



12. Provide one example each of an organism from the Monera and Protista kingdoms. **[Understand] [2]**  
13. What are the main phases of the cell cycle? **[Remember] [1]**  
14. Describe the differences in genetic composition between the daughter cells produced by mitosis and meiosis. **[Analyze] [5]**  
15. Differentiate between light microscopy and fluorescent microscopy. **[Analyze] [7]**  
16. What are restriction endonucleases and what are they used for? **[Apply] [4,7]**  
17. What is HGP? **[Remember] [1,5,7]**  
18. List out the steps in gene cloning. **[Understand] [4,7]**

**[5 x 6 = 30]**

### **Part C**

Essay Type Questions

Answer **2** Questions

Each question carries **15 marks**

19. Describe four characteristics that are common to all living organisms **[Understand] [1]**  
20. Discuss the principles of inheritance as proposed by Gregor Mendel and how they apply to modern genetics. **[Understand] [4]**  
21. Identify and describe three common misconceptions about evolution and clarify them. **[Analyze][6]**  
22. Describe in detail on NMR and X-ray crystallography. **[Apply] [3,7]**

**[15 x 2 = 30]**



MAHATMA GANDHI UNIVERSITY, KOTTAYAM MGU-UGP (HONOURS)  
FIRST SEMESTER EXAMINATION  
(2024 ADMISION ONWARDS)  
**MG1DSCZGY100– INTRODUCTION TO ZOOLOGY**

Duration: **1.5 hrs**

Maximum Marks: **50**

*Students should attempt atleast one question from each course outcome to enhance their overall outcome attainability.*

**Part A**

***Fill in the blanks***

Answer **All** Questions

Each question carries **1 mark**

1. \_\_\_\_\_ is the fertile female of the bee colony. [Remember] [CO1]
2. In the field of pet management, there is potential for entrepreneurial success by developing \_\_\_\_\_ that cater to the specific grooming needs of different pet species. [Understand] [CO4]
3. The weaver bird is known for its intricate nests, which are primarily constructed by \_\_\_\_\_. [Understand] [CO1]
4. Viceroy butterfly mimics the coloration of \_\_\_\_\_ butterfly. [Understand] [CO2]
5. Mulberry silk is primaily produced by the domesticated silkworm species \_\_\_\_\_. [Remember] [CO3]
6. Original pearls weigh \_\_\_\_\_ than fake pearls. [Remember] [CO1]
7. Centre for Cell and Molecular Biology is located at \_\_\_\_\_. [Remember] [CO3]
8. \_\_\_\_\_ is used as food additive, a value added product of Apiculture. [Remember] [CO4]
9. Entrepreneurs can explore opportunities in pet product development by designing and selling \_\_\_\_\_ that meet the unique needs of different pets, such as dogs, cats, and birds. [Understand] [CO3]
10. Darwin's frogs are found in the forests of \_\_\_\_\_ and \_\_\_\_\_. [Remember] [CO2]

**[1 x 10 = 10]**

**Part B**

***Short Answer Type Questions***

Answer Any **10** Questions

Each question carries **2 mark**

11. Define alloparenting. [Remember] [CO2]
12. What is Isinglass? [Understand] [CO4]
13. List any four ornamental breeds of poultry. [Understand] [CO3]
14. Describe fission - fusion societies. [Understand] [CO1]
15. The brood pouch of male seahorse has an important role in sexual selection. Justify. [Understand] [CO2]
16. Pollen is regarded as world's best food product - Justify. [Evaluate] [CO4]
17. What are the main components involved in the bioluminescent reaction? [Remember] [CO1]
18. What research opportunities exist in the development of pet nutrition and diet? [Understand] [CO3]
19. Explain the reason for the presence of yellow and black bands on many species. [Understand] [CO2]

20. What are the opportunities and challenges for entrepreneurs in integrating vermiculture with waste management system in urban areas? [Evaluate] [CO4]
21. How does the fungus garden found in some termite colonies contribute to the colony's nutrition? [Understand] [CO1]
22. Discuss the biomedical application of Sericulture. [Understand] [CO3]

