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1B5N24232 (Pages : 2) Reg. No:.....
Name: .....

FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Fifth Semester B.Sc Zoology Degree Examination, November 2024

BZL5B06 – Cell Biology & Genetics

(2022Admission onwards)

Time: 2 ½ hours Max. Marks : 80

SECTION A

Short answer questions. Each question carries 2 marks

1. Comment on micrometry.
2. Explain atavism.
3. What is apoptosis.
4. Briefly describe freemartin.
5. Write short note on Down's syndrome.
6. What are isoalleles.
7. What are cadherins?
8. What is the role of fixative in histological techniques.
9. Give an account on gene mapping.
10. What is nucleolar organizer? Mention any two functions of nucleolus.
11. Comment on eugenics.
12. Explain the environmental influence of sex determination with example.
13. What are puffs and bands in giant chromosomes.
14. What are the role of centriole in animal cell division ?
15. What are base analogues.

(Ceiling 25 marks)

SECTION B

Paragraph questions. Each question carries 5 marks

16. Differentiate mitosis and meiosis.
17. Explain the complementary genes with example.
18. Differentiate light microscope and electron microscope.
19. Briefly explain sex chromosomal anomalies and disorders.
20. Describe the nucleosome model of chromatin.
21. Give an account on linkage and different types.
22. Illustrate X-linked recessive inheritance with human colour blindness
23. Explain the structure of nuclear pore complex.

(Ceiling 35 marks)

SECTION C

Essay questions. Answer any two questions.

24. Write an essay on epistasis and types with suitable example.

25. Explain cell cycle and regulation. Add a note on the cell cycle check points.

26. Explain mutations and its characteristic features. Give an account on the chromosomal aberrations.

27. Write an essay on the modifications of the plasma membrane.

(2 x 10= 20 marks)

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FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Fifth Semester B.Sc Zoology Degree Examination, November 2024

BZL5B07 – Biotechnology, Microbiology& Immunology

(2022 Admission onwards)

Time: 2 ½ hours Max. Marks : 80

Section A

Short answer questions. Each question carries 2 marks.

1. What are restriction endonuclease enzymes? Give an example
2. Write short notes on cell lines.
3. What are knockout mice? Mention its uses.
4. Write short notes on lipofection .
5. Distinguish between lytic and lysogenic Phages.
6. Write short notes on applications of Bacteriophages.
7. What are Prions? Name any two diseases caused by Prions
8. Give a brief account on bioinsecticides.
9. Write short notes on NK cells.
10. What are adjuvants? Give an example.
11. Provide a brief account on agglutination reaction.
12. What is cytokine? Mention it's any two functions.
13. Comment on window period in HIV infection.
14. Write short notes on tumour antigens.
15. What is Xenotransplantation?

(Ceiling: 25 marks)

Section B

Paragraph questions. Each question carries 5 marks

16. Discuss hybridoma technology.
17. Describe any two methods for the selection of Transformants in rDNA technology
18. Briefly discuss bacterial growth curve.
19. Give a brief account on industrial fermentation products

20. Provide a brief .account on normal microflora of gastrointestinal tract.
21. What is innate immunity and discuss its mechanisms.
22. Briefly discuss humoral immunity.
23. With a suitable diagram, explain the structure of class I MHC molecules.

(Ceiling: 35 marks)

Section C

Essay questions. Answer any *two* questions

24. What are cloning vectors? Provide a detailed account on different types of vectors used in gene cloning.
25. Write an essay on Molecular markers and their uses
26. Discuss different types of sterilization techniques used in Microbiology laboratory
27. What are autoimmune diseases? Explain different classes of autoimmune diseases with features of two examples from each class

(2x10 = 20 marks)

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FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Fifth Semester B.Sc Zoology Degree Examination, November 2024

BZL5B08 – Biochemistry and Molecular Biology

(2022 Admission onwards)

Time: 2 ½ hours Max. Marks : 80

I. Short answer questions (Each question carries 2 marks)

1. Which enzyme is responsible for GTP synthesis in TCA cycle?
2. Why is glucose called as reducing sugar?
3. Define mutarotation.
4. Write notes on protein denaturation.
5. What is Myristoylation?
6. Comment on ribozymes with example.
7. Write a note on C value paradox.
8. Comment on allosteric enzymes.
9. Write a short note on significance of mass spectrometry in proteomics.
10. Write a note on spliceosomes.
11. What is temperate phage?
12. What are co-enzymes ?
13. Enumerate the features of prostaglandin.
14. What is oxidative phosphorylation?
15. Enlist the properties of hydrogen bond.

