

M.Sc. ZOOLOGY
THIRD SEMESTER
CELL AND MOLECULAR BIOLOGY-II
MSZ-304 A

**SET
A**

[USE OMR SHEET FOR OBJECTIVE PART]

Duration: 1hr. 30 mins.

Full Marks: 35

Time: 15 mins.

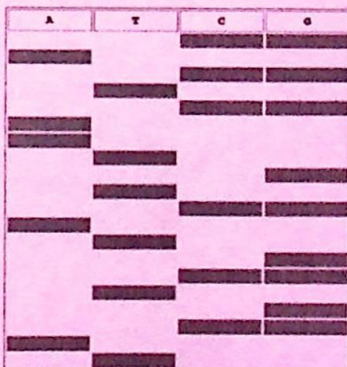
(Objective)

Marks: 10

Choose the correct answer from the following:

1×10=10

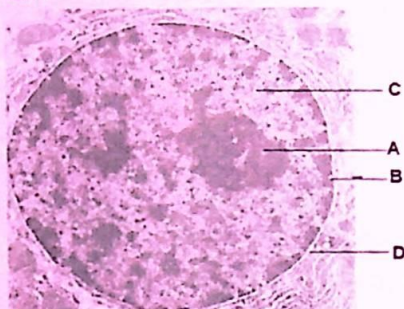
- The enzymatic method of DNA sequencing:
 - Uses RNA as template
 - Uses ddNTP in which the deoxyribose 3'-OH is present
 - Uses ddNTP in which the deoxyribose 3'-OH is missing
 - Uses different chemical treatment to cleave DNA preferentially at A, T, C or G
- Which type of DNA cleavage is done in the Maxam Gilbert method?
 - Edge
 - Base Specific
 - Interstitial
 - Gene Specific
- If we have 2 dATPs, 1 dCTP, 1 ddCTP, and 2 ddGTPs in one reaction tube, which of the following strands could be produced from a sample containing the following template strand: 5'-GCTTGGCTTAACCAGATATCCACTG-3' with the following primer: 5'-CAGTGGGAATATCTGGTT-3'?
 - 5'-CAGTGGGAATATCTGGTTAAG-3'
 - 5'-CAGTGGGAATATCTGGTTAAGCC-3'
 - 5'-CAGTGGGAATATCTGGTTAAGCCAA-3'
 - All are possible
- Based on this figure, which lane contains the shortest DNA strand? (Assume the anode is at the bottom)



- Lane A
- Lane T
- Lane C
- Lane G

5. PAUP is bioinformatics software used in:
- a. Homology searching
 - b. Phylogenetic tree construction
 - c. Database searching
 - d. Visualising 3D structure of protein

6. The given diagram represents the four different structures. Identify B and its correct function.



- a. Nucleolus- Synthesis of rRNA for formation of 80s ribosome
 - b. Nucleus pore- Exchange material between cytoplasm and nucleoplasm
 - c. Nucleoplasm protein- Formation of Nuclear matrix
 - d. Nuclear membrane- Cellulose synthesis
7. Nucleoporins are.....
- a. Nuclear pores
 - b. Ribosomes on nuclear membranes
 - c. rRNAs in the nucleolus
 - d. None of the mentioned
8. The transport factors that help in the transport of molecules through the nuclear pores are known as.....
- a. Nucleopherins
 - b. Nucleoporins
 - c. Karyopherins
 - d. Karyoporins
9. Lamin proteins that bind to the intra-nuclear chromatin are.....
- a. Emerin
 - b. Nesprin
 - c. LEM-3
 - d. None of these
10. What is the sedimentation coefficient of mitochondrial ribosome of humans?
- a. 70s
 - b. 55s
 - c. 80s
 - d. 60s

-- -- --

(Descriptive)

Time : 1 hr. 15 mins.

Marks : 25

[Answer question no.1 & any two (2) from the rest]

1. Write a short note on Multiple Sequence Alignment. 5
2. What do you mean by DNA sequencing? Explain briefly the Chain termination method of DNA sequencing. How it is different from Chemical degradation method. 2+6+2=10
3. Write short notes on: 2×5=10
 - a) BLAST
 - b) Ribosome assembly
4. Describe the internal organization of the Nucleolus and the mechanism of rRNA processing. 3+7=10
5. Write a note on the selective transport of proteins to and from the nucleus. 10

= = *** = =