

Roll No.

Answer Sheet No. _____

Sig. of Candidate. _____

Sig. of Invigilator. _____

BIOLOGY HSSC-II

SECTION - A (Marks 17)

Time allowed: 25 Minutes

National Book Foundation
Revised Syllabus

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) Secondary sewage treatment is mainly a:
A. Mechanical process B. Biological process
C. Physical process D. Chemical process
- (ii) Inside nose, underneath the mucous membrane there are blood capillaries that help to warm the air to about:
A. 35°C B. 28°C C. 37°C D. 30°C
- (iii) Which of the following hormones has broadest range of targets?
A. Epinephrine B. ADH C. Oxytocin D. TSH
- (iv) Endonephrins that function as both neurotransmitters and hormones and decrease our pain perception are biochemically:
A. Peptides B. Steroids C. Carbohydrates D. Lipids
- (v) More than 90% of male infertility is due to:
A. Autoimmune disorder B. Azoospermia
C. Sperm deformities D. Oligospermia
- (vi) In which one of the following groups Uric acid is NOT the chief nitrogenous waste material?
A. Mammals B. Reptiles C. Birds D. Insects
- (vii) In man glucose is present in blood plasma but not in urine. This is because glucose molecules are:
A. Too large to enter Bowman's capsule
B. Actively transported from proximal convoluted tubule to the blood
C. Oxidised to supply energy for ultra filtration
D. Stored in the kidney
- (viii) The 12 vertebrae in the second curve of vertebral column are known as:
A. Thoracic vertebrae B. Cervical vertebrae
C. Sacral vertebrae D. Lumbar vertebrae
- (ix) Each muscle fibre within the fascicle is covered by a layer of connective tissue called:
A. Endocardium B. Epimysium C. Perimysium D. Endomysium
- (x) The migration of Salmon from ocean to fresh water (river) during breeding season is:
A. Latent learning B. Habituation behaviour
C. Inborn behaviour D. Learning behaviour
- (xi) Which one of the following layers forms epithelial linings of digestive, respiratory and urinogenital systems?
A. Choanoderm B. Ectoderm C. Endoderm D. Mesoderm
- (xii) The phenomenon in which a gene at one locus interferes with effect caused by another gene (located on different locus) is called:
A. Over dominance B. Dominance C. Co-dominance D. Epistasis
- (xiii) Approximately every 200 nucleotides pair of the duplex DNA wrap twice around the core of 08 histones to form:
A. Plasmid B. Nucleosome C. Nucleolus D. Chromosome
- (xiv) Which of the followings is NOT a stop codon?
A. UAG B. UAA C. UGA D. UGG
- (xv) The homologous organs are those that show similarity in:
A. Size B. Appearance C. Function D. Origin
- (xvi) The amount of energy that remains for plant growth after subtracting the energy used in respiration is:
A. Exhausted energy B. Gross primary productivity
C. Net primary productivity D. Productivity
- (xvii) A genomic DNA library:
A. Is a DNA copy of mature mRNAs
B. Represents all the DNA in a specific chromosome
C. Is made by using reverse transcriptase
D. Is stored in a collection of recombinant bacteria

For Examiner's use only:

Total Marks:

17

Marks Obtained:



BIOLOGY HSSC-II

National Book Foundation

Revised Syllabus

Total Marks Sections B and C: 68

Time allowed: 2:35 Hours

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 Myoglobin? Give its biochemical nature and function. (1+2)
 - (ii) Describe Pneumonia along with its aetiology, symptoms and treatment. (1.5+1+0.5)
 - (iii) Compare briefly different methods of Osmoregulation found in freshwater and marine water animals. (03)
 - (iv) What is cartilage? Give its nature. How many types of cartilage normally exist in adults? (1+1+1)
 - (v) Define Behaviour. Differentiate between Animal Aggregation and Animal Societies. (1+2)
 - (vi) Give brief account of any three hormones produced by organs or tissues whose function is not primarily an endocrine one. (03)
 - (vii) What are Narcotics? How do they interfere with Particular sites of human brain? Give effects of Heroin. (1+1+1)
 - (viii) a. Define Neurotransmitters. Which one is most common neurotransmitter of human peripheral nervous system. (0.5+0.5)
b. How can a nerve gas inhibit acetylcholinesterase enzyme? (02)
 - (ix) What are STDs? How are they passed from one human to another? Give detail of any one STD. (0.5+0.5+2)
 - (x) Differentiate clearly between placenta and embilical cord along with their functions. (03)
 - (xi) Highlight the phenomenon of Gene linkage. Why mendelian ratio of independent assortment deviate due to gene linkage? (2+1)
 - (xii) Write down the functions of the following: (1+1+1)
a. Thyroxin b. Tropomyosin c. ADH
 - (xiii) What are sex related traits? Describe their different types with the help of examples. (1+2)
 - (xiv) Define DNA replication. Describe any two models of DNA Replication presented by scientists. (1+2)
 - (xv) Describe genetic code briefly. Enlist important characteristics of genetic code. (1+2)
 - (xvi) Highlight the Hardy-Weinburg principle. Give various factors that can change allele frequencies within a population. (1+2)
 - (xvii) What is Acid rain? Describe its major causes and effects on environment. (1+2)
 - (xviii) Outline the steps of DNA Analysis procedure. (03)
 - (xix) What is Animal husbandry? Describe briefly the nature of this job and its importance for human welfare. (1+2)

