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AAM-428

Seat No. _____

B. Sc. (Sem. III) Examination

October / November - 2016

Biotechnology : Paper - IV

(Genetics & Analytical Techniques)

Time : Hours] [Total Marks : **70**

1 Attempt the entire question : **10**

(a) MCQ :

(1) RR (Red) Antirrhinum is crossed with white (WW) one. Offspring RW are pink. This is an example of

(a) dominant-recessive
(b) incomplete dominance
(c) hybrid
(d) supplementary genes.

(2) An organism with two identical alleles is

(a) dominant
(b) hybrid
(c) heterozygous
(d) homozygous.

(3) In pea plants, yellow seeds are dominant to green. If a heterozygous yellow seeded plant is crossed with a green seeded plant, what ratio of yellow and green seeded plants would you expect in F1 generation?

(a) 9 : 1
(b) 1 : 3
(c) 3 : 1
(d) 50 : 50

(4) Phenotype of an organism is the result of
   (a) genotype and environment interactions
   (b) mutations and linkages
   (c) cytoplasmic effects and nutrition
   (d) environmental changes and sexual dimorphism

(5) Mutations which occur in body cells which do not go on to form gametes can be classified as :
   (a) auxotrophic mutations
   (b) somatic mutations
   (c) morphological mutations
   (d) oncogenes

(6) Polyploidy refers to :
   (a) extra copies of a gene adjacent to each other on a chromosome
   (b) an individual with complete extra sets of chromosomes
   (c) a chromosome which has replicated but not divided
   (d) multiple ribosomes present on a single mRNA

(7) Inheritances of skin colour in humans is an example of
   (a) point mutation
   (b) polygenic inheritance
   (c) codominance
   (d) chromosomal aberration

(8) Beer's law is strictly observed only with truly _____radiation.
   (a) Monochromatic
   (b) Polychromatic
   (c) None of these

(9) A calorimeter is used to:
   (a) Determine the heat of a reaction
   (b) Determine the heat given off/ absorbed during some process
   (c) Store the heat from a chemical reaction.
   (d) none of these

(10) Thin layer chromatography is
   (a) a partition chromatography
   (b) electrical mobility of ionic species
   (c) adsorption chromatography
   (d) none of the above

(b) Do as directed : **5**

(1) Define Chromatography

(2) Give full name of NMR and AAS

(3) Give the example of point mutation disease in Human.

(4) What is gene?

(5) Which disease occur when 47 chromosomes are present in person ?

2 Write in detail : (any **five**) **25**

(1) Explain the complete and incomplete dominance of gene?

(2) What is linkage? Explain linkage with example.

(3) Explain Chromosomal aberration in human.

(4) Write a note on Mutation with its example

(5) Explain the principle of U.V. spectrophotometer with application

(6) Explain principle of partition chromatography with its example.

(7) Write an application of spectroscopy in Biotechnology.

3 Write answers in brief : (any **three**) **30**

(1) Explain the discovery of Mendel's in genetics

(2) What is mutation? Explain inborn metabolic error in human.

(3) Write a note on NMR with its application and mechanism.

(4) Write a note on Column chromatography with its application

(5) Write a note on AAS.
