



9. Synthesis of a new DNA stand usually begins with a/an:  
A. RNA primer                                B. DNA ligase  
C. DNA primer                                D. Okazaki fragment
10. The process by which genetic information flows from genes to proteins is:  
A. Translation                                B. Transcription  
C. Mutation                                D. Gene expression
11. Which of these may be heterozygous?  
A. A Haploid cell                                B. An egg  
C. An organism with a dominant phenotype  
D. An organism with the recessive genotype
12. Albinism is recessive gene. A woman with an albino father marries an albino man, the proportion of her progeny is:  
A. 2 normal: 1 Albino                                B. All normal  
C. All albino                                D. 1 normal: 1 albino
13. The process by which species are replaced over time is:  
A. Ecological succession                                B. Climax  
C. Population                                D. Trophic level
14. An animal that carries a foreign gene that has been deliberately inserted into its genome is:  
A. Vector                                B. Transgenic animal  
C. Cultured animal                                D. Donor
15. What is the smallest unit of a DNA molecule that can be altered by a mutation and cause a change to the coding of a polypeptide?  
A. Base                                B. Codon  
C. Gene                                D. Nucleotide
16. In the equation,  $\text{NH}_4 \rightarrow \text{NO}_3 \rightarrow \text{NO}_2 \rightarrow \text{N}_2$ , the group of bacteria that have a role in the conversion is:  
A. Nitrosomonas & Clostridium  
B. Azobacter & Clostridium  
C. Nitrosomonas & Nitrobacter  
D. Pseudomonas & Clostridium
17. Which type of new vaccine production would be most important in the fight to eradicate measles in developing countries?  
A. a combined vaccine to combat it and other diseases  
B. a single vaccine, without the need for boosters  
C. a vaccine containing only live measles pathogens  
D. a vaccine containing monoclonal antibodies
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Federal Board HSSC-II Examination  
Biology Model Question Paper  
(Curriculum 2006 – NBF)

Time allowed: 2:35 hours

Total Marks: 68

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Note: Sections 'B' 'C' and 'D' comprise pages 1-2 and questions therein are to be answered on the separately provided Answer Book. Use supplementary answer sheet i.e., sheet B if required. Write your answers neatly and legibly.

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**SECTION – B** ( $7 \times 3 = 21$  Marks)  
**(Chapter 14-20)**

**Note: Please write your answer in no more than FIVE/SIX lines.**

- Q.2 Attempt any SEVEN parts from the following. All parts carry equal marks.
- i. Differentiate between the following:
    - a. Hemoglobin and myoglobin
    - b. Vasodilation and the vasoconstriction
    - c. Ectotherms and Endotherms
  - ii. Draw a liberal diagram of a L.S. of human kidney.
  - iii. Give a brief explanation of various types of bone cells.
  - iv. What are the effects of drug addiction and drug tolerance on the Central Nervous system?
  - v. What is the role of adrenal cortex?
  - vi. How do you explain the orientation behaviour in plants?
  - vii. What is latent learning? Explain briefly with an example.
  - viii. Differentiate between:
    - a. Internal respiration and external respiration
    - b. Osmoconformers and osmoregulators
    - c. Fibrous joints and cartilaginous joints
  - ix. How do the Flexor muscles and extensor muscles work in pairs?
  - x. What are the causes of female infertility?

**SECTION – C** ( $7 \times 3 = 21$ )  
**(Chapter 21-27)**

**Note: Please write your answer in no more than FIVE/SIX lines.**

- Q.3 Attempt any SEVEN parts from the following. All parts carry equal marks.
- i. What are the various factors that are responsible for aging?
  - ii. What is Roux Weissman hypothesis?
  - iii. DNA sequence TACTAGACGAGACTATCTAGATGCATGCTAACT would result in what mRNA sequence and final polypeptide
  - iv. What is Holandric trait?
  - v. Under what circumstances, is it possible for father and son to suffer from hemophilia?
  - vi. Show how "a test cross" works using round seed pea of unknown generation?
  - vii. What is Van thypothesis?
  - viii. How can bacteria be used to treat sewage waste?

- ix. What is integrated disease management?
- x. Show how does “Hardy-Weinberg equation” confirm change in allelic frequency?

### SECTION – D (Marks 26)

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

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|------|----|---|---|
| Q. 4 | a. | Why is anterior pituitary gland considered as the master gland of the endocrine system? Explain.  | 7 |
|      | b. | Describe the ultra structure of skeletal muscle.  | 6 |
| Q.5  | a. | What is the role of biotechnology in the treatment of various diseases? Illustrate with examples. | 7 |
|      | b. | Explain the mechanism of DNA replication.   | 6 |
| Q.6  | a. | Compare and contrast Lamarckism and Darwinism.  | 6 |
|      | b. | Describe structure and function of a Nephron.   | 7 |
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