

<b>Reg. No.</b>																			
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**B.Tech. DEGREE EXAMINATION, NOVEMBER 2023**  
Sixth Semester

**18BTO105T – ANIMAL MODELS FOR RESEARCH**

*(For the candidates admitted from the academic year 2020-2021 to 2021-2022)*

**Note:**

- (i) **Part - A** should be answered in OMR sheet within first 40 minutes and OMR sheet should be handed over to hall invigilator at the end of 40<sup>th</sup> minute.
- (ii) **Part - B & Part - C** should be answered in answer booklet.

Time: 3 hours

Max. Marks: 100

**PART – A (20 × 1 = 20 Marks)**

Marks    BL    CO    PO

Answer ALL Questions

- |   |   |   |   |   |
|---|---|---|---|---|
| 1. Animals are characterized by   | 1 | 1 | 1 | 2 |
| (A) Heterotrophic, multicellular, eukaryotic organisms with no cell wall  |   |   |   |   |
| (B) Heterotrophic, unicellular, eukaryotic organisms with cell wall   |   |   |   |   |
| (C) Heterotrophic, multicellular, eukaryotic organisms with cell wall   |   |   |   |   |
| (D) Heterotrophic, unicellular, eukaryotic organisms with no cell wall  |   |   |   |   |
| 2. Identify the incorrect matching pair   | 1 | 1 | 1 | 2 |
| (A) Reptiles-oviparous  |   |   |   |   |
| (B) Birds-viviparous  |   |   |   |   |
| (C) Mammals-oviparous   |   |   |   |   |
| (D) Amphibians-viviparous   |   |   |   |   |
| 3. Among the following mentioned organisms, which of the following sets belong to invertebrates   | 1 | 1 | 1 | 2 |
| (A) Insects, mammals, birds   |   |   |   |   |
| (B) Insects, earthworms, tapeworms  |   |   |   |   |
| (C) Earthworms, crocodiles, fishes  |   |   |   |   |
| (D) Crocodiles, frogs, fishes   |   |   |   |   |
| 4. Among the following phyla, which one exhibit the typical characteristic feature with the presence of water vascular system that helps in feeding, locomotion and respiration | 1 | 1 | 1 | 2 |
| (A) Coelentrata   |   |   |   |   |
| (B) Annelida  |   |   |   |   |
| (C) Echinodermata   |   |   |   |   |
| (D) Mollusca  |   |   |   |   |
| 5. In which type of mammals, younger ones are born in immature state?   | 1 | 1 | 2 | 2 |
| (A) Marsupials mammals  |   |   |   |   |
| (B) Monotremes mammals  |   |   |   |   |
| (C) Placental mammals   |   |   |   |   |
| (D) Advanced mammals  |   |   |   |   |
| 6. In which animal did vitamin C was discovered   | 1 | 1 | 2 | 2 |
| (A) Guinea pig  |   |   |   |   |
| (B) Sheep   |   |   |   |   |
| (C) Goat  |   |   |   |   |
| (D) Rabbit  |   |   |   |   |
| 7. In how many minutes does early cleavages occur in zebra fish?  | 1 | 1 | 2 | 2 |
| (A) Every 15 minutes  |   |   |   |   |
| (B) Every 25 minutes  |   |   |   |   |
| (C) Every 5 minutes   |   |   |   |   |
| (D) Every 35 minutes  |   |   |   |   |

8. In zebrafish, endoderm becomes morphologically distinctive at which stage/ period? 1 1 2 2  
 (A) Pharyngula (B) Hatching  
 (C) Onset of segmentation period (D) Gastrula
9. Mule is produced from breeding between \_\_\_\_\_ and \_\_\_\_\_. 1 1 3 2  
 (A) Donkey, horse (B) Monkey, donkey  
 (C) Horse and zebra (D) Donkey and zebra
10. What is the animal model used to study the limb regeneration? 1 1 3 2  
 (A) Giraffe (B) Lizard  
 (C) Salamanders (D) Rat
11. Long-term exposure to environmentally stressful situations can cause several behavioural alternations. Identify one of them in the following options. 1 1 3 2  
 (A) Decreased consumption of sweet food (B) Increased consumption of sweet food  
 (C) Increased body licking on the splash food (D) Decreased consumption of sour food
12. \_\_\_\_\_ created the world's first transgenic animal and the world's first transgenic animal is \_\_\_\_\_. 1 1 3 2  
 (A) Darwin, sheep (B) Rudolf Jaenish, Goat  
 (C) Rudolf Jaenish, Mouse (D) Darwin, Sheep
13. Transfer of drugs from its site of administration to the blood stream is defined as 1 1 4 2  
 (A) Distribution of drug (B) Elimination of drug  
 (C) Metabolism of drug (D) Adsorption of drug
14. Ion tapping of drugs is the process in which the 1 1 4 2  
 (A) Elimination of weak acids takes place by acidification of urine (B) Elimination of strong acids takes place by alkalization of urine  
 (C) Elimination of weak bases takes place by alkalization of urine (D) Elimination of weak acids takes place by alkalization of urine
15. What is the percentage of the filtrate reabsorbed into circulation? 1 1 4 2  
 (A) 55% (B) 65%  
 (C) 95% (D) 35%
16. Presence of bleb formation at the site of injection indicate 1 1 4 2  
 (A) Intramuscular injection is done properly (B) Intradermal injection is done properly  
 (C) Intraperitoneal injection is done properly (D) Intravenous injection is done properly