[2 x 10 = 20]

### **Part C**

#### ***Short Essay Type Questions***

Answer Any **5** Questions

Each question carries **4 marks**

23. Discuss the anatomical adaptations displayed by water bugs to ensure egg development. [Understand] [CO2]
24. Compare and contrast Harem and Matriarchal societies. [Understand] [CO1]
25. Comment on the value-added products of Aquaculture. [Understand] [CO4]
26. "Velvet Spider is an epitome of Sacrifice" - express your view on the statement. [Understand] [CO2]
27. Compare the mechanism of bioluminescence among firefly and Noctiluca. [Understand] [CO1]
28. What are the main by-products of dairy farming that contribute to career opportunities? [Understand] [CO3]
29. Describe the various pigments involved in developing coloration in animals and add a note on structural coloration. [Understand] [CO2]

[4 x 5 = 20]

# MAHATMA GANDHI UNIVERSITY, KOTTAYAM

MGU-UGP (HONOURS) FIRST

SEMESTER EXAMINATION

(2024 ADMISION ONWARDS)

## MG1DSCZGY101 – Biological Basis of Behaviour 1

Duration: 1.½ hrs

Maximum Marks: 50

*Students should attempt atleast one question from each course outcome to enhance their overall outcome attainability.*

### Part A

Fill in the blanks Questions

Answer **All** Questions

Each question carries **1** mark

1. The secretions of endocrine glands are called----- [Remember] [CO: 1]
2. The first hominin to emigrate out of Africa was----- [Remember] [CO: 1]
3. The deeply stained angular bodies present in the cytoplasm of neuron are ----- [Remember] [CO: 2]
4. The Goldman equation is used to calculate the ----- of a cell's membrane. [Remember] [CO: 2]
5. Parkinson's disease is due to degeneration of neurons that release the neurotransmitter ----- [Remember] [CO: 2]
6. The ----- is a canal in the midbrain connecting the third and fourth ventricles. [Understand] [CO: 4]
7. The ----- is the main control center for the autonomic nervous system located in the brain. [Remember] [CO: 3]
8. The ----- horn of the spinal cord gray matter is involved in processing sensory information. [Remember] [CO: 3]
9. There are ----- pairs of spinal nerves. [Remember] [CO: 4]
10. The ----- nerve is responsible for controlling the muscles of the larynx. [Remember] [CO: 3]

[1 x 10 = 10]

### Part B

Short Answer Type Questions

Answer **10** Questions

Each question carries **2** marks

11. How diet quality relate to the development of large size brain? [Understand] [CO: 1]
12. How can we ensure the well-being of animals used in research? [Understand] [CO: 1]
13. Explain the scope of neuroscience in research fields. [Understand] [CO: 1]
14. Comment on the types of neuroglial cells. [Understand] [CO: 2]
15. How do sensory neurons contribute to the functioning of the nervous system? [Understand] [CO: 2]
16. How do changes in external potassium concentration affect resting potential? [Understand] [CO: 2]
17. What factors influence the speed of action potential propagation? [Understand] [CO: 2]

18. What is the role of NMDA receptors in synaptic plasticity? [Understand] [CO: 2]  
19. Explain the difference between white matter and grey matter in the central nervous system. [Understand] [CO: 4]  
20. How does the cerebellum contribute to the learning of motor skills? [Understand] [CO: 3]  
21. Comment on cerebral dominance. [Understand] [CO: 4]  
22. Evaluate the role of the hypothalamus in maintaining homeostasis. [Evaluate] [CO: 4]

[2 x 10 = 20]

### Part C

#### Short Essay Type Questions

Answer **5** Questions

Each question carries **4** marks

23. Describe the disadvantage of using human in experimental process. [Understand] [CO: 1]  
24. Describe the structure of a neuron with labelled diagram. [Understand] [CO: 2]  
25. Explain the significance of the threshold potential in the initiation of an action potential. [Understand] [CO: 2]  
26. Explain the process of synaptic transmission and how it leads to the generation of excitatory or inhibitory postsynaptic potentials. [Understand] [CO: 2]  
27. How does the forebrain contribute to higher cognitive functions such as thinking and decision-making? [Analyse] [CO: 3]  
28. Explain the role of the cerebral cortex in higher cognitive functions such as thinking, memory, and decision-making. [Understand] [CO: 4]  
29. Describe the impact of split-brain studies on our understanding of brain lateralization. [Understand] [CO: 3]

