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**4 SEM TDC BOT M 3**

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**BOTANY**

**( Major )**

Course : 403

**( Cell Biology and Modern Laboratory Technique )**

Full Marks : 48

Pass Marks : 19/14

Time : 2 hours

*The figures in the margin indicate full marks  
for the questions*

1. (a) Choose the correct answer of the following : 1×3=3
- (i) The time gap between Meiosis I and Meiosis II is
1. G<sub>1</sub> phase
  2. interphase
  3. G<sub>0</sub> phase
  4. interkinesis
- (ii) Mitochondria is absent in
1. amoeba
  2. bacteria
  3. red algae
  4. plants

(iii) What is tonoplast?

1. Outer membrane of mitochondria
2. Inner membrane of chloroplast
3. Membrane boundary of the vacuole of the plant cells
4. Cell membrane of a plant cell

(b) Fill in the blanks of the following :  $1 \times 2 = 2$

(i) If the power of objective is 20X and the power of eyepiece is 20X, then the magnification produced is \_\_\_\_\_.

(ii) The full form of ROM is \_\_\_\_\_.

(c) Write short notes on the following :

$3+3+2=8$

- (i) Prokaryotic and eukaryotic cells
- (ii) Significance of meiosis
- (iii) G proteins

2. Describe with diagram the structure, chemical composition and functions of chloroplast.

$(3+2)+2+3=10$

Or

Write the structure and functions of the following :

$5 \times 2 = 10$

- (a) Nucleus
- (b) Golgi bodies

( 3 )

3. What are the nucleotides of DNA? Discuss how different types of nucleotides of DNA molecule are linked together. Write the functions of DNA.  $2+6+2=10$

Or

Answer/Write on the following :  $4+(2+4)=10$

- (a) Nucleoproteins
- (b) What are chromosomes? How does the position of centromere form the basis of classification of chromosome?
4. (a) Write the principle and applications of dark-field microscope. Compare electron microscope with compound microscope.  $2+2+4=8$

Or

Write on the following :  $4 \times 2 = 8$

- (i) Thin layer chromatography
- (ii) Application of computer in biological science
- (b) Write short notes on any *two* of the following :  $3\frac{1}{2} \times 2 = 7$
- (i) Colorimeter
- (ii) Hot-air oven
- (iii) Centrifuge
- (iv) Autoradiography

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