

**BIOCHEMISTRY**

PAPER – III

BIO/D/16/03/III

Time : 3 hours

Max. Marks : 100

**Important instructions:**

- Attempt all questions in order.
- Each question carries 10 marks.
- Read the question carefully and answer to the point neatly and legibly.
- Do not leave any blank pages between two answers.
- Indicate the question number correctly for the answer in the margin space.
- Answer all the parts of a single question together.
- Start the answer to a question on a fresh page or leave adequate space between two answers.
- Draw table/diagrams/flowcharts wherever appropriate.

Write short notes on:

1. a) What is promoter escape? 2+5+2+1  
b) Write the mechanism of action of RNA polymerase.  
c) List the prokaryotic and eukaryotic RNA polymerase inhibitors.  
d) Why do RNA polymerase have lower fidelity than DNA polymerase?
2. a) List the DNA repair mechanisms of eukaryotes. 5+5  
b) Write about diseases associated with defective DNA repair mechanisms.
3. a) How is secretory proteins sorted and targeted? 6+4  
b) Diseases associated with defects of protein targeting.
4. a) How is cell cycle regulated? 6+4  
b) Explain how do anti-cancer agents influence cell cycle?
5. a) Define micro RNA. 1+6+3  
b) How are they metabolized?  
c) How do they regulate gene expression?
6. List different post translational modifications of histones. How do these modifications influence gene expression? 3+7
7. a) How is antibody diversity produced? 7+3  
b) Mechanism of class switching of immunoglobulin.
8. a) Antibody dependent cellular cytotoxicity. 5+5  
b) Regulatory T-cells
9. a) Explain how translocation of chromosome contributes to pathogenesis of leukemia and what is the principle of treatment of such leukemias? 5+5  
b) Role of growth factors and growth factor receptors in carcinogenesis.
10. List tumor markers and their role in diagnosis, prognosis and therapy of cancers. 2+3+3+2

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