[4 x 5 = 20]

**MAHATMA GANDHI UNIVERSITY, KOTTAYAM**

MGU-UGP (HONOURS)

FIRST SEMESTER EXAMINATION

(2024 ADMISSION ONWARDS)

**MG1DSCZIM101 – INTRODUCTION TO MICROBIAL WORLD**

Duration :1.5 hrs

Maximum marks :50

*Students should attempt atleast one question from each course outcome to enhance their overall out come attainability.*

**Part A**

Fill in the blanks

Answer **All** Questions

Each question carries **1** mark

1. .... is the father of Microbiology [Remember] [CO1]
2. Rickettsiae are a group of..... bacteria [Remember] [CO 1]
3. Bacteria have ..... for movement [Understand] [CO2]
4. The primary component of gram positive cell wall is..... [Understand] [CO2]
5. Bacteriophages are also known as..... [Understand] [CO3]
6. Tobacco Mosaic Virus is a..... virus[Evaluate] [CO3]
7. Aspergillus is used in the production of..... [Understand] [CO4]
8. Fungi reproduce through..... [Apply] [CO4]
9. Rhizopus is commonly found in ..... [Evaluate] [CO4]
10. One of the diseases caused by protozoa is..... [Remember] [CO5]

[1x10 =10]

**Part B**

Short Questions

Answer any **10** Questions

Each question carries **2** Marks

11. Describe three distinct period of microbial evolution. [Apply] [CO1]



12. Define golden age of microbiology. [Remember] [CO1]
13. Comment on goose neck flask experiment .[Understand ] [CO1]
14. Define the features of any two internal structure of bacteria. [ Understand] [CO2]
15. Explain the function of Pili and Capsule. [ Understand] [CO2]
16. Write short note on Mesosome and Nuclear membrane. [Remember] [CO2]
17. Write the general properties of viruses. [Apply] [CO2]
18. Explain the structure of HIV. [Apply] [CO3]
19. Explain about the infectious agent. [Understand ] [CO3]
20. Write down the classification of fungi . [ Apply] [CO4]
21. Define Dinophyceae. [Remember] [CO4]
22. Write short note on morphology of protozoa. [Apply] [CO5]

[2x10=20]

#### Part –C

#### Short Essay Type Questions

Answer **5** Questions

Each question carriers **4** marks

23. Describe the history of microbiology. [Understand] [CO1]
24. Write a detailed note on Prokaryotic and Eukaryotic cell. [Apply] [CO1]
25. Discuss about the size, shape, symmetry of viruses. [Understand] [CO2]
26. Write a brief account on morphology of algae. [Apply ] [CO3]
27. Discuss the economic importance of Deuteromycota with example. [Understand] [CO4]
28. Discuss the ecological significance of cyanobacteria with suitable diagram. [Understand ] [CO4]
29. Explain the importance, morphology and reproduction of protozoa. [Understand] [CO5]

[4x5=20]

**MAHATMA GANDHI UNIVERSITY, KOTTAYAM**  
MGU-UGP (HONOURS)  
FIRST SEMESTER EXAMINATION  
(2024 ADMISION ONWARDS)  
**MG1DSCZIM102 – Fundamentals of Biochemistry**

Duration: 1.5 hrs

Maximum Marks: 50

*Students should attempt atleast one question from each course outcome to enhance their overall outcome attainability.*

