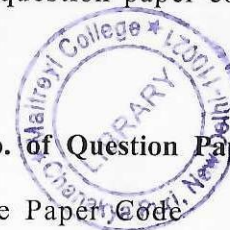


- (c) Describe the process of sample preparation for scanning and transmission electron microscopy. (5)
5. (a) Differentiate between prokaryotic and eukaryotic cell and sub-cellular organelles with the help of suitable diagrams. (5)
- (b) Write down the various functions of the chloroplast. Name at least two marker enzymes of chloroplast. (5)
- (c) Give a detailed account of the role played by lysosomes in cellular function. (5)
6. (a) Explain the translation process in prokaryotes with the help of suitable diagrams. (10)
- (b) Discuss Griffith's and Avery's transformation experiment with the help of suitable diagrams. (5)
7. (a) Give a detailed account of "theta" mode of replication. (5)
- (b) Discuss the regulation of gene expression in prokaryotes. (5)
- (c) Write a brief account of endosymbiotic theory. (5)

(500)

[This question paper contains 4 printed pages.]

05.01.2024(M)
Your Roll No.....

Sr. No. of Question Paper : 4905

G

Unique Paper Code : 42167902

Name of the Paper : Cell and Molecular Biology

Name of the Course : B.Sc. (Prog.) Life Sciences
DSE

Semester : V

Duration : 3 Hours

Maximum Marks : 75

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
 2. Attempt any **five** questions in all.
 3. Question No. **1** is compulsory.
 4. **All** questions carry equal marks.
 5. Attempt **all** parts of a question together.
-
1. (a) Comment on the following (**any five**) (5×1=5)
 - (i) Chiasma
 - (ii) Co-repressor
 - (iii) Inducible operon
 - (iv) Palindromic sequences

P.T.O.

(v) Pribnow Box

(vi) Replisome

(vii) Aminoacyl tRNA

(b) Fill in the blanks (**any five**) (5×1=5)

(i) A cluster of contiguous genes in prokaryotic systems involved in transcription regulation is called as _____.

(ii) In metaphase, the centromeres of each chromosome are aligned midway across the spindle on a plane called the _____.

(iii) The longest phase during meiotic division is _____.

(iv) Extra – nuclear DNA is found in _____ and _____.

(v) Nucleosomes are linked together by _____.

(vi) Proteins responsible for unwinding of DNA are _____.

(c) Match the following : (5×1=5)

(i) Christian de Duve (a) Lac operon

(ii) F. Jacob and J. Monod (b) Electron microscope

(iii) A. Kornberg (c) Carrier protein

(iv) Facilitated movement (d) DNA polymerase I

(v) M. Knoll and E. Ruska (e) Lysosomes

2. Write short notes on the following (**any three**) (3×5=15)

(i) X-ray diffraction

(ii) DNA packaging in eukaryotes

(iii) Fluid mosaic model

(iv) Nuclear pore complex

3. Differentiate between the following (**any five**) (5×3=15)

(i) B-DNA and Z-DNA

(ii) Centromere and Telomere

(iii) Primary wall and secondary wall

(iv) Leading and lagging strand

(v) Light microscopy and Confocal microscopy

(vi) Euchromatin and Heterochromatin

4. (a) Give an account of the structure and function of Golgi apparatus. (5)

(b) Explain the process of mitosis with the help of suitable diagrams and describe its significance. (5)

P.T.O.