00086

The Open University of Sri Lanka

Faculty of Natural Sciences

Advanced certificate in Science Programme

Department	**: Foundation Academic Unit**
Level	**: Level 2**
Name of the Examination	**: Final Examination 2023/24**
Course Title and - Code	**: Biology 3 BYF 2513**
Academic Year	**: 2023/24**
Date	**: 02.09.2023.**
Time	**: 9.30am. – 12.30pm.**
Duration	**: Three Hours**

General Instructions

1. Read all instructions carefully before answering the questions.
2. This question paper consists of **07** questions in **07** pages.
3.. All questions carry equal marks.
4. Answer for each question should commence from a new page.
5. Draw fully labelled diagrams where necessary.
6. Involvement in any activity that is considered as an exam offense will lead to punishment.
7. Use blue or black ink to answer the questions.
8. Clearly state your index number in your answer script.

Index Number : .....

Answers to questions in Part I should be given in the question paper itself. Answers to questions in Part II should be given in the answer book provided.

PART I (1 ½ Hours)
Multiple Choice and Structured Essay Questions
Answer ALL Questions

1) Multiple Choice Questions

Indicate the most appropriate answer with a cross (X) in the cage provided

1. Out of the objective lenses given below which one is not used in dry state?

a.	
b	
c.	
d	

a.) High power lens.
b.) Mid power lens.
c.) Low power lens.
d.) Oil immersion lens.

2. If the magnifications of the eye piece and the objective lenses are10 and 4 respectively, what will be the total magnification of the specimen at this stage?

a.	
b	
c.	
d	

a.) 4.
b.) 10.
c.) 10 X 4.
d.) 10 + 4.

3. An example of a macro biomolecule is,

a.	
b.	
c.	
d.	

a.) starch.
b.) glucose.
c.) fructose.
d.) sucrose.

4. I_2/KI solution can be used to detect the presence of

a.	
b.	
c.	
d.	

a.) starch.
b.) glycogen.
c.) both of the above-mentioned compounds.
d.) none of the above mentioned compounds.

5. When HCl is added to milk,

a.	
b.	
c.	
d.	

a.) curdling of milk proteins will take place.
b.) solubility of casein will decrease.
c.) shape of the milk protein will change
d.) all of the above processes will take place.

6. Out of the compounds given below, what will give a positive reaction with Sudan III?

a.	
b.	
c.	
d.	

a.) Water.
b.) Ethanol.
c.) Coconut oil.
d.) All of the above given compounds.

7. A spiral shaped bacteria is known as,

a.	
b.	
c.	
d.	

a.) a Coccus.
b.) a Bacillus.
c.) a Vibrio.
d.) a Spirillum.

8. Which of the following statements is true regarding green algae?

a.	
b.	
c.	
d.	

a.) They show various shapes and forms.
b.) All of them are motile forms.
c.) All are colonial forms.
d.) All are filamentous forms.

9. A difference between a dicot and a monocot leaf is,

a.	
b.	
c.	
d.	

a.) the monocot leaf has more stomata.
b.) the monocot leaf has a cambium.
c.) the monocot leaf has parallel venation.
d.) the monocot leaf has leaf hairs.

10. An example of a closed seeded plant is

a.	
b.	
c.	
d.	

a.) *Mangifera.*
b.) *Cycas.*
c.) *Pinus.*
d.) *Araucheria.*

11. Which of the following species is important in maintaining the balance of an ecosystem?

a.	
b.	
c.	
d.	

a.) A relict species.
b.) A keystone species.
c.) A migratory species.
d.) An exotic species.

12. A bio region is,

a.	
b.	
c.	
d.	

a.) smaller than an ecozone.
b.) smaller than an eco-region.
c.) smaller than an ecosystem.
d.) not described by any of the above.

13. Sri Lanka offers a great diversity of habitats due to the country's

a.	
b.	
c.	
d.	

a.) physiography.
b.) soil types.
c.) climatic variations
d.) all the conditions mentioned above.

14. Most of the global environmental problems arise as a result of

a.	
b.	
c.	
d.	

a.) the use of natural resources in an unsustainable manner.
b.) the destruction of forests.
c.) hunting of animals.
d.) pollution of water bodies.

