

(3 Hours)

[Total Marks : 100

- N.B. : (1) All the questions are compulsory.
 (2) Figures to the right indicate full marks.
 (3) Draw neat and labelled diagrams wherever necessary.

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1. (A) Choose the correct option from the following :

- (a) The dark reaction of the Photosynthesis takes place in _____.
- | | |
|---------------------------------|----------------------------|
| (i) Grana of chloroplast | (ii) Stroma of chloroplast |
| (iii) Membrane of mitochondrion | (iv) Lysosomes |
- (b) Middle lamella of plant cell wall is mainly composed of _____.
- | | |
|---------------------|-------------|
| (i) Cellulose | (ii) Pectin |
| (iii) Hemicellulose | (iv) Lignin |
- (c) Cell wall is absent in _____.
- | | |
|---------------------------------|------------------------|
| (i) Both plant and animal cells | (ii) Animal cells |
| (iii) Plant cells | (iv) none of the above |
- (d) Terrestrial ecosystems occupy _____ of earth's surface.
- | | |
|------------|-----------|
| (i) 28 % | (ii) 17 % |
| (iii) 50 % | (iv) 30 % |
- (e) The term ecosystem was coined by _____ in 1935.
- | | |
|----------------------|----------------|
| (i) Tansley | (ii) Odum |
| (iii) Earnst Haeckel | (iv) Philipson |
- (f) The sequence of transfer of food energy from its source, through series of organisms with repeated stages of eating and being eaten, is known as _____.
- | | |
|------------------|---------------------|
| (i) Ecosystem | (ii) Food pyramid |
| (iii) Food chain | (iv) Food flow rate |
- (g) A cross between two individuals with one pair of contrasting characters is called _____.
- | | |
|----------------------|-----------------------|
| (i) Test cross | (ii) Monohybrid cross |
| (iii) Dihybrid cross | (iv) Back cross |

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(h) In recessive epistasis, the Mendel's dihybrid ratio of 9:3:3:1 is changed to _____.

(i) 9:3:4

(ii) 15:1

(ii) 9:7

(iv) 9:6:1

(i) When a F_1 individual is crossed with pure recessive parent, it is called as _____.

(i) Back cross

(ii) test cross

(ii) reciprocal cross

(iv) monohybrid cross

(j) Which cross would best illustrate Mendel's Law of segregation ?

(i) $TT \times tt$

(ii) $Hh \times hh$

(ii) $Bb \times Bb$

(iv) $rr \times rr$

1. (B) Answer the following in one sentence

(a) Plasmodesmata

(b) Structural Proteins

(c) Test Cross

(d) Heterozygote

(e) Eutrophication

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2. Answer any two from the following :

(a) Describe bilipid layered model of Plasma membrane to explain its Ultrastructure. Add a note on its function.

(b) Describe the Ultrastructure and function of Endoplasmic reticulum.

(c) Describe the structure and chemical composition of the cell wall.

(d) Explain the structure of plant cell in detail.

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3. Answer any two from the following :

(a) What do you mean by ecosystem ? Describe any one type of Ecosystem.

(b) What are energy flow models. Explain any one in detail.

(c) Explain in brief, biotic and abiotic components of ecosystem.

(d) What is a food chain ? Explain different types of food chains.

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4. Answer any two from the following :

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- (a) Define epistasis. Explain duplicate recessive epistasis citing suitable example.
- (b) What are multiple alleles ? Explain the same with reference to inheritance of blood groups in man.
- (c) Explain dihybrid ratio with suitable example.
- (d) In summer squash the gene W is epistatic and produces white coloured fruits whenever present in homozygous or heterozygous dominant form WW or Ww. The gene Y produces coloured fruits, yellow colour, when present in dominant form YY or Yy. Homozygous recessive y (yy) produce green coloured fruits. What will be the phenotype and genotype of the parents and progeny of the following crosses, also give the phenotypic ratio.

(i) Ww Yy x WWYY

(ii) wwYy x wwyy

5. Write short notes (any four)

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- (a) Prokaryotic Cell
 - (b) Lipids in Plasma membrane
 - (c) Laws of thermodynamics
 - (d) Pyramid of biomass
 - (e) Intermediate inheritance
 - (f) Test cross and Back cross
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