- |  |                        |
|--|------------------------|
| 17. 3R's stand for   | 1      1      5      2 |
| (A) Reduction, replacement, (B) Reduction, recycle, refinement<br>refinement                     |                        |
| (C) Recycle, reusable, refinement (D) Recycle, reduction, replacement                            |                        |
|  |                        |
| 18. Specific pathogen free animals should be tested for determining free of designated pathogens | 1      1      5      2 |
| (A) It means they should be free from all pathogens and microbes                                 |                        |
| (B) It may not necessarily free from all pathogens and microbes                                  |                        |
| (C) It means they should contain free pathogens and microbes                                     |                        |
| (D) It may be necessarily contain all pathogens and microbes                                     |                        |
|  |                        |
| 19. What are the two factors required by regulatory agencies such as OECD, ICH and US FDA?       | 1      1      5      2 |
| (A) Genetic quality and reducibility   |                        |
| (B) Repeatability, reducibility  |                        |
| (C) Reproducibility, reducibility  |                        |
| (D) Repeatability, reproducibility   |                        |
|  |                        |
| 20. Personal protective equipment is important for   | 1      1      5      2 |
| (A) Protecting the animals from zoonotic pathogens   |                        |
| (B) Protecting the animals and healthcare workers from zoonotic pathogens                        |                        |
| (C) Protecting the healthcare workers from zoonotic pathogens                                    |                        |
| (D) Protecting the healthcare workers from SPF animals   |                        |

**PART – B (5 × 4 = 20 Marks)**

Answer ANY FIVE Questions

- |   | Marks | BL | CO | PO |
|---|-------|----|----|----|
| 21. Write short notes on integumentary system.  | 4     | 2  | 1  | 2  |
| 22. Write a short note on atherosclerosis.  | 4     | 2  | 1  | 2  |
| 23. What is the method used to generate the transgenic model to study the function of a gene. | 4     | 2  | 2  | 2  |
| 24. Describe CRISPR-cas 9. Mention its applications.  | 4     | 2  | 3  | 2  |
| 25. Which is the major source of drug metabolism and brief on the process.                    | 4     | 3  | 4  | 2  |
| 26. Enlist the precautions and protective gear suggested by OSHA.                             | 4     | 3  | 4  | 2  |
| 27. What is Dauer Larvae?   | 4     | 3  | 5  | 2  |

**PART – C (5 × 12 = 60 Marks)**

Answer ALL Questions

- |  | Marks | BL | CO | PO |
|--|-------|----|----|----|
| 28. a. Describe any two diseases associated with nervous system. | 12    | 2  | 1  | 2  |

(OR)

- b. Write about a metabolic disorder associated with glucose metabolism. 12 2 1 2
29. a. Explicate the life cycle of zebra fish. 12 2 2 2

**(OR)**

- b. Explain the life cycle of drosophila and its genetic information. 12 2 2 2
30. a. What are the animal models for myocardial infraction, cataract and retinitis pigmentosa? 12 3 3 2

**(OR)**

- b.i How transgenic animals are produced and write about the benefits of the same. 6 3 3 2
- ii. Write about a gene editing technique. 6 3 3 2
31. a. Corroborate on the mechanism of drug excretion. 12 3 4 2

**(OR)**

- b. What are the different routes of drug administration? 12 3 4 2
32. a. What are the applications of 3D culture? 12 3 5,6 2

**(OR)**

- b. What are the alternatives for animal usage in research field? 12 5 5,6 2

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