

LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

M.Sc. DEGREE EXAMINATION – BIO TECHNOLOGY

FIRST SEMESTER – NOVEMBER 2009

BT 1821 - CELL AND MOLECULAR BIOLOGY

Date & Time: 09/11/2009 / 1:00 - 4:00 Dept. No.

Max. : 100 Marks

PART – A
ANSWER ALL THE QUESTIONS

1. Choose the correct answer:

5 x 1 = 5 marks

1) Crossing over occurs in which stage of Meiosis I?

- a) Pachytene b) Diakinesis c) Leptotene d) Zygotene

2) Where does transcription occur in eukaryotic cell ?

- a) Cytoplasm b) Nucleus c) Endoplasmic reticulum d) Mitochondria

3) Heterochromatin is

- a) Highly condensed and code for proteins b) Highly condensed and does no code for protein
c) Not condensed and codes for proteins d) Lightly condensed and code for proteins

4) Receptor is always a

- a) protein b) carbohydrate c) lipid d) amino acid

5) Who is the father of Heredity?

- a) Charles Darwin b) Bateson c) Dobshansky d) Greger Mendel

II. State True or False, if false give reason

5 x 1 = 5 marks

6) Size of microfilament is 3-6 nm.

7) RNA pol II is involved in tRNA synthesis.

8) Euchromatin is present in the centromeric DNA.

9) Paracrine signaling occurs between cells.

10) Phenotypic ratio of dominant epistasis is 1:3: 3:1.

III. Complete the following:

5 x 1 = 5 marks

11) The amount of DNA present in human diploid cell is _____cm and _____pg.

12) The initiation codon for prokaryote is _____codon and for eukaryote is _____.

13) Enhancer in eukaryote is a _____element.

14) Pinocytosis is the internalization of _____ particles.

15) Quantitative inheritance is also called as _____ and _____ .

IV. Answer each of the following within 50 words only

5 x 1 = 5 marks

- 16) Define cytoskeleton.
- 17) What are prions?
- 18) What is the rationale behind the availability of 64 genetic codes in eukaryotes?
- 19) When does phagocytosis occur?
- 20) Give the alternative term for panmixis and define it.

PART - B

V. Answer any three questions within 350 words only, draw diagrams

where required

5 x 8 = 40 marks

- 21) Enlist the modern version of cell theory and who proposed it and when?
- 22) Explain the galactose metabolism in yeast.
- 23) Give an account on various RNA processing events and where does it occur in a cell?
- 24) What are the properties of Genetic code? Explain codon bias with examples.
- 25) What is signal transduction? Explain the enzyme linked mode of it with diagram.
- 26) Where does oxidative phosphorylation occur and describe it briefly.
- 27) Distinguish between quantitative and qualitative inheritances with two examples each.
- 28) Write a short note on myogenesis in *Drosophila*.

PART - C

VI Answer the following, each within 1500 words only

2x 20 = 40 marks

- 29 a) Describe cell cycle and its check points.

(15 + 5 marks)

OR

- b) Write notes on

i) Transcriptional activator proteins.

(7 marks)

ii) Eukaryotic transcription factors.

(6 marks)

iii) Active and passive transport.

(7 marks)

- 30 a) Explain Chromatin organization with diagrams and write notes on the

types of histone proteins and centromeric DNA

(10 + 5 + 5 marks)

OR

- b) i) What are all the evidences for cytoplasmic factors? Mention the types of extra-nuclear inheritances with an example each.

(6 + 8 marks)

ii) Explain Hardy – Weinberg law.

(6 marks)
