Time: 2:30 Hours **Total Marks: 75**

1. Attempt **all** questions.
2. **All questions** carry **equal** marks.
3. Draw **neat labelled diagrams** wherever necessary.
4. Use of **log tables** and **non-programmable calculators** is **allowed**.

Q.1 **Select the correct alternative: (Any Fifteen)** **15**

1 DNA synthesis takes place is _____ phase
a. M b. S c. G1 d. G2

2 All of the following are broad specificity growth factors EXCEPT
a. PDGF b. EGF c. FGF d. erythropoietin

3 The inhibitory kinase in the yeast cell cycle is _____.
a. Wee1 b. MO15 c. cdc25 d. cdc13

4 If an oocyte in interphase is injected with cytoplasm from an oocyte in M phase
a. it drives the recipient oocyte into Mitosis
b. it drives the recipient oocyte into DNA replication
c. it arrests the recipient oocyte in interphase
d. it does not affect the recipient's oocyte

5 *Schizosaccharomyces pombe* is also called _____ yeast.
a. Fusion b. fission c. budding d. mushroom

6 When the receptors involved in signal transduction are internal to the cells, the primary signalling molecules are _____.
a) Hydrophilic. b) Hydrophobic
c) Neutral c) negatively charged

7 cAMP is an example of _____
a) Receptor b) primary messenger
c) secondary messenger d) inhibitor

8 _____ have their cytosolic domain either has intrinsic enzyme activity or associates directly with an enzyme.
a) G protein coupled receptors b) Enzyme coupled receptors
c)ion gated Channels d) M protein coupled receptors

9 Flagellin is the protein subunit found in _____ of bacteria.
a) Cell wall b) flagella c) cytoplasm d) capsule

10 Phosphorylation of GDP on trimeric G protein causes the activation of _____ receptors.
a) G protein coupled receptors b) Enzyme coupled receptors
c)ion gated Channels d) M protein coupled receptors

11 Why is the mouse considered a preferred model organism in developmental biology?
a. It is the most closely related mammalian model to humans.
b. Model organisms should be large.,
c. Model organisms should be hard to obtain.,
d. Model organisms should be costly.

12 Identify the incorrect statement regarding model organisms:
a. They should have a long-life cycle.,
b. They should have a small adult size.,
c. They should be readily available.,
d. They should be low-cost.

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13 The ability of a single neural crest cell to differentiate into various cell types is referred to as:
a. Pluripotency, b. Cell division, c. Morphogen, d. Gastrulation

14 What is the fundamental process in animal embryogenesis that involves cellular rearrangements and movements to shape and reposition germ layers?
a. Embryo, b. Zygote, c. Gastrulation, d. Blastulation

15 The morphogenic movement known as _____ involves separating one cell sheet into two or more parallel sheets.
a) Involution, b) Invagination, c) Epiboly, d) Delamination

16 The fundamental abnormality resulting in the development of cancer is _____
a. unregulated death of cells
b. the continual unregulated proliferation of cells
c. necrosis
d. apoptosis

17 When tumour cells break away from the primary tumour and establish a secondary tumour, it is termed as _____.
a) epistasis b) apoptosis
c) metastasis d) metaplasia

18 Cancer-causing agents are termed as _____.
a) carcinogens
b) tumour suppressors
c) pollutants
d) mutagens

19 Which among the following is NOT a tumour suppressor gene?
a) RB1 b) TP53
c) MYC d) BRCA

20 _____ was first isolated from a chicken sarcoma by Peyton Rous in 1911.
a) HSV b) HIV
c) RSV d) HTLV-1

Q2A) Discuss the mitochondria-mediated pathway of apoptosis **8**
Q2B) Discuss the two experimental evidence of the cytoplasmic regulator- MPF. **7**

OR

Q2C) Explain phases of the eukaryotic cell cycle. **8**
Q2D) Explain the morphology, lifecycle, and checkpoints of budding and fission yeasts. **7**

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Q3A)	Write an account on Target cell adaptation with the help of bacterial chemotaxis.	8
Q3B)	Discuss in detail the classification of Enzyme coupled receptors. Aiso give two examples of extracellular signalling molecules involved in the activation of the enzyme coupled receptors.	7
	OR	
Q3C)	Write a note on activation of G protein coupled receptors in cell signalling.	8
Q3D)	Discuss in detail the computer based neural system used in cell signalling.	7
Q4A)	Discuss the importance of model organisms in developmental biology.	8
Q4B)	Explain Types of cellular movement and Germ layers.	7
	OR	
Q4C)	Elaborate "Fate map: Construction and uses."	8
Q4D)	How does differential gene expression contribute to terminal differentiation?	7
Q5A)	Give a brief account of: 'Types of Cancer.'	8
Q5B)	Explain Tumour progression.	7
	OR	
Q5C)	Discuss Replicative senescence and metastasis.	8
Q5D)	Discuss Viruses and cancer.	7

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