



**DP-003-001426**

Seat No. \_\_\_\_\_

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

**April / May – 2015**

**Biochemistry**

**Paper-401 : Cell Biology & Plant Bio-chem.**

**Faculty Code : 003**

**Subject Code : 001426**

Time : Hours]

[Total Marks : 70

1 Select the correct answer for the questions from the given 20 choices.

- (1) Which of the following cell does not contain nucleus?  
(A) Human nerve cell (B) Germ cell  
(C) Human RBC (D) All of the above
- (2) A 'tetrad' structure consists of .....chromosomes  
(A) Two homologous (B) Two heterologous  
(C) Four homologous (D) Four heterologous
- (3) Which of the following statement is not true for meiosis?  
(A) It produces haploid cells  
(B) It is a reductional type of cell division  
(C) Somatic cells does not divide by meiosis  
(D) It produces four diploid cells.
- (4) Yeast is classified under which of the following kingdoms?  
(A) Monera (B) Fungi  
(C) Protist (D) Animalia
- (5) The plant cell having its cell wall removed is known as  
(A) Protoplast (B) Protoplasm  
(C) Cell Plate (D) Explants

- (6) Which of the following is a natural auxin?
- (A) Indole-3-butyric acid
  - (B) 1-naphthaleneacetic acid
  - (C) Indole-3-acetic acid
  - (D) 2,4-dichloroethoxyacetic acid
- (7) Which of the following enzyme is not utilized in ammonia assimilation?
- (A) GS
  - (B) GDH
  - (C) Transaminase
  - (D) none
- (8) Fluidity of plasma membrane depends on
- (A) Fatty acid
  - (B) cholesterol
  - (C) both (A) and (B)
  - (D) none
- (9) Find the odd option from the following
- (A) Synapsis
  - (B) Chiasma
  - (C) Haploid chromosomes
  - (D) Equational division
- (10) The organelle of cell having maternal origin is
- (A) Nucleus
  - (B) Mitochondria
  - (C) Centrosomes
  - (D) All
- (11) The main component of the endomembrane system also called as cytocavity network is
- (A) Cytoskeleton
  - (B) Endoplasmic reticulum
  - (C) Golgi complex
  - (D) Lysosome

- (12) 'Rubisco' is found in
- (A) Stroma of chloroplast
  - (B) Grana of chloroplast
  - (C) Matrix of mitochondria
  - (D) Both (A) and (B)
- (13) The plant hormone responsible for cell division and ripening of fruit respectively are
- (A) Auxin & Cytokinin
  - (B) Cytokinin & Ethylene
  - (C) Cytokinin & Abcissic acid
  - (D) Ethylene & Cytokinin
- (14) Bundle sheath with chloroplasts found in angiosperms performing C4 pathway is
- (A) Kranz anatomy      (B) Meristem
  - (C) Vascular bundle      (D) Plastids
- (15) The gene responsible for the working of nitrogenase enzyme for Nitrogen fixation is
- (A) BNF gene      (B) Nif gene
  - (C) Nfi gene      (D) Nf gene
- (16) Which of the following is not a growth stimulator?
- (A) Auxin      (B) Ethylene
  - (C) Gibberelin      (D) Cytokinin

- (17) Transport of glucose-  $\text{Na}^+$  is the example of
- (A) Uniport                      (B) symport
- (C) Antiport                      (D) Counter transport
- (18) The structure responsible for biogenesis of ribosomal subunits(40S & 60S) disappears during
- (A) Prophase                      (B) Telophase
- (C) Anaphase                      (D) All of the above
- (19) The thickness of lipid bilayer plasma membrane is about
- (A) 5nm                              (B) 8nm
- (C) 12nm                              (D) 20nm
- (20) Features of fluid mosaic model of membrane includes:-
- (A) A lipid bi-layer
- (B) Dynamic motion of both membrane lipids and proteins
- (C) Proteins that may either rest on the surface or penetrate the membrane
- (D) All of the above.

**2** (A) Answer any **three** of the following questions:- **6**

- (1) Justify the structural diversity in eukaryotic cells by giving examples
- (2) Are RBCs classified as true cells? Give Reason for your answer.
- (3) Differentiate : Cisternae and Cristae

- (4) Write the difference between antiport and symport transport mechanisms.
- (5) What are the functions of cholesterol in plasma membrane?
- (6) Prokaryotes do not have mitochondria. Which organelle is responsible for ATP synthesis in them?

(b) Answer any **three** of the following questions: **9**

- (1) Describe with diagram the characteristics of prophase of mitosis
- (2) Draw the schematic diagram of fluid mosaic model of cell membrane & write any two functions of it.
- (3) Why nucleus is known as control centre or brain of the cell ?
- (4) "E. Coli is extensively studied organism." Justify the statement by giving reasons.
- (5) What are luxury genes and housekeeping genes ? Give examples
- (6) What is cell cycle? Write the importance of quiescent phase of cell cycle.

(c) Answer any **Two** of the following questions: **10**

- (1) Write differences between Prokaryotes and Eukaryotes.
- (2) Describe endosymbiosis hypothesis regarding origin of mitochondria.
- (3) Enlist the major enzymes of lysosomes and write the functions of lysosomes

- (4) Write the comparison of mitosis and meiosis.
- (5) Explain various type of "Active Transport" and write any two functions of various proteins present in plasma membrane.

**3** (a) Answer any **Three** of the following questions:- **6**

- (1) What are diazotrophs ? Mention their types along with examples.
- (2) What is plant tissue culture? Give any two advantages of it.
- (3) Photorespiration is a wasteful process. Justify the statement.
- (4) What are transgenic plants? Mention any two methods for producing transgenic plants.
- (5) Give some advantages of Micropropagation.
- (6) Write any two difference between cyclic and non cyclic phosphorylation.

(b) Answer any **three** of the following questions: **9**

- (1) Define Photosynthesis and describe two reactions involved in it.
- (2) Explain electron transfer mechanism of nitrate reductase activity and write the equation for biological nitrogen fixation.
- (3) What is totipotency ? How can you differentiate protoplast and protoplasm ?

- (4) Explain the laboratory requirement of Plant Tissue Culture.
- (5) What is  $T_i$  plasmid ? Mention any three gene transfer method studied by you.
- (6) Describe about Gibberellins .

(c) Answer any **Two** of the following questions: **10**

- (1) What are synthetic seeds? Explain how are they produced? What are their advantages?
- (2) Explain showing diagram the steps in Carbon fixation.
- (3) Describe Photosytem I and Photosystem II with Z-scheme.
- (4) Explain callus culture with diagram.
- (5) Describe Physical, Chemical and Biological Nitrogen Fixation.

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