**Part A**

Fill in the blanks

Answer **All** Questions

Each question carries **1** mark

- 1.Theory of spotaneous generation shows life originates from..... [Remember] [CO1]
- 2.....is the negative logarithm of H<sup>+</sup> ions. [Understand] [CO2]
- 3.Double helical model of DNA was proposed in the year..... [Remember] [CO1]
- 4.The four hydrogen bond in water molecules are arranged tetrahedrally to form.....structure. [Apply][CO2]
- 5.The prominent role of mitochondria is to produce energy in the form of..... [Understand] [CO4]
- 6 .....proposed fluid Mosaic model in 1972 [Remember] [CO3]
- 7.Prokaryotes have .....ribosomes ,each consist of 30 S and 50 S subunits. [Analyse] [CO3]
- 8.Lysosomes are frequently nicknamed as..... [Remember] [CO4]
- 9.During symbiotic nitrogen fixation cellwall of roothair invaginates to form..... [Evaluate] [CO5]
- 10 .Monoterpenes has.....isoprene units. [Remember] [CO5]

[1 x 10 = 10]

**Part B**

Short Questions

Answer **10** Questions

Each question carries **2** marks

11. Differentiate between biogenesis and abiogenesis. [Remember] [CO1]
12. Outline the contribution of Louis Pasteur. [Remember] [CO1]
13. Write short note on major forces stabilizing water molecule. [Apply] [CO2]
14. Explain the difference between strong and weak acid. [Understand] [CO2]
15. Describe the key feature of fluid mosaic model of plasma membrane? [Understand] [CO3]
16. Explain Characteristics of peripheral membrane proteins with one example. [Apply] [CO3]
17. Define Active transport . [Remember] [CO4]
18. Write a note on Rough Endoplasmic Reticulum. [Apply] [CO4]
19. Write short note on thylakoids [Apply] [CO5]
20. Describe Cyclic photophosphorylation [Remember] [CO5]
21. Discuss the morphology of Endoplasmic Reticulum. [Understand] [CO4]
22. Explain Root nodulation process in nitrogen fixation. [Understand] [CO5]

[2 x 10 = 20]

**Part C**  
**Short Essay Type Questions**  
**Answer 5 Questions**  
Each question carries 4 marks

23. Draw structure of water molecule with their bond angle. [Remember] [CO2]
24. Explain the significance of key milestones in the history of biochemistry.  
[Remember] [CO1]
25. Explain the concept of pH Scale, its importance and application in various fields.  
[Apply] [CO2]
26. Explain fluid mosaic model of plasma membrane. [Understand] [CO3]
27. Compare and contrast isotonic, hypotonic and hypertonic solution. [Apply] [CO4]
28. Discuss the significance of Mitosis & Meiosis. [Understand] [CO4]
29. Write an essay on molecular mechanism involved in symbiotic nitrogen fixation  
[Analyse] [CO5]

[4 x 5 = 20]

**MAHATMA GANDHI UNIVERSITY, KOTTAYAM**

**MGU-UGP (HONOURS)**

**FIRST SEMESTER EXAMINATION**

**(2024 ADMISION ONWARDS)**

**MG1MDCBTS100- FOOD, NUTRITION AND MEDICINE**

Duration: 1 hrs

Maximum Marks: 35

Students should attempt at least one question from each course outcome to enhance their overall outcome attainability.

**Part A**

**Multiple Choice Questions**

**Answer All Questions**

**Each question carries 1 mark**

1. Probiotics are a type of functional food that mainly promote **[REMEMBER] [3]**  
a) Cardiovascular disease. b) bone health. C) skin health. D) digestive health
2. What is HACCP? **[REMEMBER] [1]**  
a) Hazard Analysis Critical Control Point c) Hazard Analysis Critical Control Problem  
b) Hazard Analysis Control Critical Point d) Hazard Analysis Control Critical Problem
3. BMI stands for **[REMEMBER] [1,2]**  
a) Body mass index b) Basal metabolic index c) Basal mass index d) Body metabolic index
4. Which vitamin helps in blood clotting? **[UNDERSTAND] [2,3]**  
a) Vitamin C b) vitamin A c) vitamin K d) vitamin D
5. Prebiotics are most commonly found in: **[REMEMBER] [3]**  
a) Fruits b) Dairy Products c) vegetable d) meat

[1 x 5 = 5]

