

**M.Sc. MICROBIOLOGY
FIRST SEMESTER
CELL BIOLOGY & GENETICS
MMB-104**

(Use separate answer scripts for Objective & Descriptive)

Duration : 3 hrs.

Full Marks : 70

[PART-A : Objective]

Time : 20 min.

Marks : 20

Choose the correct answer from the following:

1x20=20

1. Animal cells are devoid of:
a. Microtubules
b. Cytoplasm
c. Plastids
d. Cell membrane
2. Which cell organelle is known as garbage disposal of the cell?
a. Golgi bodies
b. Lysosome
c. Ribosome
d. Chloroplast
3.is known as the powerhouse of the cell.
a. Ribosome
b. Golgi bodies
c. Endoplasmic reticulum
d. Mitochondria
4. Gram staining was developed in the year:
a. 1884
b. 1838
c. 1899
d. 1900
5. Non fibrous protein present in extracellular matrix is:
a. Fibronectin
b. Collagen
c. Proteoglycan
d. Elastin
6. Signalling molecule acting on the same cell which produce it, is known as:
a. Autocrine regulation
b. Pracrine regulation
c. Endocrine regulation
d. Local regulation
7. Calcium independent cell adhesion molecule is:
a. Cadherin
b. IgG like(Immunoglobulin superfamily)
c. Selectin
d. Integrin
8. In cell cycle spindle checkpoint occurs during the transition from:
a. G0/G1 phase
b. Metaphase to Anaphase
c. G2/M phase
d. G1/S phase
9. Who is known as Father of modern genetics?
a. Hugo de Vries
b. Gregor Johan Mendel
c. Carl Corens
d. Johansan
10. The term "Genetics" was coined by:
a. Erich von Tschermak
b. Johansan
c. William Bateson
d. Gregor Johan Mendel

11. Frameshift mutation occurs due to:
- Transition
 - Transversion
 - Substitution
 - Insertion/Deletion
12. The term "Mutation" was coined by:
- Hugo de Vries
 - Thomas Hunt Morgan
 - William Bateson
 - Hermann Joseph Muller
13. During tautomeric shift rare imino form of cytosine pairs with:
- Guanine
 - Thymine
 - Adenine
 - Uracil
14. Sickle cell anemia is a type of..... disease.
- Autosomal dominant
 - X linked recessive inheritance
 - Autosomal recessive
 - X linked dominant inheritance
15. Which of this is not a spontaneous lesion?
- Depurination
 - Deamination
 - Alkylation
 - Base Analog
16. Which of the following is not a type of cell specification during differentiation process?
- Autonomous
 - Conditional
 - Syncytial
 - Potency
17. The morphogenetic determinant involved in cellular differentiation are:
- Lipid or RNA
 - DNA or Carbohydrate
 - Protein or mRNA
 - None
18. Secretory function of the cell is carried out by:
- Golgi bodies
 - Mitochondria
 - Plastids
 - Ribosomes
19. The variation from Mendel's law is known as:
- Law of independent assortment
 - Law of segregation
 - Law of co-dominance
 - Law of dominance
20. Ribotyping is based on analysis of:
- Protein
 - DNA
 - 16s and 23s rRNA
 - Mitochondrial genome

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(PART-B : Descriptive)

Time : 2 hrs. 40 min.

Marks : 50

[Answer question no.1 & any four (4) from the rest]

- Describe the regulatory mechanism of cell cycle. 10
- Write short notes on: 5+5=10
 - Chloroplast DNA
 - ATP Synthase
- Explain the mode of cell communication. 4+6=10
 - What are the different types of membrane receptor? Explain each of them.
- Describe different types of mutation. 6+4=10
 - What are the different kinds of spontaneous lesion? Explain.
- Discuss the patterns of single gene inheritance. 5+5=10
 - What are the different types of genetic disease?
- Define mitochondria. Explain its ultrastructure with diagram. 6+4=10
 - Write about the composition of bacterial cell wall and classify the bacteria on the basis of cell wall composition.
- Write short notes on: 5+5=10
 - Mitochondrial inheritance
 - Morphogenetic gradient
- Define cell differentiation and state the principle of cell differentiation. 3+3+4=10

What are different kinds of cell specification? Discuss the molecular basis and mechanism of cellular determination.

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