647510 **BSCgenCC5020** **Seat No: _____**

B.Sc. Semester - 5 (CBCS) Examination
Oct/Nov. - 2018
GENETICS AND MOLECULAR BIOLOGY (CORE)

Time: 2:30 Hours **Marks: 70**

Instructions:

1. All questions are compulsory.
2. Figures to the right indicate marks.

Que-1 (A) Answer the following. (Any one out of Two) (07)

(1) Describe the Mendel's law of segregation with suitable example.

(2) Describe Chromosomal Aberrations in detail.

(B) Attempt any One. (Out of Two) (04)

(1) Explain Incomplete Dominance with suitable example in brief.

(2) Explain chromosomal theory of Sex determination in brief.

(C) Attempt any Three. (Out of Five) (03)

(1) Define: Linkage.

(2) Effect of environment occurs on Sex determination in organisms. (True/False)

(3) Genes that affect expression of more than one character are known as _____.

(4) ABO Blood grouping is example of _____ alleles.

(5) Define: Pseudogenes.

Que-2 (A) Answer the following. (Any on out of Two) (07)

(1) What are alternative forms of DNA? Write important features of B-DNA.

(2) Write a detail note on Genomic organization in Eukaryotic cell.

(B) Attempt any One. (Out of Two) (04)

(1) Explain about any one experiment to justify "DNA as genetic material."

(2) Write a short note on Watson & Crick's DNA double helix model.

(C) Attempt any Three. (Out of Five) (03)

(1) Which law is useful in studying allelic frequencies in a population?

(2) Define: Extrachromosomal inheritance.

(3) _____organelle is responsible for extrachromosomal inheritance in Animal cells.

(4) Which basic proteins are involved in Genomic organization of Eukaryotes?

(5) Central dogma explains the flow of genetic information in all living organisms. (True/False)

Que-3 (A) Answer the following. (Any one out of Two) (07)

(1) Describe in detail about Eukaryotic DNA replication.

(2) Explain in detail about Mechanisms of Gene transfer.

(B) Attempt any One. (Out of Two) (04)

(1) What is semi conservative mode of Replication? Explain with appropriate experimental evidence.

(2) Explain briefly about Light dependent repair system.

(C) Attempt any Three. (Out of Five) (03)

(1) Name any two enzymes involved in DNA replication.

(2) Define: Okazaki fragments.

(3) _____enzyme is involved in unwinding of DNA during respiration.

(4) Gene transfer done by Virus is known as _____.

(5) Define: Transposons.

Que-4 (A) Answer the following. (Any one out Two) (07)

(1) Briefly describe RNA polymerase II promoter. Write various factor & steps which involve in eukaryotic transcription initiation?

(2) Describe in detail about the steps involved in Prokaryotic translation.

(B) Attempt any One. (Out of Two) (04)

(1) Write the brief account of mechanisms of post translational modification.

(2) Explain briefly about regulation of gene expression in Lac operon.

(C) Attempt any Three. (Out of Five) (03)

(1) Define: Exon.

(2) Write down genetic code for stop codons.

(3) Process of transcription and translation is continuous in Prokaryotes. (True/False)

(4) Tryptophan operon is switched OFF when Tryptophan levels are low. (True/False)

(5) Catalytic RNA molecules are also known as _____.

Que-5 (A) Answer the following. (Any one out of Two) (07)

(1) What are Restriction endonucleases? Write difference between typeI, typeII and typeIII Restriction endonuclease? Why type II is mostly used?

(2) What are Cloning vectors? Give brief overview of any three cloning vector.

(B) Attempt any One. (Out of Two) (04)

(1) Write a short note on Blue white screening.

(2) Write down the applications of Genetic engineering.

(C) Attempt any Three. (Out of Five) (03)

(1) Which enzyme is used to join gene of interest with cloning vector?

(2) Define: Recognition site.

(3) What are adapters?

(4) Ampicillin resistance gene is an example of _____.

(5) Heat shock method is used for transferring recombinant vector into host. (True/False)

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