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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 × 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 × 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 × 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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