SECTION – C (Marks 26)

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

- Q. 3**
- a. How do bones get fracture? What are main types of fractures? Describe in detail the process of Bone repair. (07)
 - b. Describe main steps involved in Urine formation. (03)
 - c. Write down the causes, symptoms and treatment of lung cancer. (03)
- Q. 4**
- a. What is Nerve Impulse? Write a comprehensive note on its generation and Transmission. (08)
 - b. Describe Neurulation process in human embryo (as first major event in organogenesis). (05)
- Q. 5**
- a. Define Central Dogma. Discuss in detail Transcription. Also support your answer with the help of proper diagram. (07)
 - b. What are Ecological Pyramids? Explain pyramids of Biomass and numbers. (04)
 - c. Define Cystic fibrosis. How is gene therapy of Cystic fibrosis carried out? (02)



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Answer Sheet No. _____

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BIOLOGY HSSC-II

SECTION – A (Marks 17)

Time allowed: 25 Minutes

Punjab Text Book Board

NOTE: Section-A is compulsory and comprises pages 1-2. 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) In Pakistan temperate moist conditions are found in:
A. Southern Punjab B. Karachi C. Swat D. Shogran
- (ii) Bilirubin is the break down product of:
A. Purine bases B. Myoglobin C. Nucleic Acid D. Haemoglobin
- (iii) Which hormone is secreted when the level of calcium increases in blood?
A. Cortisone B. Thyroxine C. Parathormone D. Calcitonin
- (iv) Which among the following is a short-day plant?
A. Cucumber B. Tomato C. Strawberry D. Cabbage
- (v) Which is NOT concerned with Arthritis?
A. Haematoma B. Inflammation C. Degeneration D. Stiffness
- (vi) During development of chick embryo the hypoblast formed in process of gastrulation is presumptive layer for:
A. Yolk sac B. Ectoderm C. Endoderm D. Mesoderm
- (vii) Nucleosome in chromosome appear like beads in a string. Each nucleosome is made up of _____ nucleotides.
A. 1000 B. 150 C. 200 D. 250
- (viii) Which is the result of autosomal non-disjunction?
A. Jacob's Syndrome B. Down's Syndrome
C. Klinefelter's Syndrome D. Turner's Syndrome
- (ix) Mendel laid the foundation stone of classical genetics by formulating two laws of inheritance. His work was published in:
A. 1866 AD B. 1854 AD C. 1860 AD D. 1865 AD
- (x) The cause of sickle cell anaemia was discovered by:
A. Archibald Garrod B. F-Sanger
C. Vernon-Ingram D. Beadle and Tatum
- (xi) If both mother and father are A and B heterozygous blood groups, then their children can be with blood types:
A. All of the four blood groups B. AB group only
C. A and B groups only D. AB and O groups only
- (xii) MODY (Maturity Onset Diabetes of Young) is caused due to the absence of:
A. Glucokinase B. Isomerase C. Lipase D. Aldolase
- (xiii) The plasmid PSC 101 contains antibiotic resistant gene for:
A. Sulphonamide B. Ampicillin C. Tetracycline D. Penicillin
- (xiv) In a population that is at a Hardy-Weinberg equilibrium 25% of the individuals show the recessive traits. What is the frequency of the dominant allele in the population?
A. 0.25 B. 0.70 C. 0.50 D. 0.75
- (xv) The average annual rainfall in temperate deciduous forest is:
A. 750-1500 mm B. 500 mm C. 750 mm D. 500-1000 mm
- (xvi) The term totipotent for plant cell was first coined by:
A. F.C. Steward B. William Bateson
C. Garrod D. Gottlieb Haberlandt
- (xvii) The total available Fresh Water in the form of lakes, streams and rivers on the earth is:
A. 1% B. 5% C. 10% D. 2%

