

MSc Sem.-2 Examination

408

CB

Time : 2-30 Hours]

May-2025

[Max. Marks : 70

Instructions:

**All Questions are compulsory
Draw neat and labeled diagram wherever
necessary**

- Q-1 Write the following 14**
- (i) Describe molecular mediators of tumor angiogenesis. 7
- (ii) 'Survival of circulating tumor cells in the circulation is a rate limiting step in metastasis' explain this and describe how they evade cell death. 7
- OR**
- (i) What are capillaries? Discuss the role of different capillaries in angiogenesis process. 7
- (ii) Describe how primary tumor can prepare distant organ for metastasis. 7
- Q-2 Write the following 14**
- (i) Role of angiogenesis as anti-cancer therapy. 7
- (ii) State the role of the Epithelial-Mesenchymal Transition in metastasis initiation. 7
- OR**
- (i) Describe differences between angiogenesis and vasculogenesis. 7
- (ii) Explain bone metastasis in detail. 7
- Q-3 Write the following 14**
- (i) Explain the relation between p53 and glycolysis with respect to altered metabolism. 7
- (ii) How do genetics and epigenetics differ from each other? 7
- OR**
- (i) With respect to altered metabolism explain how mTOR can be targeted? 7
- (ii) Discuss the use of epigenetics biomarkers for detecting cancer. 7
- Q-4 Write the following 14**
- (i) What is Crabtree effect? Describe in brief. 7
- (ii) What are the future trends and challenges in cancer epigenomics? 7
- OR**
- (i) Write a note on lipid metabolism in cancer cells. 7
- (ii) Briefly explain the role of cytosine modification in epigenetic regulation. 7

**Q-5 MCQs/ Short Questions (one or two line answer)/ Fill in the Blanks/ 14
True or False (Any seven out of twelve)**

- 1 **Who is the father of angiogenesis?**
 - a Robert Auerbach
 - b Thiersch
 - c Judan Folkman
 - d Sudan Folkman

- 2 **What term describes the ability of cancer cells to survive in the circulation and evade immune surveillance?**
 - a Dormancy
 - b Anoikis resistance
 - c Metastasis
 - d Differentiation

- 3 **_____ is a small molecule that inhibits Akt and S6K and has shown anti-neoplastic activity in preclinical studies.**
 - a XI418
 - b XI318
 - c XI419
 - d XI319

- 4 **What is epigenetics?**
 - a The study of genetic mutations
 - b The study of heritable changes in gene expression that do not involve changes to the underlying DNA sequence
 - c The study of gene sequences
 - d The study of protein

- 5 **Tumor cells can grow along existing vessels without evoking an angiogenic response, it is defined as _____.**
 - a Vasculogenesis
 - b Endothelial progenitor Cells
 - c Vasculogenic mimicry
 - d Vessel co-option

- 6 **Which of the following is a critical step in the metastasis cascade?**
 - a Tumor dormancy
 - b Cellular differentiation
 - c Immune surveillance
 - d Tissue necrosis

- 7 **Neoplastic transformation originated as a consequence of irreversible damage to _____ respiration.**
 - a Cytoplasmic
 - b Ribosomal
 - c Membranous
 - d Mitochondrial

- 8 **Which of the following is an example of an epigenetic modification?**
 - a DNA mutation
 - b RNA splicing
 - c DNA methylation
 - d Protein folding

- 9 **Which of the following is not an endogenous inhibitor of angiogenesis?**
 - a Angiostatin
 - b Thrombospondins
 - c Endostatin
 - d Angiogenin

- 10 **What is the primary mechanism through which cancer cells invade surrounding tissues during metastasis?**
 - a Extravasation
 - b Intravasation
 - c Angiogenesis
 - d Epithelial-to-mesenchymal transition

- 11 Glutamine metabolism provides both NADH and _____ for increased lipogenesis of the cancer cell.
- | | | | |
|---|------------|---|----------|
| a | Isocitrate | b | Pyruvate |
| c | Citrate | d | Oxolate |
- 12 Which enzyme is primarily responsible for maintaining DNA methylation during DNA replication?
- | | | | |
|---|--------|---|--------|
| a | DNMT1 | b | TET1 |
| c | DNMT3A | d | DNMT3B |
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