

**B.Sc. BIOTECHNOLOGY**  
**SIXTH SEMESTER (SPECIAL REPEAT)**  
**ANIMAL BIOTECHNOLOGY**  
**BBT-604**

(Use separate answer scripts for Objective & Descriptive)

Duration : 3 hrs.

Full Marks : 70

**[ PART-A : Objective ]**

Time : 20 min.

Marks : 20

**Choose the correct answer from the following:**

**1 × 20 = 20**

- The physiological process of aging can be studied in a
  - Youth mouse
  - Mouse with low body temperature
  - αMUPA mouse
  - All of the above
- .....virus carry enzyme .....to infect cells because their genome is RNA.
  - Retro; reverse transcriptase
  - Baculo; polymerase
  - Class I; invertase
  - All of the above
- Ultrasonication is used for transient transfection.
  - True
  - False
  - Maybe
  - Can't say
- In vector recombinant vaccine, plasmid insertion vector incorporates its genes into ..... virus genome at a place that encodes for .....enzyme.
  - Baculovirus; HbSAg
  - Vaccinia; HbS
  - Vaccinia; thymidine kinase
  - Baculovirus; TK
- Stem cells present in the inner cell mass of blastocyst are
  - Totipotent
  - Pluripotent
  - Multipotent
  - All of the above
- In IVF during ovarian stimulation, trigger shot is given by
  - LH
  - hCG
  - Both 1 and 2
  - FSH
- Biolistics is also known as
  - Microparticle carrier
  - Gene gun
  - Particle bombardment
  - All of the above
- Recombinant Factor VIII protein is industrially produced in
  - E. coli cells
  - Hamster kidney cells
  - Embryonic stem cells
  - None
- Cell lines have not been established from avian tissues
  - True
  - False
  - Maybe
  - Can't say
- Most common method of semen collection from bull is
  - AV
  - Artificial vagina
  - Both 1 and 2
  - Electroejaculation

11. Human Genome Project was published in
  - a. 2000
  - b. 1999
  - c. 2002
  - d. 2001
12. Hepatitis vaccine, a .....vaccine, is produced by cloning .....gene in yeast cells.
  - a. Attenuated; HbS
  - b. Subunit; HbS
  - c. Subunit; HbSAg
  - d. Attenuated, HbSAg
13. HeLa cell line is
  - a. Suspension cell line
  - b. Anchored cell line
  - c. Continuous cell line
  - d. Both 1 and 3
14. TPA is a thrombolytic agent
  - a. True
  - b. False
  - c. Maybe
  - d. Can't say
15. Which of these statements regarding stem cells are FALSE?
  - a. They are blank cells
  - b. Practically divide in unlimited
  - c. Found in embryos and adults
  - d. All
16. ....is added to anchored cell lines for.....
  - a. Trypsin; subculturing
  - b. Collagenase; subculturing
  - c. Collagenase; passaging
  - d. None
17. Production of biopharmaceuticals is branch of .....biotechnology.
  - a. Medical
  - b. Industrial
  - c. Recombinant
  - d. All of the above
18. Most common method opted to suppress menstrual cycle in females for IVF is
  - a. OCP
  - b. Oral contraceptive
  - c. Both 1 and 2
  - d. Subcutaneous injection
19. ....can solve the problem food scarcity in the world.
  - a. Super pig
  - b. SCID mouse
  - c. Xenotransplanters
  - d. None of the above
20. Non viable cells get colored by
  - a. Trypan blue
  - b. Coomassie blue
  - c. Bromophenol blue
  - d. Giemsa

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**( PART-B : Descriptive )**

Time : 2 hrs. 40 min.

Marks : 50

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

- |   |                   |
|---|-------------------|
| 1. a) What are stem cells? Write about their important features. Give the unique properties of ESC and ASC.   | 1+2+2=5           |
| b) Differentiate between a stem cell and progenitor cell. Give the different classifications of stem cell. Draw types of stem cells during development.   | 2+2+1=5           |
| 2. Differentiate between:<br>a) Conventional and recombinant vaccines<br>b) Biological and conventional drugs   | 5+5=10            |
| 3. a) What are the biological approaches of gene transfer in animal cells?<br>b) Explain in brief the working of gene gun and electroporation.  | 2<br>4+4=8        |
| 4. a) What are hybridomas? Describe the process of production and selection of hybridomas.<br>b) Differentiate between monoclonal and polyclonal antibodies. How is recombinant erythropoietin produced?                                      | 1+5=6<br>2+2=4    |
| 5. a) Describe the different process of semen collection in bulls. How is it packaged for transportation?<br>b) How is heat detected in a cow and why is it important? Briefly write about the factors affecting conception in cows after AI. | 3+2=5<br>2+3=5    |
| 6. Expand ICSI. What are ZIFT and GIFT and the difference between? Describe the process of IVF with all the steps in detail.  | 1+2+7=10          |
| 7. a) What is Dolly? Explain the process of its production? Why pigs are used as xenotransplanters?<br>b) Diagrammatically explain the production of cholera vaccine.   | 1++3+1=5<br>2+3=5 |
| 8. Write short notes on:<br>a) Instruments of cell culture lab<br>b) Cell culture media   | 5<br>5            |

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