

K22P 1401

Reg. No. :

13 DEC 2022

Name :

**III Semester M.Sc. Degree (CBSS – Reg./Sup./Imp.) Examination, October 2022
(2019 Admission Onwards)
BIOTECHNOLOGY
BTG3C08 : Biostatistics and Bioinformatics**

Time : 3 Hours

Max. Marks : 40

SECTION – A

Write about each of the following in **2 or 3** sentences. **Each** question carries **1** mark.
(1×10=10)

1. Distinguish between discrete and continuous data.
2. What is ANOVA ?
3. What is SAGE ?
4. Explain genome mapping and its importance.
5. What is meant by regression coefficient ? Explain with an example.
6. What are the advantages of random sampling ?
7. What is meant by harmonic mean ?
8. Give an example each for DNA, RNA and protein sequence database.
9. Define EST.
10. Explain cumulative frequency.

SECTION – B

Write notes on or discuss **any four** of the following. **Each** question carries **5** marks.
(5×4=20)

11. Which are the different measures of central tendency ? Explain each of them with suitable examples.
12. What are the ideal properties of a biological data bank ?

P.T.O.

K22P 1401

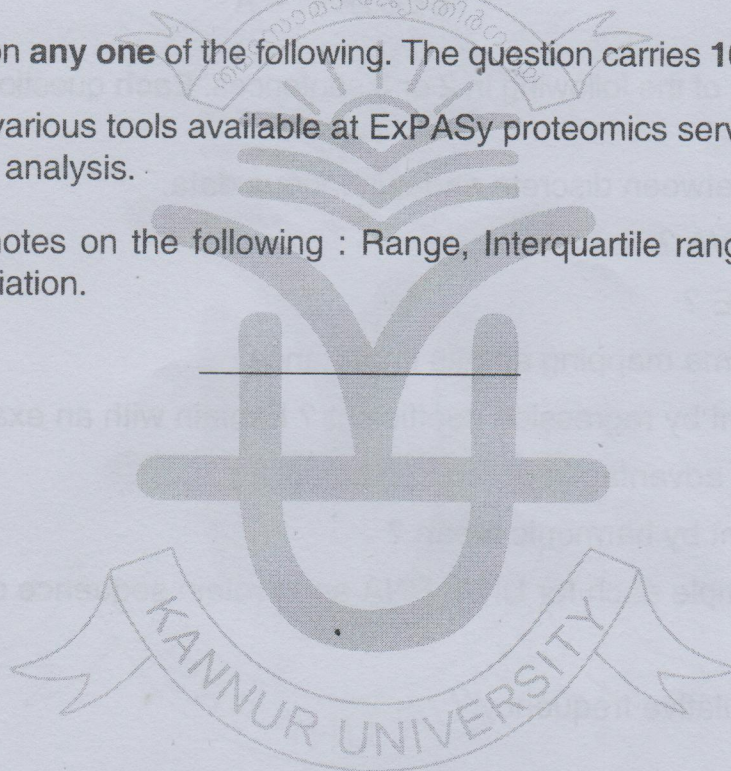


13. Explain how structure visualization tools help in elucidating protein structure determination.
14. Describe the various tests of significance used in statistical analysis.
15. Discuss the scope and applications of bioinformatics in biotechnology.
16. What is meant by probability? Briefly explain the additive theorem of probability.

SECTION – C

Write an essay on **any one** of the following. The question carries **10** marks. (1×10=10)

17. Discuss the various tools available at ExPASy proteomics server and how they aid in protein analysis.
18. Write short notes on the following : Range, Interquartile range, variance and standard deviation.





K22P 1402

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**III Semester M.Sc. Degree (CBSS – Reg./Sup./Imp.)
Examination, October 2022
(2019 Admission Onwards)
BIOTECHNOLOGY
BTG3C09 : Recombinant DNA Technology**

Time : 3 Hours

Max. Marks : 40

SECTION – A

Write about **each** of the following in **2 or 3** sentences. **Each** question carries **1** mark : **(1×10=10)**

1. What are pET vectors ?
2. Explain the structure of Ti plasmids.
3. What is nested PCR ?
4. What are T-Vectors ?
5. Mention the use of His tags in recombinant DNA technology.
6. Explain problems associated with inclusion body formation in heterologous expression.
7. Explain what is miRNA technology.
8. Explain the importance of complementation strategy in yeast system.
9. Explain the importance of SNPs.
10. Explain the role of satellite DNA in fingerprinting.

