

B.SC. BIOTECHNOLOGY
SEMESTER-3RD (REPEAT)
PLANT AND ANIMAL BREEDING
BBT-302

Duration: 3 Hrs.

Marks: 70

Part : A (Objective) = 20

Part : B (Descriptive) = 50

[PART-B : Descriptive]

Duration: 2 Hrs. 40 Mins.

Marks: 50

[Answer question no. One (1) & any four (4) from the rest]

1. Write short notes on the following –
(a) Artificial insemination
(b) Embryo transfer in farm animals. 5+5=10
2. Define stem cells. Discuss the properties and types of stem cells. 2+3+5=10
3. What do you understand by plant breeding? Why is it necessary to breed plants?
What are the basic steps in plant breeding? Mention the objectives of plant breeding 2+2+3+3=10
4. What do you mean by selection and domestication of plants? Mention specific characters
of plants. Which occurred due to domestication? What is biometrics? 2+2+4+2=10
5. What is germplasm? What do you understand by genetic erosion and gene bank?
What is gene pool? What are the types of gene pool? 2+3+2+3=10
6. What is asexual reproduction? What are the types of asexual reproduction? What
do you understand by self and cross pollination? 2+4+4=10
7. What are molecular markers? State the properties of an ideal marker system? What is
a dominant and co dominant molecular marker? 2+4+4=10
8. Briefly explain the following- RFLP, RAPD, AFLP, ASAP, Germplasm evaluation 2X5=10

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[PART-A : Objective]

Choose the correct answer from the following :

1X20=20

1. Stem cells are capable of
 - (a) self renewal,
 - (b) potency,
 - (c) both (a) and (b),
 - (d) none of the above.
2. In a developing embryo, stem cells can differentiate into
 - (a) ectoderm,
 - (b) endoderm,
 - (c) mesoderm,
 - (d) all of above
3. Where can scientists obtain stem cells?
 - (a) Only from an embryo,
 - (b) Only from tissues in the body ,
 - (c) Only from the brain
 - (d), From an embryo or tissues in the body.
4. Embryonic stem cells can differentiate into which types of cell?
 - (a) Only brain stem cells and specialized brain cells
 - (b) All types of specialized cells
 - (c) Only cells that can produce insulin
 - (d) Only cells that can produce artificial skin
5. What are the roles of stem cells in our bodies?
 - (a) We are not sure what roles stem cells play in the body
 - (b) They produce new specialized cells to replace cells that die or are used up
 - (c) They fight against infections
 - (d) They perform specialized roles in the body (e.g. produce insulin, transmit signals in the nervous system, ...)
6. Louise Brown, the first test-tube baby, was conceived using which assisted reproductive technology?
 - (a) artificial insemination
 - (b) intra-cytoplasmic sperm injection
 - (c) in vitro fertilization
 - (d) gamete intra-fallopian transfer
7. Which assisted reproductive technology places collected oocytes and sperm in the woman's fallopian tubes?
 - (a) artificial insemination
 - (b) intra-cytoplasmic sperm injection
 - (c) in vitro fertilization
 - (d) gamete intra-fallopian transfer
8. Oocytes can be frozen in liquid nitrogen. At which phase of the cell cycle are these cells at the time of freezing?
 - (a) meiosis, metaphase I,
 - (b) meiosis, metaphase II,
 - (c) mitosis, metaphase,
 - (d) meiosis or mitosis, interphase.
9. The changes made in plants by plant breeding are
 - (a) permanent
 - (b) temporary
 - (c) partial
 - (d)alternating between generations
10. Plants are the primary producers in an
 - (a) ecosystem
 - (b) farm
 - (c) forest
 - (d) grassland
11. Which process is required to generate seedlessness in plants
 - (a) diploidy
 - (b) tetraploidy
 - (c) triploidy
 - (d) hexaploidy
12. Technique used to create homozygous diploid
 - (a) Haploidy
 - (b) Diploidy
 - (c) Triploidy
 - (d) tetraploidy
13. Who is known as the father of green revolution
 - (a) Norman Borlaug
 - (b) Hargovind Khorana
 - (c) Ratan Tata
 - (d) M S Swaminathan
14. Who developed the binomial nomenclature
 - (a) Carl Linnaeus
 - (b) Charles Darwin
 - (c) Alfred Wallace
 - (d) Thomas Knight
15. The theory of evolution is credited to
 - (a) Charles Darwin
 - (b) Luther Burbank
 - (c) D N Duvick
 - (d)E M East
16. Gregor Mendel is regarded as the founder of
 - (a) Genetics
 - (b) Evolution
 - (c) Molecular Biology
 - (d) Immunology
17. Which of the following is a marker system
 - (a) RFLP
 - (b) cDNA
 - (c) EDTA
 - (d) Ponceau A
18. The science which deals with application of statistical procedures for study of biological problems
 - (a) Biometry
 - (b) Statistics
 - (c) Biostatistics
 - (d)Biochemistry
19. The phenomenon of development of embryos from embryo sac without pollination is
 - (a) emasculation
 - (b)parthenogenesis
 - (c)embryony
 - (d)apomixes
20. Reproduction which does not involve fusion of male and female gametes
 - (a) sexual reproduction
 - (b)asexual reproduction
 - (c) budding
 - (d) vegetative reproduction
