Use Separate Answer Script for each group

M. Sc. Examination, 2018
Semester-II
Botany
Paper: MBC-21
(Cytology & Genetics)

Time: Three 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) NHC proteins
   b) Histone code
   c) Facultative heterochromatin
   d) Cyclin dependent kinase
2. What is NOR? Briefly outline the characteristic features of rRNA genes. Describe schematically the molecular processing of pre-rRNA molecule involving small nuclear RNA. 1+3+4=8
3. Elucidate the ultra structure of nuclear envelope. State the molecular mechanisms of trafficking of biomolecules across the nuclear pore complex. 3+5=8
4. What is satellite DNA? How is it detected experimentally? Briefly state the characteristics of moderately repeated DNA sequences. 2+4+2=8
5. Explain with suitable example the genome complexity existing in biological organisms. Describe the molecular organization of chromatin fiber giving emphasis on its higher order structure. 3+5=8

Group- B (Genetics)

Answer ***any three*** questions.

1. Write short notes on: 2x4=8
   a) Polygenic inheritance
   b) Chromatin remodelling
   c) Base excision repair
   d) Barr body
2. Write down the different types of gene interaction with suitable examples. 8
3. Briefly describe the repressible and attenuation system of gene regulation mechanism of tryptophan operon in prokaryotes. What is 'wobble hypothesis'? 6+2=8
4. How does P element in *Drosophila* differ from Ty element of yeast? What is insertion sequence? Briefly enumerate the cut and paste mechanism of transposition. 3+2+3=8
5. How does X linked dominant gene inheritance differ from X linked recessive gene inheritance? Briefly describe the various types of chemical mutagens and their effect. 3+5=8

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