AAG-003-001611 Seat No. _____

B. Sc. (Sem. VI) (CBCS) Examination

April/May – 2016

Botany : Paper - 601 (B)

(Genetics, Mole. Bio., Biotech., Bioinfo. & Anatomy) (New Course)

Faculty Code : 003
Subject Code : 001611

Time : $2\frac{1}{2}$ Hours] [Total Marks : **70**

Instructions : (1) Write answers of all questions in main answer book.

(2) Draw neat and labelled diagrams wherever necessary.

(3) Figures to the right hand side indicate full marks for the questions.

1 Choose correct answer : **20**

(1) An organism is found to contain four naploid genomes derived from two separate species this organism is called

(A) Auto tetraploid (B) Allo tetraploid

(C) Amphi tetraploid (D) Tetraploid

(2) Picking up plants with superior phenotype for further propagation is called

(A) Pure line selection (B) Mass selection

(C) Hybrid vigour (D) Introduction

(3) Cytoplasmic inheritance is also called maternal inheritance because it is

(A) Without sexual reproduction

(B) Only female parent takes part in multiplication

(C) Most of the cytoplasm of the zygote is provided by ovum

(D) All the above

(4) The term 'gene' refers to

(A) Sequence of amino acids in protein

(B) A linkage group

(C) A part of RNA

(D) A portion of DNA

(5) Restriction enzymes are to

(A) Cut DNA at certain places

(B) Synthesise DNA

(C) Synthesise RNA

(D) Synthesise ATP

(6) Plasmids are used in genetic engineering because they are

(A) Easily available

(B) Able to replicate

(C) Able to integrate with host cromosome

(D) Inert

(7) Fragments of DNA formed after treatment with endonucleases are separated by the technique

(A) Polymerase chin reaction

(B) Southern blotting

(C) Colony hybridisation

(D) Electrophoresis

(8) Inducer molecule induces the gene expression by binding with

(A) Repressor (B) Promoter

(C) Operator (D) Regulatory gene

(9) Modern biotechnology is based on

(A) Protoplast fusion (B) Tissue culture

(C) Recombinant proteins (D) Genetic engineering

(10) Trangenic plants are the ones

(A) Grown on artificial medium after hybridisation in the field

(B) Produced after protoplast fusion in artifical medium

(C) Produced by somatic embryo on artifical medium.

(D) Generated by introducing foreign DNA into a cell and regenerating plant from the cell

(11) Which of the following controls pH change in M.S. media?

(A) Hydrochloric acid (B) Sodium hydroxide

(C) Both (A) and (B) (D) None of the above

(12) Which enzyme is used in manufacture of detergents for removing proteinaceous stains from the cloth ?

(A) Alcalage (B) Liapase

(C) Invertase (D) Lactase

(13) Which option allows us to get an entries in one data base ?

(A) Together (B) Link

(C) Joint (D) Separate

(14) The sequences used in bio informatics is

(A) DNA sequences (B) RNA sequences

(C) Protein sequences (D) All the above

(15) The most common molecular visualization tool is

(A) RASMOL (B) SCOP

(C) CATH (D) GSDB

(16) The most common from end system to all the data bases maintained by NCBI is

(A) BLAST (B) FASTA

(C) ENTREZ (D) DDBJ

(17) Which of the following plant cells lack nuclei at maturity ?

(A) Root hairs (B) Xylem parenchyma

(C) Sieve tube (D) Collenchyma

(18) A vascular bundle in which phloem is embeded in xylem is

(A) Collateral (B) Bi-collateral

(C) Amphicribal (D) Amphivasal

(19) Intra fassicular cambium is situated

(A) in between the V.B. (B) inside the V.B.

(C) Outside the V.B. (D) in pith

(20) What is used to take sections in ultra microtome ?

(A) Steel blade

(B) Razor

(C) Glass knife or diamond knife

(D) None of these

2 (a) Answer in short : (any three) **6**

(1) Explain : Procedure for mass selection.

(2) Describe : pBR322 as a vector.

(3) Write note on : FASTA.

(4) Explain : Block preparation.

(5) Write note on : Cytoplasmic inheritance in yeast.

(6) Discuss : Companion cells.

(b) Answer in brief : (Any three) **9**

(1) Explain the case of cytoplasmic inheritance in mirabilis jalapa.

(2) Explain sticky end ligation method for the joining of foreign DNA fragment to a cloning vector.

(3) Write note on : Insect resistant transgenic plants.

(4) Discuss the role of bio informatics in Gene therapy.

(5) Explain formation of cambial ring in dicot root.

(6) Describe application of Tissue culture in crop improvement.

(c) Answer in detail : (Any two) **10**

(1) Explain the essential features of modern concept of genes.

(2) Write essay on : Restriction endonuclease.

(3) Describe any two biological database.

(4) How extraction of enzyme is done ? Explain.

(5) Explain with neat and labelled diagram : The anomalous secondary growth in Dracaena stem.

3 (a) Answer in short : (Any three) **6**

(1) Give the disadvantages of mass selection.

(2) Explain : Characteristic features of an ideal plasmid vector.

(3) Write use of enzymes in food industry.

(4) What is bio informatics ?

(5) Explain with diagram : Parenchyma.

(6) Describe : Freezing microtome.

(b) Answer in brief : (Any three) **9**

(1) Write note on : Autopolyploids.

(2) Explain : DNA Cleavage style.

(3) Describe : Advantages of Transgenic plants.

(4) Write notes on : Gene scan.

(5) Explain : Interxylary phloem.

(6) Write note on : Staining.

(c) Answer in detail : (Any two) **10**

(1) Discuss : Allopolyploidy in detail with example.

(2) Explain the mechanism of the regulation of gene expression in lac-operon in E.coli.

(3) Describe the preparation of M.S. medium in tissue culture.

(4) Explain : Protein functional analysis tools.

(5) Enumerate the process of sencondary growth in sun-flower stem.