



ਪੰਜਾਬ ਟੈਕਨੀਕਲ ਯੂਨੀਵਰਸਿਟੀ ਜਲੰਧਰ
PUNJAB TECHNICAL UNIVERSITY JALANDHAR

Max. Marks: 90

Time: 90 Mins.

Entrance Test for Enrollment in Ph.D. Programme

Important Instructions

- > Fill all the information in various columns, in capital letters, with blue/black ball point pen.
- > Use of calculators is not allowed.
- > All questions are compulsory. No negative marking for wrong answers.
- > Each question has only one right answer.
- > Questions attempted with two or more options/answers will not be evaluated.

Stream: Life Sciences

Discipline / Branch: Bio-Technology

Name

Father's name

Roll No.

Signature of the candidate

Signature of the invigilator

1. Generation of antibody diversity in vertebrate animals takes place through:
 - a) The presence of as many genes in the germ line as there are types of antibodies possible.
 - b) Infection with bacteria carrying antibody genes
 - c) Infection with viruses carrying antibody genes
 - d) Rearrangement of DNA in tissues that go on to produce antibodies
2. Arabidopsis is advantageous for plant genetic research because:
 - a) It is commercially important as a food crop
 - b) It is an endangered species
 - c) it is the closest to humans of any existing plant
 - d) It is a small plant with a small genome size which can be raised inexpensively
3. RFLP analysis is a technique that
 - a) Uses hybridization to detect specific DNA restriction fragments in genomic DNA
 - b) Is used to determine whether a transcribed in specific cells
 - c) Measures the transfer frequency of genes during conjugation
 - d) Is used to detect genetic variation at the protein level.
4. Positional cloning refers to:
 - a) using a selection procedure to clone
 - a) DNA
 - b) .Cloning a portion of a gene using PCR
 - c) Isolating a gene by PCR using primers from another species
- (d) Mapping a gene to a chromosomal region and then identifying and cloning a genomic copy of the gene from the region
5. Mitochondrial DNA is advantageous for evolutionary studies because:
 - a) It is inherited only through the female parent and thus evolves in a way that allows trees of relationship to be easily constructed
 - b) It is inserted into the X chromosome
 - c) It first appeared in humans and is not found in other animals
 - d) It evolves more slowly than the genes in the nucleus
6. Which of the following is the best method to determine bacteriophages concentration in a sample.
 - a) Spectrophotometry
 - b) Plaque assay
 - c) Copy assay number
 - d) Light microscopy
7. Insertional inactivation of a gene helps in
 - a) Identification of recombinant clones
 - b) Identification of deletion mutants
 - c) Identification of suppression mutants
 - d) Elimination of recombinant clones
8. The Southern blotting technique depends on
 - a) similarities between the sequences of probe DNA and experimental DNA
 - b) similarities between the sequences of probe RNA and experimental RNA

- c) similarities between the sequences of probe protein and experimental protein
 e) The molecular mass of proteins
9. Problems in obtaining large amounts of proteins encoded by recombinant genes can overcome by using
- BACS
 - Expression vectors
 - YACS
 - None of them
10. The first plant genome sequenced is
- Wheat
 - Rice
 - Maize
 - Barley
11. What is the normal role of restriction endonucleases in bacterial cells
- To degrade the bacterial chromosome into small pieces during replication
 - To degrade invading phage DNA
 - To produce RNA primers for replication
 - All the above
12. Infectious RNA particles without protein coat are
- Virion
 - Prion
 - Viroid
 - Virusoid
13. One principal function of complement is to
- Inactivate perforins
 - Mediate the release of histamine
 - Bind antibodies attached to cell surfaces and to lyse these cells
 - Phagocytize antigens
14. If the strand of DNA has 35 nucleotide how many phosphodiester bonds would exist
- 34
 - 35
 - 24
 - 70
15. A buffer is a mixture of
- Acid and Base
 - Weak acid and weak Base
 - Strong acid and its conjugate base
 - Weak acid and its conjugate base
16. Antibodies
- are carbohydrates
 - are made from alpha and beta chains
 - contain no carbohydrate
 - contain heavy and light chains
17. Which of the following immunoglobulins is present normally in plasma at the highest concentration?
- IgG
 - IgM
 - IgA
 - IgD
18. Agrobacterium based gene transfer is efficient
- Only with dicots
 - Only with monocots
 - With both monocots and dicots
 - With majority monocots and few dicots
19. Myoglobin is a protein with
- Primary Structure
 - Tertiary Structure
 - Quaternary Structure
 - Secondary structure
20. To differentiate self DNA from non self DNA, Self DNA should be
- Glycosylated
 - Carboxylated
 - Phosphorylate
 - Methylated.