** the part of forebrain?  
A. Cerebral cortex B. Hippocampus  
C. Cerebellum D. Amygdalae
- (viii) Which of the following is the result of under secretion of adrenal cortical hormones?  
A. Addison's disease B. Cushing's disease  
C. Cretinism D. Grave's disease
- (ix) Some animals like fiddler crab, are busiest during the time of either dawn or dusk or both are called:  
A. Diurnal animals B. Dual animals  
C. Crepuscular animals D. Nocturnal animals
- (x) If after ovulation, the secretion of LH suddenly stops. Which of the following is expected?  
A. Fertility is increased B. Pregnancy is established  
C. Delayed menstruation D. Early menstruation
- (xi) The onset of menstrual cycle for the first time in the life of a female is called:  
A. Leutinization B. Menarche  
C. Menopause D. Follicle atresia
- (xii) If blastocyst is successfully implanted, it begins to secrete a hormone known as:  
A. Human chorionic gonadotropin B. Corticosteroid  
C. Leutinizing hormone D. Progesteron
- (xiii) If two contrasting pairs of traits are tightly linked, what will be the phenotypic ratio in  $F_2$  generation of their dihybrid cross?  
A. 1:2:1 B. 1:1:1:1 C. 3:1 D. 9:3:3:1
- (xiv) A wheat plant having AAbbCC genotype shows red grain color. Which of the following genotypes also expresses the same phenotype?  
A. AaBBcc B. AABbCc C. aaBBcc D. AaBbCc
- (xv) Which of the following enzymes can act as polymerase as well as exonuclease?  
A. RNA polymerase-I B. DNA polymerase-I  
C. RNA polymerase-III D. DNA polymerase-III
- (xvi) If the recessive gene frequency in the gene pool of a particular trait is 20%. What will be the genotype frequency of heterozygotes of that trait in the population?  
A. 20% B. 80% C. 64% D. 32%
- (xvii) On average, about what percent of net energy production at one trophic level is passed on the next level?  
A. 50% B. 90% C. 1% D. 10%

For Examiner's use only:

Total Marks:

17

Marks Obtained:



# BIOLOGY HSSC-II

National Book Foundation

37

Time allowed: 2:35 Hours

Total Marks Sections B and C: 68

NOTE: Answer any fourteen parts from Section 'B' and any two questions from Section 'C' on the separately provided answer book. Use supplementary answer sheet i.e. Sheet-B if required. Write your answers neatly and legibly.

## SECTION – B (Marks 42)

Q. 2 Answer any FOURTEEN parts. The answer to each part should not exceed 3 to 4 lines. ( 14 x 3 = 42 )

- (i) Describe the mechanism of Inspiration in human respiratory system.
- (ii) How is hypertonic urine formed during the state of dehydration?
- (iii) Describe the structure of rib cage.
- (iv) Define any three types of synovial joints. Also give at least one example of each.
- (v) Give the characteristic of three types of neurons.
- (vi) Write the functions of insulin hormone.
- (vii) What is the mode of communication among honey bees?
- (viii) What is the mechanism of spermatogenesis?
- (ix) Write any three causes of male infertility.
- (x) Differentiate between Identical twins and fraternal twins.
- (xi) a. What did Morgan observe about the phenotypes of offspring in step-3 cross (test cross) during the study of eye color in *Drosophila*?  
b. Write the phenotypes of following genotypes of flower color of foxgloves:
  1. MM DD WW
  2. Mm dd Ww
  3. mm Dd ww
  4. Mm Dd ww
- (xii) A couple, in which both partners have B+ve blood group, they have a daughter of O-ve blood group. What is the probability that their next child will be a son of O-ve blood group?
- (xiii) What are the types and functions of DNA polymerases?
- (xiv) What is Post transcriptional modification of mRNA?
- (xv) Define any three factors that can change allele frequency of a population.
- (xvi) What are the types of ecological succession?
- (xvii) What are three basic steps of DNA sequencing technique?
- (xviii) What are the applications of DNA analysis technique?
- (xix) Define Integrated Disease Management (IDM) and give its procedure.

## SECTION – C (Marks 26)

Note: Attempt any TWO questions. All questions carry equal marks. ( 2 x 13 = 26 )

- Q. 3 a. Describe the mechanism of transport of carbon dioxide in blood as bicarbonate ions. (05)  
b. Describe the mechanism of generation and transmission of nerve impulse. (08)
- Q. 4 a. Describe the stages of labour process during child birth. (04)  
b. What is Erythroblastosis Foetalis? Discuss its causes and risk factors. (03)  
c. Describe procedure, observations and conclusion of Meselson-Stahl experiment. (06)
- Q. 5 a. Describe the causes and effects of acid rain. (04)  
b. Describe the technique of Polymerase Chain Reaction (PCR). (09)