

(6 pages)

**Reg. No. :** .....

**Code No. : 6892**

**Sub. Code : PBOM 22**

M.Sc. (CBCS) DEGREE EXAMINATION, APRIL 2021.

Second Semester

Botany — Core

GENETICS, CELL AND MOLECULAR BIOLOGY

(For those who joined in July 2017 onwards)

Time : Three hours

Maximum : 75 marks

PART A — ( $10 \times 1 = 10$  marks)

Answer ALL questions.

Choose the correct answer :

1. The total hereditary material outside the chromosome is called
  - (a) Plasmagene
  - (b) Plasmon
  - (c) Muton, cistron and recon
  - (d) None of these

2. The movement of metabolites through nuclear pores is controlled by
- (a) Signal sequences only
  - (b) Signal receptors only
  - (c) Both of these
  - (d) Nuclear lamins
3. DNA is concentrated in
- (a) Chromosomes
  - (b) Cell wall
  - (c) Golgi body
  - (d) Ribosomes
4. Which of the following cell organelle is related to respiration?
- (a) Nucleus
  - (b) Vacuole
  - (c) Chloroplast
  - (d) Mitochondria
5. Faulty release of F-factor by Hfr strains causes
- (a) Lysogeny
  - (b) Sexduction
  - (c) Partial transformation
  - (d) All of these

6. In eukaryotes genetic recombination can lead to a novel set of genetic information that can be passed on from parents to offspring during
- (a) mitosis
  - (b) meiosis
  - (c) genetic expression
  - (d) replication
7. During transcription, the DNA site at which RNA polymerase binds is called
- (a) Promoter
  - (b) Regulator
  - (c) Receptor
  - (d) Enhancer
8. RNA directed DNA synthesis was first report in
- (a) Retroviruses
  - (b) Poliovirus
  - (c) Rhabdoviruses
  - (d) TMV
9. In jacob-Monod model, operator is the binding site of
- (a) repressor
  - (b) activator
  - (c) ligase
  - (d) none of these
10. Which one of the following is not a component of lac-operon model?
- (a) Structural gene
  - (b) Promoter gene
  - (c) Regulator gene
  - (d) Primer gene

PART B — ( $5 \times 5 = 25$  marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) List out the physical and chemical mutagens.

Or

- (b) Comment on structure and functions of nuclear envelope.

12. (a) Explain about DNA polymerases.

Or

- (b) List out the different types of DNA.

13. (a) Explain lysogenic cycle.

Or

- (b) Write notes on generalized genetic recombination.

14. (a) Write notes on synthesis of RNA.

Or

- (b) Describe about RNA polymerase.

15. (a) Explain *trp* Operon.

Or

- (b) Comment on transposons.

PART C — ( $5 \times 8 = 40$  marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Describe about meiosis and its physio chemical apparatus.

Or

- (b) Explain the theories on sex determination.

17. (a) Write an essay on DNA synthesis and its replication in Eukaryotes.

Or

- (b) Explain the structure of chloroplast DNA.

18. (a) Discuss on bacterial conjugation with neat sketch.

Or

- (b) Discuss on bacterial transduction with diagram.

19. (a) Write an essay on post transcriptional changes in RNA.

Or

- (b) Give an account on translation.

20. (a) Write an essay on pseudo alleles.

Or

- (b) Write an essay on mRNA processing.
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