Use Separate Answer Script for each Group

M.Sc. Examination, 2017
Semester-II
Botany
Course – MBC-21

Time: 3 Hours **Full Marks: 48**

Questions are of value as indicated in the margin

Group-A (Cytology)

Answer *any three* questions

1. Write short notes on: 2×4=8
   a) Nuclear lamina
   b) Lampbrush chromosome
   c) NOR
   d) SINES and LINES
2. With suitable diagram outline the ultrastructure of nuclear pore complex (NPC). What are the various modifications occurring in histone N-terminal ends? How do these modifications affect the chromatin organization and gene expression? 4+2+2=8
3. What are the major chemical components of nucleoplasm? With suitable experimental evidences discuss the role of nucleolus in biogenesis of ribosome. 2+6=8
4. State the major molecular events occurring in various phases of cell cycle. Elucidate the molecular regulation of cell cycle. 3+5=8
5. Characterize the polytene chromosome found in *Drosophila melnogaster*. How do you microscopically visualize the gene activity in polytene chromosomes? 3+5=8

Group-B (Genetics)

Answer ***any three*** questions.

1. Write short notes on: 2x4= 8
   a) Recessive epistasis
   b) Phenotypic ratio of 1:4:6:4:1
   c) Human retro-transposons
   d) Recessive sex linked inheritance
2. What are the different properties of universal genetic code? State the contribution of Hargovind Khorana for deciphering of genetic code. 4+4=8
3. What are the various types of DNA damages? How are the mismatch base pairs recognised and repaired at molecular level? 4+4=8
4. What is meant by inducible and repressible system of gene regulation in prokaryotes? Write down the application of gene silencing. 4+4=8
5. Describe the mechanism of dosage compensation for X-linked gene in mammals. How does it differ from that of *Drosophila*? Distinguish between primary and secondary non-disjunction. 4+2+2=8