SECTION – B

Write notes on or discuss **any four** of the following. **Each** question carries **5** marks : **(5×4=20)**

11. Discuss any one method each for radioactive and nonradioactive labelling of DNA.
12. Explain the importance of gene knockout system. How it is achieved ?

P.T.O.

K22P 1402



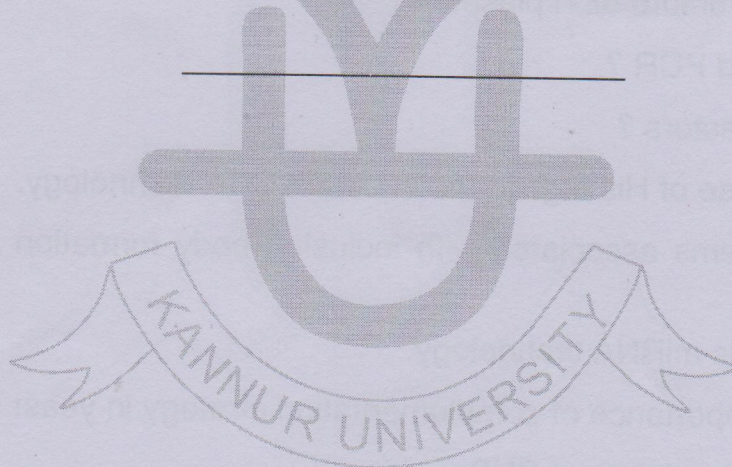
13. Explain the methodology and importance of replica plating.
14. Elaborate the considerations to be made by designing primers for PCR reactions.
15. Explain the methodology and importance of M13 vectors in site directed mutagenesis.
16. Discuss the biolistic method for plant cell transformation and the instrumentation required.

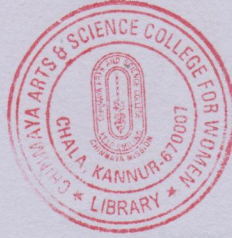
SECTION – C

Write an essay on **any one** of the following. The question carries **10** marks :

(10×1=10)

17. Explain the importance of different types of enzymes used in recombinant DNA technology.
18. Elaborate the limitations of prokaryotic expression system and advantages of eukaryotic expression system in the contest of heterologous expression of proteins.





K22P 1403

Reg. No. :

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III Semester M.Sc. Degree (CBSS – Reg./Sup./Imp.)
Examination, October 2022
(2019 Admission Onwards)
BIOTECHNOLOGY
BTG3C10 : Plant Biotechnology

Time : 3 Hours

Max. Marks : 40

SECTION – A

Write about **each** of the following in **2 or 3** sentences. **Each** question carries **1** mark.

(1×10=10)

1. Endosperm culture.
2. Microprojectile.
3. Liquid culture.
4. *In vitro* pollination.
5. Asymmetric hybrid.
6. Somaclones.
7. Browning of the medium.
8. What are artificial seeds ?
9. Cell viability measurement.
10. Biotechnological approach for plant secondary metabolite production.

SECTION – B

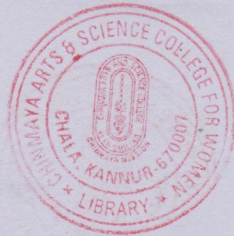
Write notes on or discuss **any four** of the following. **Each** question carries **5** marks.

(5×4=20)

11. What is embryo rescue ?
12. Describe the method of genetic mapping of plant genome.

P.T.O.

