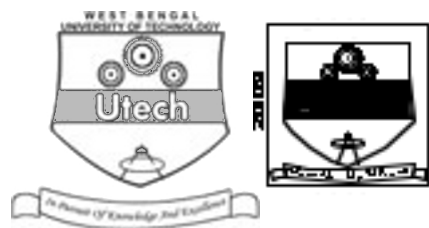


# GENE EXPRESSION & GENE REGULATION ( SEMESTER - 2 )

CS/B.Sc (H) (Mol.bio)/SEM-2/GGR-204/09



1. ....  
Signature of Invigilator

2. ....  
Signature of the Officer-in-Charge

Reg. No.

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Roll No. of the  
Candidate

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CS/B.Sc (H) (Mol.bio)/SEM-2/GGR-204/09  
ENGINEERING & MANAGEMENT EXAMINATIONS, JUNE – 2009  
GENE EXPRESSION & GENE REGULATION ( SEMESTER - 2 )

Time : 3 Hours ]

[ Full Marks : 70

## INSTRUCTIONS TO THE CANDIDATES :

- This Booklet is a Question-cum-Answer Booklet. The Booklet consists of **32 pages**. The questions of this concerned subject commence from Page No. 3.
- In **Group – A**, Questions are of Objective type. You have to answer the questions in the space provided marked 'Answer Sheet'.
  - For **Groups – B & C** you have to answer the questions in the space provided marked 'Answer Sheet'. Questions of **Group – B** are Short answer type. Questions of **Group – C** are Long answer type. Write on both sides of the paper.
- Fill in your Roll No. in the box** provided as in your Admit Card before answering the questions.
- Read the instructions given inside carefully before answering.
- You should not forget to write the corresponding question numbers while answering.
- Do not write your name or put any special mark in the booklet that may disclose your identity, which will render you liable to disqualification. Any candidate found copying will be subject to Disciplinary Action under the relevant rules.
- Use of Mobile Phone and Programmable Calculator is totally prohibited in the examination hall.**
- You should return the booklet to the invigilator at the end of the examination and should not take any page of this booklet with you outside the examination hall, **which will lead to disqualification**.
- Rough work, if necessary is to be done in this booklet only and cross it through.

**No additional sheets are to be used and no loose paper will be provided**

## FOR OFFICE USE / EVALUATION ONLY

Marks Obtained

	Group – A					Group – B					Group – C					Total Marks	Examiner's Signature
Question Number																	
Marks Obtained																	

.....  
Head-Examiner / Co-Ordinator / Scrutineer

2337 (11/06)



**DO NOT WRITE ON THIS PAGE**



[ Full Marks : 70



vi) In translation, the start codon is

- |        |         |
|--------|---------|
| a) UAA | b) AUG  |
| c) UGA | d) UAG. |



(B) Answer any *five* of the following questions :

5 × 1 = 5

vii) What is polycistronic *mRNA* ? Give example.

viii) What are enhancers and what are their functions ?

ix) What is HAT and what is its function ?

x) What are hypersensitive ( HS ) regions in DNA and what are their functions ?

xi) Give examples of some DNA binding domains ( structural motifs ) found in DNA binding proteins, such as transcription factors.

xii) What is the function of 5' capping and polyadenylation at the 3' end of newly synthesized *mRNA* ?

xiii) What is genomic imprinting ?

### GROUP – B

#### ( Short Answer Type Questions )

Write short notes on any *three* of the following.

3 × 5 = 15

2. RNA splicing.
3. Wobble hypothesis.
4. Rho independent transcription termination.
5. Clover leaf structure of *tRNA*.
6. Role of CpG island in the vertebrate genome.

**GROUP – C****( Long Answer Type Questions )**Answer any *three* of the following questions. $3 \times 15 = 45$ 

7. What do you mean by transcription ? Differentiate between prokaryotic and eukaryotic transcriptions. Give the location and function of different classes of eukaryotic RNA polymerases. 3 + 5 + 7
8. What are the basic steps of protein synthesis ? Differentiate the characteristics between prokaryotic and eukaryotic ribosomes. Give the names of termination triplets and state the function of release factor in protein synthesis. 3 + 5 + 3 + 4
9. Define genetic code. State the characteristics of genetic code. Give the role of different types of antibiotics in protein synthesis. 3 + 7 + 5
10. What is meant by a polycistronic transcript, and how is it related to the *lac* operon ? What is the normal function of the operator site and what is the effect of loss of that function ? Starting with lactose in the extracellular environment, describe all of the steps that must occur to induce enhanced expression of the genes in the *lac* operon. 2 + 2 + 2 + 2 + 7

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END