2019

(October)

BIOTECHNOLOGY

(Honours)

(Cell Biology and Genetics)

Marks : 56

Time : 3 hours

The figures in the margin indicate full marks for the questions

Answer Question No. **1** which is compulsory and *any* **four** from the rest

1. Write briefly on the following : 2×6=12

(a) Epistatis and dominance

(b) Karyotype

(c) C-value paradox

(d) Telomeres

(e) Chromatin

(f) GERL

2. *(a)* Differentiate between peripheral membrane and integral membrane proteins. 4

(b) Discuss the aberration observed in Down's syndrome and Turner's syndrome. 7

3. How can mutations be detected in autosomes and *X*-chromosomes of *Drosophila*? Illustrate with suitable diagrams. 11

4. *(a)* Distinguish between test cross and back cross with suitable examples. 5

(b) Describe Mendel's laws of segregation citing suitable illustrations. 6

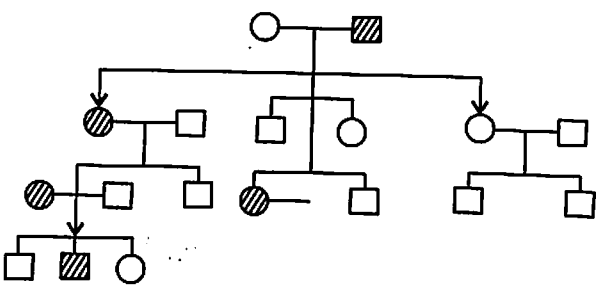
5. Define cell cycle. Explain the role of cdk and cyclins in mitosis as known in yeast and mammals. 2+9=11

6. What is cytoplasmic inheritance? Describe the process of conversion of a sensitive to killer strain of *Paramecium*. 2+9=11

7. What is crossing-over? How is meiosis related to this phenomenon? Explain the formation of synaptonemal complex with diagrams. 2+2+7=11

(Continued)

8. *(a)*



The pedigree shown above reflects the inheritance of a rare genetic condition in one family. What is the most likely mode of inheritance? Explain. 7

(b) Differentiate between inhibitory and pleiotropic genes. 4

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