

SEM	SET	PAPER CODE	TITLE OF THE PAPER
IV	2013	12PBT4116	REGULATION OF GENE EXPRESSION

SECTION – A**Answer all the questions:****20 x 1 = 20****Choose the correct answer:**

1. What are genes?
 - a) The functional unit of inheritance
 - b) A fragment of DNA
 - c) A portion of a chromosome
 - d) All of the above
2. Which of the following is part of an operon?
 - a) structural genes
 - b) a promoter
 - c) an operator
 - d) all of the above
3. The assembly of transcription factors on a promoter begins some 25 nucleotides upstream where it binds to a start
 - a) TATA
 - b) ATAT
 - c) TTAA
 - d) AATT
4. Methylated gene are
 - a) active
 - b) silent
 - c) dynamic
 - d) none of these

5. In *Drosophila* development, an embryonic segment
- a) is the same things as a para segment
 - b) is a region of spatial control of gene expression
 - c) all of the above
 - d) none of the above

Fill in the blanks:

6. Proteins that block the passage of RNA polymerase are called _____
7. In prokaryotes, the ribosomal binding site in mRNA is called _____.
8. The process of copying a gene's DNA sequence into a sequence of RNA is called _____.
9. Gene expression occurs when _____ is made.
10. Conveys positional information to cells within the embryo _____.

State True or False:

11. Regulatory proteins, which come in two types: positive regulators and negative regulators.
12. RNA polymerase binds the *lac* promoter highly in the absence of CAP.
13. The process of making RNA from a DNA template by RNA polymerase is called translation.
14. Housekeeping genes are responsible for the routing metabolic functions.
15. Each domain encompasses the progenitors of several contiguous segments.

Answer in one or two sentences:

16. Define gene?
17. What is S factor?
18. Transcription factor.
19. Signal transduction.
20. Differential gene expression.

SECTION – B

Answer all the questions:

5 x 4 = 20

21. a. Explain – Central Dogma.

OR

- b. Enumerate the need of gene regulation.

22. a. Describe the NtrC and MerR.

OR

- b. Comment on AraC and araBAD.

23. a. Brief account on post translational control.

OR

- b. Comment on Promoters and Coactivators.

24. a. RNAs in gene regulation.

OR

- b. Explain combinatorial control.

25. a. Describe the differential gene expression.

OR

b. Comment on expression of specific genes during development.

SECTION – C

Answer any FOUR questions:

4 x 15 = 60

26. Give a detailed account on gene regulation in prokaryotes.

27. Explain gene regulation after transcription initiation.

28. Add a note on translational level control.

29. Detailed account on gene regulation in eukaryotes.

30. Explain regulation of gene during *Drosophila* embryogenesis.