(Ceiling 25 marks)

Section B

II. Paragraph questions (Each question carries 5 marks)

16. Explain different types of classification of amino acids.
17. Explain beta-oxidation of fatty acids.
18. Comment on classification of enzymes.
19. Differentiate between homo and hetero-polysaccharides with examples.

20. Describe the features of theWatson and crick model of DNA.
21. Comment on post transcriptional modifications of mRNA.
22. Explain the features of genetic code
23. Write an account on Meselson and Stahl experiment

(Ceiling 35 marks)

Section C

Essay questions (Answer any two)

24. Write a brief essay on various structure of proteins. Write examples.
25. Describe the process of the electron transport chain.
26. Write an essay on tryptophan operon and its regulation
27. Describe the process of translation.

(2 x 10 = 20 marks)

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FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Fifth Semester B.Sc Zoology Degree Examination, November 2024

BZL5B09 – Methodology in Science, Biostatistics & Bioinformatics

(2022 Admission onwards)

Time: 2 ½ hours Max. Marks : 80

Section A
Short answer questions. Each question carries 2 marks.

1. Explain how interdisciplinary approaches can enhance scientific research.
2. How does deductive reasoning differ from inductive reasoning?
3. Brief the necessity of units and dimensions in experiments.
4. How does the design of an experiment influence its outcomes?
5. Write on the depositories of scientific information.
6. Summarize the significance of the 't' test in statistical analysis.
7. Give a note on the concept of mode and its importance.
8. Differentiate frequency polygon & frequency curve.
9. Define the Prevention of Cruelty to Animals Act of 1960, Section 17.1(d).
10. Differentiate between gene phylogeny and species phylogeny.
11. Describe a web-based tool for DNA sequence analysis.
12. Define molecular phylogeny.
13. Write on the importance of whole genome sequence assembly.
14. Write any two applications of transcriptomics and metabolomics
15. Comment on EMBL.

(Ceiling: 25 marks)

Section B
Paragraph questions. Each question carries 5 marks

16. Discuss the role of auxiliary and ad hoc hypotheses in scientific research.
17. Discuss the differences between theories and laws in science.
18. Explain the significance of graphical and diagrammatic representation of data.
19. Describe the process of calculating standard deviation and standard error.
20. Describe how you would use PubMed to search for literature on the impact of climate change on marine biodiversity.

21. Discuss the importance of pairwise and multiple sequence alignments in bioinformatics research.
22. Explain how microarrays can be used in functional genomics to study gene expression patterns under different conditions.
23. Explain the methods used to construct phylogenetic trees.

(Ceiling: 35 marks)

Section C
Essay questions. Answer any *two* questions.

24. Discuss the role of database search engines in bioinformatics.
25. Give an account on principles and procedure of designing an experiments.
26. Discuss the significance of statistical tools in hypothesis testing and data interpretation.
27. Discuss the advancements and challenges in proteomics and its significance in understanding protein functions.

(2x10=20 marks)

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FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Fifth Semester B.Sc Zoology Degree Examination, November 2024
(Open Course)
BZL5D01 – Reproductive Health and Sex Education

(2022 Admission onwards)

Time: 2 hours Max. Marks : 60

SECTION A

I. Answer the following questions. Each question carries *two* marks.

1. What is Klinefelter's Syndrome? Explain.
2. What is Oogenesis?
3. Write an account on the accessory structures of male reproductive system.
4. Distinguish between Vasectomy and Tubectomy.
5. What is Barr Body? Write down its significance.
6. Briefly explain sexual hygiene.
7. Differentiate GIFT and ZIFT.
8. What is POCSO Act 2012?
9. What do you mean by Gender Discrimination?
10. Write an account on Gonorrhoea. How is it transmitted?
11. Discuss the importance of sex education for teen and youth briefly.
12. Comment on Trichomonal Vaginitis.

(Ceiling: 20)

SECTION B

II. Answer the following questions in a paragraph. Each question carries *five* marks.

13. Explain Spermatogenesis.
14. With a labelled diagram, explain the structure of a Graafian follicle.
15. Discuss various sex determination mechanisms in animals.
16. What is Prenatal Diagnosis? Briefly describe Amniocentesis and CVS.
17. Briefly describe the various fertility control methods.
18. Discuss ways to maintain a healthy relationship with the opposite sex.
19. Explain the causes, symptoms, transmission and diagnosis of AIDS.

(Ceiling: 30)

SECTION C

III. Essay questions. Answer *any one* question.

20. Discuss the various technologies used to solve infertility problems.
21. Explain Menstrual Cycle and its hormonal control in human beings.

(1x10 = 10 marks)