For Examiner's use only:

Total Marks:

17

Marks Obtained:



BIOLOGY HSSC-II

Punjab Text Book Board

35

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

- (i) Define the following:
- | | | |
|----------------|---------------------|------------|
| a. Lithotripsy | b. Plumage Fluffing | c. Pyrogen |
|----------------|---------------------|------------|
- (ii) Write down the function of the hormones:
- | | | |
|--------------|-------------|-------------|
| a. Thyroxine | b. Estrogen | c. Oxytocin |
|--------------|-------------|-------------|
- (iii) Name the bones of human cranium.
- (iv) Define the following:
- | | | |
|------------------|---------------------|--------------|
| a. Parthenocarpy | b. Follicle atresia | c. Menopause |
|------------------|---------------------|--------------|
- (v) Define the following:
- | | | |
|------------------------|---------------|-----------------------|
| a. Embryonic Induction | b. Teratology | c. Discoidal cleavage |
|------------------------|---------------|-----------------------|
- (vi) Write a brief note on Nucleosome.
- (vii) Write the important features of DNA – Polymerase III.
- (viii) Write a brief note on Malignant tumor.
- (ix) Define the following:
- | | | |
|--------------|---------------|------------|
| a. Epistasis | b. Pleiotropy | c. Linkage |
|--------------|---------------|------------|
- (x) Write a brief note on Molecular carrier.
- (xi) What is endosymbiont hypothesis? How does it help in evolution of Eukaryotic cell?
- (xii) Define the following:
- | | | |
|----------|------------|-----------|
| a. Niche | b. Habitat | c. Biome. |
|----------|------------|-----------|
- (xiii) Name three plants of temperate deciduous forests.
- (xiv) What is Predation? Write its significance in ecosystem
- (xv) What is geothermal energy? Why it is not feasible?
- (xvi) Define the following:
- | | | |
|------------|------------|---------------|
| a. Climate | b. Weather | c. Succession |
|------------|------------|---------------|
- (xvii) What is Food-Web? Draw Food Web.
- (xviii) Write names of excretory organs of the following animals:
- | | | |
|-------------|--------------|--------------|
| a. Planaria | b. Earthworm | c. Cockroach |
|-------------|--------------|--------------|
- (xix) Write a brief note on Sciatica

SECTION – C (Marks 26)

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

- Q. 3**
- | | | |
|----|---|------|
| a. | Describe the structure of Nephron and draw its labelled, neat diagram | (05) |
| b. | What is sliding filament model of muscle contraction? Show diagrammatically both the relaxed and contracted muscle. | (04) |
| c. | Write role of secretions of posterior lobe of pituitary gland | (04) |
- Q. 4**
- | | | |
|----|--|------|
| a. | What is the replication? Describe the process of replication of DNA. | (09) |
| b. | What is Genomic library? How is it constructed? | (04) |
- Q. 5** What is biogeo-chemical cycle? Describe nitrogen cycle. (9+4)

Roll No.

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Answer Sheet No. _____

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Sig. of Invigilator. _____

36

BIOLOGY HSSC-II

SECTION – A (Marks 17)

