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Botany (Hons.) Paper-V

Answer five questions, in which Q.No. 1 is compulsory.

1. Select the most appropriate answer of the following :
 - (a) DNA and RNA are :
(i) Base (ii) Sugar (iii) Acid (iv) Salt
 - (b) The binding of ligands (i.e. substrate or co-enzymes) with enzyme is :
(i) Specific (ii) Reversible
(iii) With breakage and formation of covalent bonds
(iv) All of the above
 - (c) The crown gall is caused by :
(i) Nostoc (ii) Azotobacter (iii) E. Coil (iv) Agrobacterium
 - (d) The enzymes required to obtain protoplast are :
(i) Cellulase and Proteinase (ii) Cellulase and Pectinase
(iii) Cellulase and Amylase (iv) Amylase and Pectinase
 - (e) Polymerase chain reaction was discovered by :
(i) F.H.C. Crick (ii) Karr Mullis
(iii) Barbara Mc Clintock (iv) M.W. Nirenberg
 - (f) Lysozyme is :
(i) Isomerases (ii) Hydrolases (iii) Ligases (iv) Lyases
 - (g) The lactose on hydrolysis yields :
(i) D-galactose and D-glucose (ii) D-glucose and D-mannose
(iii) D-fructose and D-galactose (iv) D-arabinose and D-fructose
 - (h) The amino-acids with positively charge R groups are :
(i) lysine, arginine and histidine (ii) Aspartate and glutamate
(iii) Serine, threonine and methionine
(iv) Phenylalanine, Tyrosine and tryptophan
 - (i) To obtain haploid plant, we culture :
(i) Entire anther (ii) Nucleus (iii) Embryo (iv) Apical bud
 - (j) Which one of these is not a restriction endonuclease ?
(i) Eco RI (ii) DNA ligase (iii) Hind III (iv) Taq II
2. Give an account of the mechanism of replication of DNA.
Or, Write an essay on recombination of DNA. LNMUonline.com
3. Write short notes on any four of the following :
 - (a) DNA polymerase (b) Nucleotide (c) Co-enzymes
 - (d) Mechanism of action of enzymes (e) Restriction endonuclease
4. Compare and contrast any four of the following :
 - (a) Nucleosides and nucleotides (b) Saturated and unsaturated fatty acids
 - (c) Monosaccharides and polysaccharides (d) Acidic and basic amino-acids (e) Transcription and translation (f) Southern and Northern blotting
5. Briefly describe the Operon model for the regulation of gene activity.
6. Describe Maxam and Gilbert and Sanger's techniques for DNA sequencing.
7. Define any four the following terminologies in not exceeding 10 lines :
 - (a) Totipotency (b) Organogenesis (c) Somatic hybridization (d) Somaclonal variation (e) Micropropagation.
8. Elaborate the various methods of gene delivery.
9. Comment on the salient features of any four of the following :

(a) Storage and modification of fats and lipids LNMUonline.com

(b) interrupted gene in eukaryotes (c) RNA splicing (d) Transgenic plants (e) Cloning vectors (f) r-RNA

10. Distinguish between any four of the following pairs :

(a) Positive and negative gene regulations (b) Inducible and repressible systems

(c) Genomic and C-library (d) RFLP and RAPD

(e) m-RNA and t-RNA (f) Polar and non-polar amino-acids

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