AAG-003-001621 Seat No. _____

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

March / April - 2016

BT-601 : Prin. of Biotec. Applied to Plants & Animals

Faculty Code : 003
Subject Code : 001621

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

Instructions : (1) All questions are compulsory.
(2) Figures at right side indicates marks of the question.

1 There are 20 multiple choice questions (MCQs). Choose the correct option : **20**

(1) Protoplasts can be produced from suspension cultures, callus tissues or intact tissue by enzymatic treatment with

(A) cellulolytic enzymes

(B) pectolytic enzymes

(C) both cellulolytic and pectolytic enzymes

(D) proteolytic enzymes

(2) Which of the following statements are true for agrobacterium mediated ger transfer ?

(A) Vir genes are essential for gene transfer

(B) T-DNA borders are essential for gene transfer

(C) both (A) and (B)

(D) none of these

(3) Introduction of DNA into cells by exposing to high voltage electric pulse is

(A) Electrofusion (B) Electrofision

(C) Electrolysis (D) Electroporation

(4) Which of the following is example of plant secondary metabolites?

(A) Alkaloids (B) Insulin

(C) Vitamin B12 (D) Palmitic acid

(5) In a callus culture

(A) increasing level of cytokinin to a callus induces shoot formation and increasing level of auxin promote root formation

(B) increasing level of auxin to a callus induces shoot formation and increasing level of cytokinin promote root formation

(C) auxins and cytokinins are not required

(D) only auxin is required for root and shoot formation

(6) Plant Tissues Culture technique is a redefined method of which of the following?

(A) Hybridization

(B) Selection

(C) Asexual reproduction

(D) Vegetative Propagation

(7) The phenomenon of the reversion of mature cells to the meristematic state leading to the formation of callus is known as

(A) Redifferentiation (B) Dedifferentiation

(C) Totipotency (D) None of these

(8) In a experiment of plant cell culture we have to create the plant having pure diploid homozygous line, we should do

(A) Endosperm culture (B) Embryo culture

(C) Haploid culture (D) somatic emryogenesis

(9) For old tissue which one is most suitable for tissue disaggregation-

(A) Versin (B) Colleganase

(C) Trypsin (D) Pepsin

(10) The removal or replacement of tumor causing genes from Ti plasmid is termed as

(A) gene replacement (B) disarming

(C) insertional inactivation (D) gene displacement

(11) Which of the following is considered as the disadvantage of conventional plant tissue culture for clonal propagation?

(A) Multiplication of sexually derived sterile hybrids

(B) Less multiplication of disease free plants

(C) Storage and transportation of propogates

(D) All of the above

(12) Agrobacterium based gene transfer is efficient

(A) only with dicots

(B) only with mpnpcots

(C) with both monocots and dicots

(D) with majority monocots and few dicots

(13) _____ is an excised piece of leaf or stem tissue used in micropropagation.

(A) Microshoot (B) Scion

(C) Explants (D) Medium

(14) What are the benefits of micropropagation or clonal propagation?

(A) Rapid multiplication of superior clones

(B) Multiplication of disease free plants

(C) Multiplication of sexually derived sterile hybrids

(D) All of the above

(15) For allogenic hemopoietic stem cell transplantation in children with hemoglobinopathies. Presently best source of stem cells is

(A) Bone marrow

(B) umbilical cord

(C) peripheral blood

(D) bone marrow & peripheral blood

(16) The first trial for the gene therapy of human had done on-

(A) Parkinson's disease

(B) SCID

(C) Lesch-nhyan syndrome

(D) Cystic fibrosis

(17) Superovulation is an

(A) increased ovulatory response by external hormonal therapy

(B) decreased ovulatory response by external hormonal therapy

(C) decreased ovulatory response by internal hormonal therapy

(D) increased ovulatory response by internal hormonal therapy

(18) Transgenic goats have been used to produce which of the following protein that is used for dissolving blood clots?

(A) Amyloid precursor protein

(B) $\alpha 1-$ anti trypsin (AAT)

(C) Casein

(D) A variant of human tissue-type plasminogen activator

(19) The method widely used for transforming invitro animal cell cultures that use lipid vescicles or liposomes

(A) lipotransformation

(B) liposome mediated transformation

(C) lipofection

(D) lipid mediated DNA transfer

(20) pH of culture medium is initially controlled by

(A) presence of CO_2

(B) presence of bicarbonate buffer

(C) addition of bases

(D) none of these

2 (a) Answer any three out of six : **3×2**

(a) Define synthetic seed

(b) Define plantibodies

(c) Explain totipotency

(d) Define molecular farming

(e) Define clonal propagation.

(f) Define cybrids.

(b) Answer any three out of **six** : **3×3**

(a) Write down the applications of pollen culture

(b) Write short note on Edible vaccine

(c) What are the applications of synthetic seed?

(d) Write short note on 'BT cotton'.

(e) What are importances of plant secondary metabolites?

(f) Draw the labelled diagram of Ti plasmid of *Agrobacterium tumefaciens*

(c) Answer any two out of five : **2×5**

(a) Write various methods of gene transfer in plants

(b) Describe different type of plant growth regulators and their functional role in plant tissue culture

(c) Write in detail about enzymatic method of protoplast isolation and purification

(d) Describe lay-out plan with requirements for a large-sized tissue culture facility.

(e) Write down the strategies for identification of hybrids in protoplast culture.

3 (a) Answer any three out of six : **3×2**

(a) Define stem cell.

(b) What is trypsinization ?

(c) What is primary cell culture ?

(d) Write the basic principle of cryopreservation

(e) What is chemically defined media ?

(f) What is somatic embryogenesis?

(b) Answer any three out of six: **3×3**

(a) Write the different strategies for Gene therapy

(b) What is Receptor mediated endocytosis?

(c) Describe any one bioreactor for animal cell culture.

(d) Write the important features of Stem cell

(e) Give an example of a selectable marker gene

(f) Explain ascetic techniques in animal cell culture

(c) Answer any two out of five: **2×5**

(a) Describe the disaggregation methods for tissue culture

(b) Give the detail account of application of Transgenic animal

(c) Write down the application of animal cell culture in research.

(d) Give a detailed account of physical method of DNA delivery

(e) Write the need of in vitro fertilization. Describe the protocol of in vitro fertilization.