



ML-254

003-001426

Seat No. _____

B. Sc. (Sem. IV) (CBCS) Examination

April / May - 2012

Biochemistry : Paper - 401

(Cell Biology & Plant Biochemistry)

Faculty Code : 003

Subject Code : 001426

Time : $2\frac{1}{2}$ Hours]

[Total Marks : 70

SECTION - A

1 Circle (O) the correct answer :

1 Which of the following is not a constituent of plant cell wall?

- (a) Cellulose
- (b) Pectin
- (c) Lignin
- (d) Peptidoglycan

2 Marker enzyme for microsomes is :

- (a) Succinate Dehydrogenase
- (b) Hexokinase
- (c) NADPH cytochrome-C reductase
- (d) Acid phosphatase

3 Yeast is classified under which of the following kingdoms?

- (a) Monera
- (b) Fungi
- (c) Protist
- (d) Animalia

- 4 Mitochondria we all have in our cells are inherited from
- (a) Mothers only
 - (b) 50% from mothers and 50% from fathers
 - (c) Fathers only
 - (d) 75% from fathers and 25% from mothers.
- 5 Which event occurs during the "S" phase of cell cycle?
- (a) Duplication of DNA
 - (b) Breakdown of DNA
 - (c) Division of genetic material
 - (d) None of the above
- 6 Inner cell mass of embryo further divide to form
- (a) Endoderm
 - (b) Ectoderm
 - (c) Mesoderm
 - (d) All of the above
- 7 At the end of meiosis-I the daughter cell produced are
- (a) Haploid along with sister chromatid
 - (b) Diploid along with sister chromatid
 - (c) Haploid
 - (d) Diploid
- 8 Which protein helps in attachment of sister chromatid with each other ?
- (a) Condensin
 - (b) Cyclin
 - (c) Synthase
 - (d) Cohesion

- 9 In CAM metabolism, how many carbon acids is being synthesized ?
- (a) 2
 - (b) 4
 - (c) 3
 - (d) no acid is synthesized.
- 10 The process of _____ is how ADP+P are converted into ATP during the light dependent process.
- (a) Glycolysis
 - (b) Chemiosmosis
 - (c) Substrate level phosphorylation
 - (d) Calvin cycle
- 11 Which of the following is natural auxin ?
- (a) Indole-3-butyric acid
 - (c) 1-Naphthaleneacetic acid
 - (b) Indole-3-acetic acid
 - (d) 2,4-dichlorophenoxyacetic acid
- 12 Which of the following plant hormones is incorrectly paired with its function ?
- (a) auxins -- responsible for apical dominance
 - (b) abscisic acid -- regulates the rate of transpiration
 - (c) gibberellins -- promotes bud and seed dormancy
 - (d) ethylene -- promotes ripening
- 13 Which one is the example of antiport in cell membrane transport ?
- (a) Na^+ /glucose transport
 - (b) Na^+ - Ca^{+2} counter transport
 - (c) Na^+ / K^+ ATPas
 - (d) Both (a) and (b)

- 14 Amount of oligosaccharide in plasma membrane is
- (a) 1-15%
 - (b) 10-15%
 - (c) 1-5 %
 - (d) 0.1-0.5%
- 15 In cell membrane carrier protein are also known as
- (a) Transport
 - (b) Porter
 - (c) Transportase
 - (d) All
- 16 The simple diffusion of substance can occur through
- (a) Carrier protein and phospholipid bilayer
 - (b) Watery channels & phospholipid bilayer
 - (c) Carrier protein & watery channel
 - (d) None of these
- 17 Desired. gene is inserted in _____ region of the Ti plasmid.
- (a) T-DNA
 - (b) Origin of replication (Ori)
 - (c) Opine catabolism (oc)
 - (d) Virulance
- 18 _____ is the ability of an individual to develop into whole organism.
- (a) differentiation
 - (b) totipotency
 - (c) multipotent
 - (d) division

19 Nitrogenase enzyme is sensitive to

- (a) H_2
- (b) NH_3
- (c) O_2
- (d) CO_2

20 Nodule formation occurs on

- (a) Sugarcane
- (b) Mango trees
- (c) Wheat
- (d) Soyabean

SECTION - B

2 (a) Answer any **three** from the following : **3×2=6**

- (i) With one example explain thigmotropism.
- (ii) What is the difference between antiport and symport ?
- (iii) Types of microtubules and their functions in cell division.
- (iv) Why RBCs are not classified as true cells?
- (v) Explain industrial nitrogen fixation.
- (vi) Why germ cells are produced by meiosis and not by mitosis?

(b) Answer any **three** from the following : **3×3=9**

- (i) Discuss briefly about Gibberellins.
- (ii) Write the various functions of plasma membrane.
- (iii) Write the functions of lysosomes
- (iv) Describe with diagram the characteristics of prophase of mitosis.
- (v) Write a brief note on cyclic photophosphorylation.
- (vi) Explain fungi resistant plant with one example.

(c) Answer any **two** from the following : **2×5=10**

- (i) Explain fluid mosaic model of plasma membrane.
- (ii) Discuss with diagrams different stages of meiosis I.
- (iii) Explain showing diagram the steps in Carbon fixation.
- (iv) Describe endosymbiosis hypothesis regarding origin of mitochondria.
- (v) Write a short note on structure of enzyme Nitrogenase.

3 (a) Answer any **three** from the following : **3×2=6**

- (i) Write significance of mitosis.
- (ii) What is Plant tissue culture? Give the name of two culture techniques used for plant tissue culture?
- (iii) Explain simple diffusion with any one example.
- (iv) Why viruses are classified as obligatory parasites?
- (v) Define marker enzymes.
- (vi) Photorespiration is a wasteful process. Justify the statement.

(b) Answer any **three** from the following : **3×3=9**

- (i) Why cell fractionation is carried out using an isotonic medium?
- (ii) How Na^+ and K^+ transport plasma membrane?
- (iii) Write the difference between C3 and C4 pathway.
- (iv) Write the importance of G_0 phase of cell cycle.
- (v) Write a short note on Synthetic seed.
- (vi) Discuss role of denitrification in nitrogen cycle.

(c) Answer any **two** from the following : **2×5=10**

- (i) Write in detail about auxin.
 - (ii) Explain various type of "Active transport".
 - (iii) Describe in detail about various stages of cell cycle.
 - (iv) Write differences between prokaryotes and eukaryotes.
 - (v) Explain Micropropagation in detail.
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