U.S.N.										

B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

August 2024 Supplementary Examinations

Programme: B.E. **Semester: IV**
Branch: Biotechnology **Duration: 3 hrs.**
Course Code: 19BT4DCCMB **Max Marks: 100**
Course: Cell and Molecular Biology

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

UNIT - I

1 a) Discuss how gene is regulated due to chromatin structural or chemical re-modelling. **06**

b) Write a comparative account on the proteins involved in DNA replication process in Bacteria and yeast cells. **08**

c) Cytoskeletal elements play crucial role in disease management. Validate the statement with suitable examples. **06**

OR

2 a) Pharmaceutical companies claim about anti-ageing chemicals that slowdown of ageing process. Scientifically, is this claim appropriate? How does the ageing occurs at the molecular level? **06**

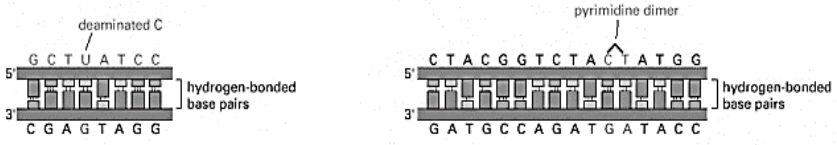
b) Comment on the ORGANELLE involved in the synthesis of: **08**
   a. Ribosome
   b. DNA

c) With an example each, discuss the types of modification that occur at cis and trans Golgi. **06**

UNIT - II

3 a) Answer the following based on the given figure (a & b) which shows a damaged DNA that needs repair.
   i) Name the type of repair involved in a & b
   ii) List the enzymes required for the repair
   iii) Write the mechanism of repair in a & b **05**

a) b)



b) Differentiate between Composite transposon and Insertion sequence with an example. **05**

c) Cells have the mechanisms that elevate the levels of DNA repair enzymes, as an emergency response to severe DNA damage. With suitable repair mechanism justify the statement. **05**

d) What recombinant product would be formed during the resolution of the junction marked

05

UNIT - III

4 a) Modification of mRNA at both 5' and 3' end plays important role in translation as well as gene regulation. Validate the statement with suitable modifications at both the end of mRNA transcript. **10**

b) Differentiate between type I and type II intron splicing **06**

c) Add a note on transcriptional inhibitors. **04**

OR

5 a) Differentiate between initiation of transcription of three major types of RNAs. **08**

b) Spliceosome proves that RNA can act as enzymes to form a functional transcript post splicing. Justify with appropriate figures **07**

c) Add a note on RNA interference. **05**

UNIT - IV

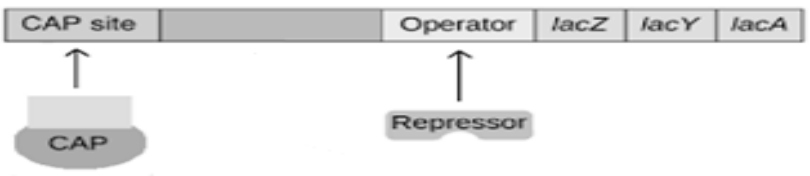
6 a) With suitable figure, discuss the process of initiation of protein synthesis in Eukaryotic cells. **08**

b) Justify with suitable example, the importance of each Post translational and Co translational modification in Protein functions. **06**

c) Compare the process of translation termination in *E. coli* and yeast. **06**

UNIT - V

7 a) The given image shows that Metabolism of lactose is regulated by CRP and repressor. How does the regulation occur. What is the role of glucose in the metabolism of lactose?



07

b) Tryptophan synthesis is regulated by leader peptide and trp repressor. Discuss with suitable figure and justification. **08**

c) Alternative splicing of one gene gives rise to different products in tissues. With an example validate this statement. **05**

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