S4BSc Sem III

Code - 53498 Botany Paper - II

Oct 2018

SET-I: Solution

Q.1 (A) Choose the correct option from the following and rewrite the sentence. **1 each**

i) Mitochondrion
ii) Functional state
iii) Protein
iv) Z
v) Paracentric
vi) X- Chromosome
vii) Sex-Linked
viii) S- phase
ix) DNA polymerase I
x) Operon

Q.1 (B) Answer the following in one or two sentences: **2m each**

i) Cytokinesis- Definition
ii) Butterflies, Moth
iii) Significance of cytoplasmic male sterility: Hybrid seed production
iv) Peroxisome: Definition Functions of Glyoxysomes
v) Central Dogma: Heterocatalytic function of DNA in two steps namely transcription and translation

Q.2 Answer any two of the following:

i) Cell cycle: Definition **1m**
Generation time **1m**
Interphase (G_1 Phase, S phase, G_2 phase) **6m**
M phase/ mitotic phase **2m**

ii) m-RNA structure: Definition of m-RNA **1m**
Structure with diagram **6m**
Function **3m**

iii) Structure of DNA: (Double helix, Deoxyribose sugar, phosphate group, nitrogenous bases, nucleotide, nucleoside, types of bonds) **6m**
A &B DNA: Description **4m**

iv) Meiosis –II: Prophase-II **2m**
Metaphase-II **2m**
Anaphase-II **2m**
Telophase-II **2m**
Cytokinesis **2m**

Q.3. Answer any two of the following:

i) Deletions: Definition **1m**
Origin **1m**
Cytological significance **2m**
Genetic significance (1 example each from plants, animals and humans) **6m**

ii) [illegible] Definition sex linked inheritance - 2
Colourblindness in man **8m**

[illegible] 2m

iii) Sex determination in heterogametic females:

ZW-ZZ mechanism **5m**
ZO-ZZ mechanism **5m**

iv) Chloroplast determined heredity: Description **2m**
Inheritance pattern in *Mirabilis jalapa* **8m**

Q.4. Answer any two of the following:

i) Meselson-Stahl experiment
Autocatalytic function of DNA- Semi-conservative mode of replication **2m**
Experiment explanation **8m**

ii) Mechanism of replication **10m**
Leading strand formation
Lagging strands formation

iii) Transcription in prokaryotes:
Description of transcription **1m**
Initiation **3m**
Elongation of polynucleotide chain **3m**
Termination **3m**

iv) RNA processing
5' Capping **2m**
Poly A addition **4m**
Splicing of mRNA **4m**

Q.5 Write short notes. (Any Four)

i) Peroxisomes:
Structure **2m**
Composition **3m**

ii) r-RNA: Structure **3m**
Function **2m**

iii) Translocations **5m**

iv) Genic balance theory **5m**

v) Streptomycin resistance in *Chlamydomonas* **5m**

vi) Eukaryotic RNA polymerases: RNA polymerase I **2m**
RNA polymerase II **2m**
RNA polymerase III **1m**