

[16 / A-42]

Sardar Patel University
 SYBSc --Biotechnology Course: US04CBIT02
 4th Semester examination-2016
 07/04/2016 (Thursday)
 Paper title---Applications of Biotechnology-II

Total Marks:70

Time: 10.30am to 1.30pm

Q1.MCQs attempt all ---Marks [1X10=10]

i) The ratio of phenotypes in F₁ of a dihybrid cross is

- [A] 3:1 [B] 1:2:1
 [C] 9:3:3:1 [D] 2:1

ii) How many different types of gametes can be produced by an individual with the genotype AaBb?

- [A] 2 [B] 4 [C] 6 [D] 8

iii) In a test cross, an individual is

- (A) Crossed to homozygous recessive parent
 (B) Crossed to homozygous dominant parent
 (C) Crossed to heterozygous parent
 (D) Selfed

iv) Inheritance of plastids in plant is a good example of

- (A) Mendelian inheritance [B] Cytoplasmic inheritance
 [C] Polygenic inheritance [D] Epistasis

v) For getting virus free plants the technique adopted is

- [A] Anther culture [B] Pollen culture
 [C] Meristem culture [D] Embryo culture

vi) . In blue/white selection of recombinants, blue colonies produced in the presence of X-gal contain:

- [A] Plasmid DNA only [B] Foreign DNA only
 [C] Both foreign DNA and plasmid [D] Neither plasmid nor foreign DNA

vii) Pomato a hybrid between potato and tomato is achieved through?

- [A] Grafting [B] Protoplast fusion
 [C] Conjugation [D] Recombinant DNA technology

viii) An haploid plant can be made homozygous diploid by treating with

- [A] Nitrogen mustard [B] Nitrous acid
 [C] Colchicine [D] Acridine orange

ix) When an enucleated protoplast is fused with a nucleated protoplast the hybrid is called

- [A] Homokaryon [B] Heterokaryon
 [C] Somatic hybrid [D] Cybrids

x) The transfer of foreign DNA into the bacterial cells are called

- [A] Transduction [B] Transformation
 [C] Conjugation [D] Translocation

Q2 Short questions—attempt Any Ten. Each carries 2marks (2X10=20)

- i. Define the law of independent assortment.
 - ii. Enlist the reasons of Mendel's success.
 - iii. Define and explain the term competent cells.
 - iv. Explain the term osmoticum.
 - v. Define embryo rescue and give its significance.
 - vi. Define heterokaryon, homokaryon, symmetric hybrid and asymmetric hybrid.
 - vii. Explain the term r-DNA.
 - viii. Define cybrid and give its significance
 - ix. Explain the term insertional inactivation.
 - x. Define somatic embryo and synthetic seeds.
 - xi. Define androgenic haploid and homozygous diploid.
 - xii. Define and explain the term test cross.
- Q3.** Give Mendel's laws. For a cross between homozygous individuals with two pairs of non linked alleles, AABB X aaBB, calculate the genotypic and phenotypic ratios in F₁ and F₂ generation with the help of Punnet square board. [10]
- OR**
- Q3** a) Explain law of segregation with a suitable example. [05]
b) Discuss cytoplasmic inheritance with a suitable n example. [05]
- Q4.** a) How competent cells are prepared in laboratory, explain? [05]
b) Explain the mechanism of blue and white selection in detail. [05]
- OR**
- Q4** a) How will you transfer r-DNA in to competent cell of bacteria, explain? [05]
b) Explain the method of constructing a recombinant for cloning. [05]
- Q5.** a) Describe meristem culture in detail. [06]
b) Explain any one method used for pollen culture. [04]
- OR**
- Q5.** a) Describe somatic embryogenesis in detail. [06]
b) Give the significance of haploids. [04]
- Q6.** a) Enlist various methods use to screen fused protoplasts, explain any one method. [05]
b) Write a short note on cybrids and its significance. [05]
- OR**
- Q6** a) Give all methods to isolate protoplasts. [05]
b) Explain the mechanism of protoplast fusion and give the significance of somatic hybrid. [05]

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