**Part B**

**Short questions Type Questions**

**Answer 5 Questions**

**Each question carries 2 marks**

6. Define functional foods? **[REMEMBER] [3]**
7. Determine the health benefits of omega-3 fatty acids in functional foods? **[APPLY] [3]**
8. Name the mineral is crucial for thyroid function **[UNDERSTAND] [2,3]**
9. List out the important nutrients for the human body? **[REMEMBER] [1,2]**
10. Discuss acidosis & its effects **[UNDERSTAND] [1,2]**
11. Recall the function of vitamin K? **[REMEMBER] [2,3]**
12. Name the plant-based foods that are rich in antioxidants, and what health benefits do they provide? **[REMEMBER] [3]**

[2 x 5= 10]

**Part C**

**Short Essay Type Questions**

**Answer 5 Questions**

**Each question carries 4 marks**

- |  |                  |
|--|------------------|
| 13. Give a short essay on principles of HACCP                      | [UNDERSTAND] [1] |
| 14. Why proteins are considered essential nutrients for the body?  | [UNDERSTAND] [1] |
| 15. Why are antioxidants in functional foods important for health? | [UNDERSTAND] [3] |
| 16. List out the health benefits of proteins                       | [REMEMBER] [4]   |
| 17. What are the possible health benefits of phytochemicals?       | [REMEMBER] [4]   |
| 18. Explain in detail about various factors affecting BMR          | [REMEMBER] [1,2] |
| 19. Describe Symbiotics  | [REMEMBER] [3]   |

[4 x 5= 20]

**MAHATMA GANDHI UNIVERSITY, KOTTAYAM**  
**MGU-UGP(HONOURS)**  
**FIRST SEMESTER EXAMINATION**  
**(2024 Admission Onwards)**  
**MG1MDCZGY100 - ORNAMENTAL FISH FARMING AND AQUARIUM KEEPING**

**Duration: 1hr**

**Maximum marks: 35**

*Students should attempt at least one question from each course outcome to enhance their overall outcome attainability.*

**Part A**

**Fill in the Blanks**

**Answer All Questions**

**Each question carries 1 mark**

1. pH of Aquarium water can be measured using ----- [Remember][CO4]
2. Excess build-up of Fish excreta may lead to the release of ----- gas in aquariums [Understand][CO4]
3. An antifungal agent that inhibits the action of moulds in fish feed is .....[Remember][CO1]
4. Microorganism that cause disease in aquarium fishes is .....[Remember][CO3]
5. To prevent the contamination during transport, ..... are used to ensure the water free from pathogens [Remember] [CO2].

**(1x5=5 marks)**

**Part B**

**Short Questions**

**Answer 5 Questions**

**Each question carries 2 marks**

6. Discuss the factors that can lead to insufficient Dissolved Oxygen in Aquariums[understand][CO4]
7. Enumerate the conditions needed for hatching Artemia cyst. [Remember] [CO1]
8. "Prevention is better than cure". Relate the proverb with the process of quarantine of fishes [Apply] [CO2].
9. Define dry feeds in fish nutrition. [Understand] [CO1]
10. How the male swordtail fish can be identified? [Apply][CO3]

11. Briefly describe the water conditions necessary for the brood stock. [Understand][CO3]
12. Analyse the main reasons for the popularity of ornamental fish keeping. [Analyse][CO1]

**(5x2=10 marks)**

**Part C**

**Short Essays**

**Answer 5 Questions**

**Each question carries 4 marks**

13. Analyse the significance of monitoring Ammonia concentration in an aquarium [Analyse][CO4]
14. Explain the steps for maximum survival of the fishes in live transport [Apply] [CO2].
15. Evaluate the effectiveness of feeds for colour enhancement. How do they contribute to the overall health and appearance of ornamental fish? [Evaluate][CO1]
16. Explain the role of plants in an aquarium [Apply][CO4]
17. Write notes on hatching of the eggs of Gourami [Understand][CO3]
18. Explain the feeding and care of the fry of egg-layers [Understand][CO3]
19. Write short notes on a) Guppy, b) Molly, c) Platy and d) Swordtail. [Remember][CO1]

**(5x4=20 marks)**

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