

**2017****M.Sc.****3rd Semester Examination****MICROBIOLOGY****PAPER—MCB-301***Full Marks : 40**Time : 2 Hours*

*The figures in the right-hand margin indicate full marks.*

*Candidates are required to give their answers in their own words as far as practicable.*

*Illustrate the answers wherever necessary.*

***Separate answer scripts to be used for each group.***

**Group — A****[Marks : 20]**

Answer any *two* questions.

1. (a) What are cell cycle check points ? Write the salient features of each check points ? 2+3
- (b) State the effect of non-disjunction of chromosome during meiosis. 2
- (c) Write the function of endoplasmic reticulum and golgibodies. 1.5+1.5

*(Turn Over)*

2. (a) What are the common characteristics of signal transduction process in eukaryotes. 2
- (b) Discuss briefly the different states of cancer development. 3
- (c) When cells undergo apoptosis ? State in brief about the intrinsic and extrinsic pathway of apoptosis. 1+4
3. Write short notes on (any four) : 4×2.5
- (a) Gap junction ;
- (b) Embryonic stem cells and its application ;
- (c) Quorum sensing in bacteria ;
- (d) Cyclin-CDKs ;
- (e) Cytoskeleton ;
- (f) Importance of meiosis.

**Group — B**

[Marks : 20]

Answer any two questions.

1. (a) What do you mean by DNA sequencing ? Write the principle of SANGER Method of DNA sequencing. Write the importance of DNA sequencing ?
- (b) Write about the different reaction components of PCR.

- (c) Write the general features of primer design in PCR.  
(1+3+2)+2+2

2. (a) What is cosmid vector ? Differentiate between plasmid and cosmid vector.
- (b) Write in brief about the process of isolation and selection of suitable gene of interest codes for known specific proteins.
- (c) State the importance of linker and adapter.
- (d) What do you mean by shuttle Vector ?  
(2+2)+3+2+1

3. Write short notes on the following (any four) : 4×2.5
- (a) RFLP ;
- (b) DNA ligase ;
- (c)  $\lambda$  phage vector ;
- (d) Southern blotting ;
- (e) Ti plasmid and T-DNA ;
- (f) Pyrosequencing.
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