# PARUL UNIVERSITY

## PARUL INSTITUTE OF APPLIED SCIENCES

## MID SEMESTER INTERNAL EXAMINATION, APRIL 2017

**B. Sc. Semester IV**

**Subject: Biotechnology & Microbiology**

**Paper Code: 11102251** **Title of the paper: Molecular biology**

**Date: 12 /04/2017** **Time: 12.30 p.m. to 02.00 p.m.**

**Maximum Marks: 40**

**Instructions:**

1. **All questions are compulsory and options are given in first and second question only.**
2. **Numbers to the right of question indicate the marks of respective question.**

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**Q. 1** Attempt any one question of the following. **(08)**

(i) Define transcription? Describe the transcription process in prokaryotes?

(OR)

(ii) Write the different forms of DNA and give the structural details of Watson Crick model.

**Q. 2** Attempt any three questions of the following. **(12)**

(i) Structure of tRNA

(ii) Griffith's experiment

(iii) Promoters

(iv) Chargaff's rule

(v) Chromatin structure

**Q. 3** Define the following. **(05)**

(i) Conjugation

(ii) Semiconservative replication

(iii) Wobble Hypothesis

(iv) Enhancers

(v) DNA polymerase

**Q. 4** Write correct option in your answer sheet for following 15 multiple choice questions. **(15)**

1. Which phase of the cell cycle does DNA replication occur?
   (A) Go (B) G1
   (C) S (D) G2
2. The following are features of DNA replication except
   (A) Semi-Conservative (B) Semi-discontinuous
   (C) Unidirectional (D) Dispersive
3. Which of the following is not true of RNA synthesis?
   (A) The key enzyme is RNA polymerase (B) The energy is supplied by 3' ring cleavage
   (C) The RNA sequence is complimentary to the template strand of DNA (D) The RNA sequence is opposite polarity to the template strand of DNA
4. If the molar amount of G In a DNA sample is 20% , what is the molar amount of T in the sample.

(A) 20% (B) 30%
(C) 40% (D) 60%

5. Which of the following subunits of the bacterial RNA polymerase is responsible for promoter recognition?
(A) alpha (B) β
(C) β’ (D) sigma

6. The process involved in the RNA formation on the DNA template is:
(A) Transcription (B) Translation
(C) Replication (D) Transformation

7. Transcription is the transfer of genetic information from.
(A) DNA-RNA (B) tRNA-mRNA
(C) mRNA-tRNA (D) DNA-mRNA

8. A promoter site on DNA
(A) Initiates transcription (B) Regulates termination
(C) Codes for RNA (D) Transcribes repressor

9. Sigma factor is component of
(A) DNA ligase (B) DNA polymerase
(C) RNA polymerase (D) Endonuclease

10. RNA polymerase has ----------polypeptide chains.
(A) 2 (B) 3
(C) 4 (D) 5

11. The DNA chain acting as template for RNA synthesis has the following order of bases, AGCTTCGA. What will be the order of bases in mRNA.
(A) TCGAAGCT (B) UGCUAGCT
(C) TCGAUCGU (D) UCGAAGCU

12. The elongation of the leading strand during DNA synthesis.
(A) Progress away from the replication fork (B) Occur in 3’-5’ direction
(C) Produces okazaki fragment (D) Depend on the action of DNA polymerase

13. DNA synthesis can be specifically measured by estimating the incorporation of which radio labeled molecule.
(A) Uracil (B) Thymine
(C) Adenine (D) Deoxy ribose sugar

14. Considering DNA (Deoxyribonucleic Acid) structure, backbone outside double helix is made up of:
(A) sugar and nitrogen (B) nitrogen and carbon
(C) phosphate and sugar (D) phosphate and nitrogen

15. In nucleic acids, the phosphate group is attached to the _____ carbon of the sugar.
(A) 5' (B) 4'
(C) 3' (D) 2'

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