K22P 1403

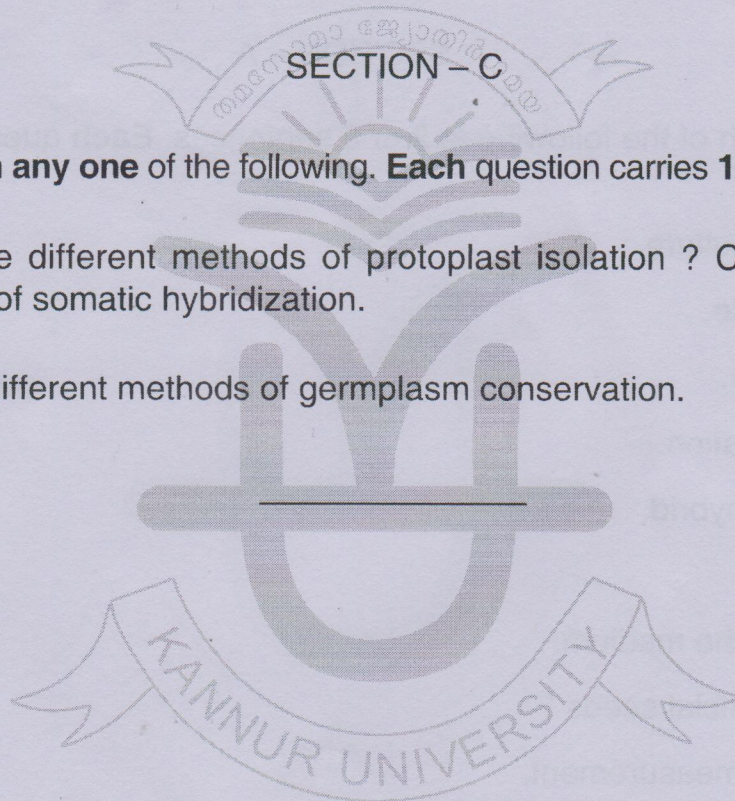


13. What is disarming of Ti Plasmid ?
14. What are the applications of micropropagation ?
15. Explain the importance of chloroplast transformation.
16. Different types of callus and the method to regenerate plants from callus.

SECTION - C

Write an essay on **any one** of the following. **Each** question carries **10** marks. **(10×1=10)**

17. What are the different methods of protoplast isolation ? Comment on the applications of somatic hybridization.
18. Explain the different methods of germplasm conservation.





K22P 1404

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III Semester M.Sc. Degree (CBSS – Reg./Sup./Imp.)
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BIOTECHNOLOGY
BTG3C11 : Animal Cell Biotechnology

Time : 3 Hours

Max. Marks : 40

SECTION – A

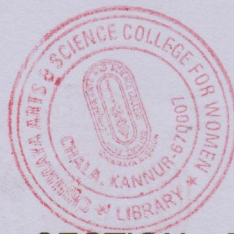
Write about **each** of the following in **2** and **3** sentences. **Each** question carries **1** mark.

(1×10=10)

1. Explain tissue engineering.
2. What are continuous cell lines ?
3. What are the different types of vaccines ?
4. Explain balanced salt solution.
5. What is organ culture ?
6. Explain RFLP.
7. Explain the importance of serum in cell culture media.
8. Difference between monoclonal and polyclonal antibodies.
9. Explain the method used for the propagation of adhesive cells.
10. Discuss cell synchronization.

P.T.O.

K22P 1404



SECTION – B

Write notes on or discuss **any four** of the following. **Each** question carries 5 marks.

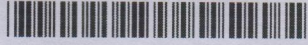
(5×4=20)

11. Write a note on gene transfer methods in animal cell lines.
12. Explain about the maintenance of cell cultures.
13. Write a note on hybridoma technology.
14. Discuss on the equipments and materials for animal cell culture technology.
15. What is cell cloning and micromanipulation ?
16. Explain DNA fingerprinting.

SECTION – C

Write essay on **any one** of the following. **Each** question carries 10 marks. (10×1=10)

17. Discuss on the chemical, physical and metabolic functions of different constituents of culture medium.
18. Explain the biotechnological approach to vaccine production.



K22P 1405

Reg. No. :

Name :

**III Semester M.Sc. Degree (CBSS – Reg./Sup./Imp.) Examination, October 2022
(2019 Admission Onwards)**

BIOTECHNOLOGY

BTG3E04 : Biosafety, Bioethics and Intellectual Property Rights

Time : 3 Hours

Max. Marks : 40

SECTION – A

Write about **each** of the following in **2** or **3** sentences. **Each** question carries **1** mark. **(1×10=10)**

1. What is meant by FDA ?
2. What is meant by trade secret ?
3. Comment on subject matter copyright.
4. Describe about animal patent.
5. Define Biosafety.
6. What is meant by GATT ?
7. Comment on plant genetic resources.
8. What is meant by trademark ?
9. Name the different biosafety levels and which is the level with the highest containment ?
10. Comment on the biosafety code of practice.

P.T.O.



SECTION – B

Write notes on or discuss **any four** of the following. **Each** question carries **5** marks.

(5×4=20)

11. Explain Sui-generis plant variety protection.
12. Describe the dangers associated with alteration in genetic makeup.
13. Discuss the similarities and differences between a patent and a copyright.
14. Explain the mechanism of implementation of biosafety guidelines.
15. Discuss the various classes of pathogenic microorganisms.
16. Elucidate the importance of TRIPS.

SECTION – C

Write an essay on **any one** of the following. The question carries **10** marks. (1×10=10)

17. Which are the biosafety objectives ? Discuss the various biological and physical containments.
18. Discuss the nature of patents and give a detailed account on the procedure for patent granting and patent infringement.

