

Q.P. Code :01694

[Time: 2 $\frac{1}{2}$ Hours]

[Marks:75]

Please check whether you have got the right question paper.

- N.B:
1. All questions are compulsory.
 2. Figures to the right indicate full marks.
 3. Draw neat labelled diagrams wherever necessary.
 4. Use of simple calculator is allowed.

Q.1) Attempt **any two:** 15

- a) What are amino acids? Classify them based on their polarity and charge on R groups.
- b) What are enzymes? Explain their characteristics and mode of action.
- c) What is enzyme inhibition? Describe the various types of enzyme inhibitions.
- d) With reference to Nitrogen metabolism in higher plants explain:
 - i. Amination reaction
 - ii. Nitrogenase

Q.2) Attempt **any two:** 15

- a) What are base analogs? Explain how a transition mutation occurs with 5BU.
- b) What is the molecular basis of Albinism and PKU?
- c) Describe Bateson and Punnett's experiments to explain the phenomenon of coupling and repulsion.
- d) In Chinese Primrose, grey coloured flowers (g) are recessive to blue flowers (G), red stigma(r) is recessive to green stigma (R) and long style (l) is recessive to short style (L). Test cross of F_1 hybrids gave the following progeny:

gRL - 27	gRI - 427
grl - 85	GRI - 95
GrL - 402	GRL - 960
grl - 977	Grl - 27

- i. Mention types of cross overs and parental phenotypes.
- ii. Calculate cross over percentage frequency of given genes.
- iii. Construct a genetic map to show gene sequence.

Q.3) Attempt **any two:** 15

- a) With reference to nucleic acid database explain DDBJ, EMBL and Gen Bank.
- b) Give an account of comparative modelling for protein analysis.
- c) What are the different sections of a typical database record?
- d) Explain phylogenetic analysis. How does it help in commenting on evolution between organisms?

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- Q.4) Attempt **any two:** 15
- a) Define antioxidants. Discuss the role of SOD and Vitamin E as antioxidants.
 - b) What are free radicals? How do they affect the body? Enlist the sources and effects of any two free radicals.
 - c) What are the raw materials used for preparation of herbal shampoo and herbal face mask? Explain the role of each raw material.
 - d) Discuss the role of any three plants used in herbal hair dye and herbal bath oil.
- Q.5) Attempt **any three:** 15
- a) Michaelis-Menton equation
 - b) PIR
 - c) Active sites and allosteric sites
 - d) Suppressor mutations
 - e) Structure of cellulose
 - f) Current status of herbal cosmetic industry in India.