15. An example of a non-renewable resource is

a.	
b.	
c.	
d.	

a.) food.
b.) fuel.
c.) water.
d.) forests.

16. The water table is described as,

a.	
b.	
c.	
d.	

a.) the point at which rainwater flows into a river.
b.) the point at which the rainwater reaches the ground water.
c.) the depth of the soil at which all the spaces between soil particles are saturated with water.
d.) all of the above.

17. The Carbon cycle is mainly affected by,

a.	
b.	
c.	
d.	

a.) use of fertilizer in the agricultural fields.
b.) burning of fuels.
c.) depletion of ozone layer.
d.) disposal of chemical wastes.

18. Acid rains are formed when

a.	
b.	
c.	
d.	

a.) SO_2 reacts with rainwater.
b.) CO_2 reacts with rainwater.
c.) CH_4 reacts with rainwater.
d.) N_2 reacts with rainwater.

19. Services offered by biodiversity include,

a.	
b.	
c.	
d.	

a.) good health.
b.) clean water, air and fertile soil.
c.) raw material required for humans
d.) all of the above.

20. A horizontal disease is transmitted,

a.	
b.	
c.	
d.	

a.) from a parent to a foetus.
b.) among members from person to person.
c.) not only by direct touch.
d.) through placenta during pregnancy.

21. Innate immunity can be influenced by,

a.	
b.	
c.	
d.	

a.) age and nutrition of a person.
b.) stress and preexisting disease state.
c.) by all the above mentioned in a.) and b.).
d.) by none of the above factors.

22. Which of the following statements is true?

a.	
b.	
c.	
d.	

a.) Waste can be recycled and reused economically.
b.) Facultative ponding is done using aerobic treatments.
c.) Integrated ponding is done using only algae.
d.) One of the mostly used micro-algal forms in wastewater treatment is *Chlorella.*

23. Micro-organisms obtain their Carbon,

a.	
b.	
c.	
d.	

a.) as carbon dioxide.
b.) as organic forms.
c.) in the form of Carbon.
d.) by none of the above forms.

24. Most of the fungi prefer to live in,

a.	
b.	
c.	
d.	

a.) acidic environments.
b.) alkaline environments.
c.) neutral environments.
d.) all the above environments.

25. When Gram's staining is done on bacteria,

a.	
b.	
c.	
d.	

a.) Gram positive bacteria will stain pink
b.) Gram positive bacteria will stain purple.
c.) Gram negative bacteria will stain purple.
d.) none of the above processes would occur.

(100 marks)

2.) Structured Essay Question

This question is based on N cycle.

a.) What is the chief reservoir of Nitrogen?

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b.) Why do you refer the N cycle as a biogeochemical cycle?

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c.) Name the three processes by which N is fixed.

i) .....

ii) .....

iii) .....

d.) How do the animals obtain their N?

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e.) Name the processes in which the microorganisms are involved in the N cycle and the name of each microorganism.

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f.) Explain why Nitrogen is considered to be an important element for living beings.

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g.) Compare the N cycle with the C cycle.

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(100 marks)

Part II
Essay Type Questions (1 ½ hours)

Answer any <u>three (03)</u> questions in the answer book provided. Each question will carry 100 marks.

1.a.) What is biodiversity loss?

b.) List the causes of biodiversity loss.

c.) Briefly describe each cause explaining the influence of the human on the biodiversity loss.

2.a.) What is a pure culture of a microorganism?

b.) Describe briefly with appropriate drawings, the steps that you should follow, in order to obtain a pure culture of a bacterium from a mixed culture.

c.) What are the precautions that you have to take in this process and explain why each precaution is taken.

3.a) explain why mangrove soil is considered to be humic clay.

b.) What are the differences between the true mangroves and mangrove associates?

c.) Describe the adaptations shown by mangrove plants to their habitats.

4.a) List the importance of bio fertilizers.

b.) Give a description of bio fertilizers giving the important types and the name of the bio fertilizers that are being used by farmers at present.

c.) Explain in brief the reasons of using bio fertilizers in agriculture.

5.) Write short notes on any three (3) of the following.

a.) Species diversity

b.) Advantages and disadvantages of bio-control agents.

c.) Tropical rain forests.

d) In situ conservation

e.) Equipment used in a microbiology laboratory and their uses.