

Bachelor of Science (B.Sc. Part-III) Fifth Semester
B.Sc. 3502 - Biochemistry Paper-II (Molecular Biology)

P. Pages : 2

Time : Three Hours



GUG/W/18/1327

Max. Marks : 50

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- Notes : 1. All questions are compulsory & carry equal marks.
2. Draw well labelled diagram wherever necessary.

1. Describe the nature of Ori C in E. Coli DNA. Describe the process of initiation of DNA replication in E. Coli. 10

OR

- a) Describe the structure of DNA polymerase III holoenzyme. 5
- b) Write a note on mismatch repair and Ames test. 5

2. Describe the process of initiation of transcription in prokaryotes. 10

OR

- a) Briefly describe the process of reverse transcription. 5
- b) Explain the working of trp operon. 5

3. a) Give experimental proof of discontinuous replication. 2½
- b) Briefly describe the structure of DNA polymerase - I 2½
- c) Describe rho dependent termination of transcription. 2½
- d) Describe the role of cAMP-CRP in regulation of Lac- operon. 2½

OR

- e) Write a note on DNA ligase. 2½
- f) Explain the regulation of E. Coli replication. 2½
- g) Describe the structure of prokaryotic RNA polymerase. 2½
- h) Explain the negative control of trp operon. 2½

4. a) Discuss termination of replication. 2½
- b) Describe base excision repair of DNA. 2½
- c) Describe rho independent termination of transcription. 2½
- d) Discuss the structure of Lac operon. 2½

OR

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| e) | Describe rolling circle model of replication. | 2½ |
| f) | Write a note on direct repair of DNA. | 2½ |
| g) | Describe weak and strong promoter. | 2½ |
| h) | Rifampicin inhibits prokaryotic transcription. Explain. | 2½ |

5. Attempt **any ten** of the following.

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| a) | What is priming in replication? | 1 |
| b) | What is unidirectional replication? | 1 |
| c) | What is meant by replicon? | 1 |
| d) | Name the processivity subunit of DNA polymerase III holoenzyme. | 1 |
| e) | Name the exclusive activity of DNA pol I | 1 |
| f) | Name the enzyme responsible for SOS repair in prokaryotes. | 1 |
| g) | What is meant by operon? | 1 |
| h) | What is the role of -35 sequences in transcription? | 1 |
| i) | Name the technique used in determination of length of promoter sequence. | 1 |
| j) | What is repressor? | 1 |
| k) | What is capping of mRNA? | 1 |
| l) | What is attenuation? | 1 |
