SSR DEGREE & PG COLLEGE (AUTONOMOUS)

MSc BIOTECHNOLOGY

SEMESTER – II (MOLECULAR BIOLOGY – II)

INTERNAL - II

QUESTION BANK

MCQs

1. The concept of operon was proposed by:
   A) Watson & Crick
   B) Jacob & Monod
   C) Mendel
   D) Darwin
   Answer: B
2. The lac operon is activated in the presence of:
   A) Glucose
   B) Lactose
   C) Tryptophan
   D) ATP
   Answer: B
3. The trp operon is an example of:
   A) Inducible operon
   B) Repressible operon
   C) Constitutive operon
   D) Silent operon
   Answer: B
4. Positive control of gene expression involves:
   A) Repressor proteins
   B) Activator proteins
   C) Ribosomes
   D) tRNA
   Answer: B
5. DNA methylation generally results in:
   A) Gene activation
   B) Gene repression
   C) DNA replication
   D) Mutation
   Answer: B
6. Histone acetylation leads to:
   A) Chromatin condensation
   B) Chromatin relaxation
   C) DNA mutation
   D) Gene silencing
   Answer: B

7. CpG islands are regions rich in:
   A) A-T pairs
   B) C-G pairs
   C) Proteins
   D) Lipids
   Answer: B
8. RNA interference (RNAi) leads to:
   A) DNA replication
   B) mRNA degradation
   C) Protein folding
   D) Translation initiation
   Answer: B
9. MicroRNAs regulate gene expression at:
   A) DNA level
   B) Post-transcriptional level
   C) Translation initiation
   D) Replication
   Answer: B
10. Zinc finger motif is involved in:
   A) RNA synthesis
   B) DNA binding
   C) Protein degradation
   D) Lipid synthesis
   Answer: B
11. Molecular chaperones help in:
   A) DNA replication
   B) Protein folding
   C) Transcription
   D) Translation
   Answer: B
12. Chaperonins are:
   A) Lipids
   B) Protein complexes
   C) DNA segments
   D) Enzymes only
   Answer: B
13. Signal sequences are important for:
   A) DNA repair
   B) Protein targeting
   C) Mutation
   D) Replication
   Answer: B
14. Proteins entering ER follow the:
   A) Glycolysis pathway
   B) Secretory pathway
   C) Krebs cycle
   D) Calvin cycle
   Answer: B
15. Ubiquitin tagging leads to:
   A) Activation

B) Folding
C) Degradation
D) Transport
Answer: C

16. Proteasome degrades:
A) Lipids
B) Carbohydrates
C) Ubiquitinated proteins
D) DNA
Answer: C

17. Calmodulin is activated by:
A) Sodium ions
B) Calcium ions
C) Potassium ions
D) Chloride ions
Answer: B

18. Phosphorylation involves addition of:
A) Methyl group
B) Phosphate group
C) Acetyl group
D) Sugar
Answer: B

19. Protein targeting to mitochondria requires:
A) Signal peptide
B) Introns
C) Histones
D) tRNA
Answer: A

20. Deubiquitination refers to:
A) Addition of ubiquitin
B) Removal of ubiquitin
C) Protein synthesis
D) DNA replication
Answer: B

Fill in the Blanks

1. The operon model was proposed by _____ and Monod.
   Answer: Jacob
2. Lac operon is a _____ operon.
   Answer: Inducible
3. Trp operon is a _____ operon.
   Answer: Repressible
4. Activators are involved in _____ control.
   Answer: Positive
5. DNA methylation causes gene _____.
   Answer: Repression
6. Histone acetylation leads to gene _____.
   Answer: Activation
7. CpG islands are rich in _____ nucleotides.
   Answer: Cytosine and Guanine
8. RNA interference causes _____ of mRNA.
   Answer: Degradation
9. MicroRNAs act at _____ transcriptional level.
   Answer: Post
10. Zinc finger is a DNA-binding _____.
    Answer: Motif
11. Molecular chaperones assist in protein _____.
    Answer: Folding
12. Chaperonins are _____ complexes.
    Answer: Protein
13. Signal peptides guide proteins to correct _____.
    Answer: Location
14. Secretory proteins enter the _____.
    Answer: Endoplasmic reticulum
15. Ubiquitin tags proteins for _____.
    Answer: Degradation
16. Proteasome degrades _____ proteins.
    Answer: Ubiquitinated
17. Calmodulin binds _____ ions.
    Answer: Calcium
18. Phosphorylation involves addition of _____ group.
    Answer: Phosphate
19. Mitochondrial targeting requires a _____ sequence.
    Answer: Signal
20. Deubiquitination removes _____ from proteins.
    Answer: Ubiquitin