National Book Foundation
Revised Syllabus

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) Which of the following is NOT a goal of human genome project (HGP)?
A. Cloning B. Molecular medicine
C. Bioarchaeology D. Study of human evolution
- (ii) Respiratory control centers are located in the:
A. Upper spinal cord and Medulla B. Midbrain and Medulla
C. Medulla and Pons D. Pons and Midbrain
- (iii) Exophthalmic goiter results from Graves' disease is a classic symptom of:
A. Addison's disease B. Hypothyroidism
C. Hyperglycemia D. Hyperthyroidism
- (iv) Dancing of honey bees for indication of food is a type of:
A. Innate behaviour B. Biological Rhythm
C. Tropic movement D. Learning behaviour
- (v) An egg fertilized in the laboratory and then implanted in the uterus for development is called:
A. Miscarriage B. Test tube baby
C. Cloning D. In vivo fertilization
- (vi) During DNA sequencing techniques, use of dideoxynucleotides (dd NTP's) is common in:
A. Dimethod B. Maxam method
C. Sanger's method D. Gilbert method
- (vii) Pelvic girdle is composed of three pairs of fused bones:
A. Ileum, Ischium and Pubis B. Ileum, Ischium and Frontal
C. Clavicle, Scapula and Pubis D. Malleus, Incus and Stapes
- (viii) As filtrate travels up the ascending limb of Nephron, active uptake of sodium chloride into surrounding area is controlled by:
A. Insulin B. Aldosterone C. ADH D. Calcitonin
- (ix) Irritability, abnormal involuntary movements and severe decline in thinking are symptoms of a nervous disorder called:
A. Parkinsons disease B. Multiple sclerosis
C. Alzheimers disease D. Huntingtons disease
- (x) Active turning and movement of human foetus inside the mother starts by:
A. 6th week B. 8th week C. 15th week D. 16th week
- (xi) When a normal man is married with a normal woman whose father was colorblind, then what will be percentage risk of this disease in their babies?
A. 25% B. 100% C. 75% D. 35%
- (xii) During denitrification, which of the following reduces nitrates back to atmospheric nitrogen?
A. Nitrobacter B. Azotobacter C. Nitrosomonas D. Pseudomonas
- (xiii) Ozone is a bluish and poisonous gas layer of atmosphere above the Earth extending from:
A. 10-50 kilometers B. 50-80 Kilometers
C. 90-120 kilometers D. 130 kilometers
- (xiv) Which one of the following is a stop codon?
A. GAU B. UAC C. UAA D. AUG
- (xv) Drugs like alcohol and Heroin belongs to:
A. Antibiotics B. Hallucinogens C. Stimulants D. Depressants
- (xvi) Which one of the following observations does not match with Darwin's idea of Natural selection?
A. Over production B. Inheritance of acquired characters
C. Variations D. Survival of the fittest
- (xvii) MMR vaccine protects against:
A. Measles and Mumps B. Flu
C. Hepatitis A D. Polio

For Examiner's use only:

Total Marks:

17

Marks Obtained:



BIOLOGY HSSC-II

National Book Foundation
Revised Syllabus

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) Define Tidal volume. Also describe about vital capacity of human lungs. (1.5+1.5)
 - (ii) What is Feed back mechanism? How does negative feedback operate to control water contents in the body? (1+2)
 - (iii) Describe about synovial joints. Also explain any two types of synovial joints. (1+2)
 - (iv) Differentiate clearly between cramp and tetany muscle disorders. (03)
 - (v) Give parts of limbic system along with their functions. (03)
 - (vi) What is MRI test? Give its procedure and benefits. (1+2)
 - (vii) How is the blood calcium level regulated by calcitonin and parathormone? (03)
 - (viii) Define the following terms: (1+1+1)
 - a. Biological Rhythms
 - b. Biological clock
 - c. Circadian Rhythms
 - (ix) Describe secretory post-ovulatory phase of the menstrual cycle. If fertilization has not occurred then what will be the end of this phase? (2+1)
 - (x) Differentiate between chromosomal mutations and gene/point mutations. Also name this type (44+xo) of syndrome? (2+1)
 - (xi) Differentiate between incomplete dominance and co-dominance along with the help of examples. (03)
 - (xii) Highlight the role of morphogenetic determinants during development of an individual. Enlist results drawn by Spemann during his 'delayed nucleation experiments'. (1+2)
 - (xiii) Give major differences between homologous organs and analogous organs. What types of evolution they represent? (2+1)
 - (xiv) What is demography? What main problems gradually appeared due to population explosion in last few decades? (1+2)
 - (xv) Write down functions of the following: (1+1+1)
 - a. FSH and LH in Male
 - b. Cortisone
 - c. Troponin
 - (xvi) Describe briefly the three principal methods for the creation of transgenic animals. (03)
 - (xvii) Give the role of Microbes in: (1.5+1.5)
 - a. Yoghurt making
 - b. Vineagar making
 - (xviii) Differentiate between protein synthesis (translation) of prokaryotes and eukaryotes. (03)
 - (xix) In which form maximum CO_2 transports in the blood towards lungs? Describe briefly chloride shifts or Hamburgers phenomenon. (1+2)

SECTION – C (Marks 26)

- Note:** Attempt any TWO questions. All questions carry equal marks. (2 x 13 = 26)
- Q. 3**
 - a. What is synapse? Discuss in detail its structure and mechanism of transmission. (07)
 - b. Describe neurosecretory role of posterior lobe of pituitary gland. (04)
 - c. Write down the number and names of brain box bones. (02)
 - Q. 4**
 - a. Describe LAC Operon Model. Give its structure and working during positive regulation of gene expression. (07)
 - b. Discuss the pattern of sex determination commonly found in man and drosophila. (03)
 - c. What is lactation? Name the hormone involved in milk production. Give significance of lactation for a baby. (03)
 - Q. 5**
 - a. Define ecological succession. Give its major kinds. Describe the whole process of xerarch succession. (07)
 - b. Discuss in detail the whole functions of kidney being osmoregulatory organ in human body. (06)