

K21P 0998

Reg. No. :

Name :

III Semester M.Sc. Degree (CBSS – Reg./Suppl./Imp.)

Examination, October 2021

(2018 Admission Onwards)

BIOTECHNOLOGY

BTG 3E04 : Biosafety, Bioethics and Intellectual Property Rights

Time : 3 Hours

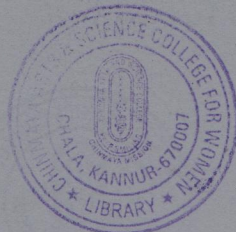
Max. Marks : 40

SECTION – A

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

1. What is meant by a copyright ?
2. What is terminator technology ?
3. What are the legislations covering patenting in India ?
4. How human autonomy is compromised in creation of designer babies ?
5. Comment on TRIPS.
6. What is bioterrorism ?
7. What are LMO ?
8. What is biological containment ?
9. USA patented scented rice varieties (Basmati) under the name Texmati. This patent was successfully revoked by Govt. of India. What is the type of IPR that provides this protection to indigenous varieties ?
10. What are ES cells ?

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SECTION – B

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

(4×5=20)

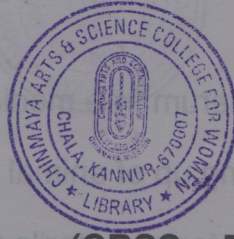
11. What is Patent Co-operation Treaty ?
12. What are the inventions that cannot be patented ?
13. Comment on Cartagena protocol on biosafety and biodiversity.
14. Comment on patentability of microorganisms with special emphasis on Super Bug.
15. Comment on the ethical implications of euthanasia.
16. Elaborate on different biosafety levels.

SECTION – C

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

17. What are the different forms of intellectual properties ?
 18. Elaborate on biosafety levels with containment facilities practised in each level.
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III Semester M.Sc. Degree (CBSS – Reg./Suppl./Imp.)
Examination, October 2021
(2018 Admission Onwards)
BIOTECHNOLOGY
BTG 3C11 : Animal Cell 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 :

(10×1=10)

1. What are cadherins ?
2. What is humulin ?
3. What is a continuous cell line ?
4. What is HAT selection ?
5. What are endogenous marker genes ?
6. What are cryoprotectants ?
7. What is a hystiotypic culture ?
8. What is a primary culture ?
9. What is cell line transformation ?
10. What is mycoplasma contamination in cell lines ?

SECTION – B

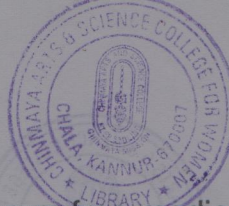
Write notes on or discuss **any four** of the following. **Each** question carries **5** marks :

(4×5=20)

11. Write in detail the applications of hybridoma technology ?
12. What is the principle and applications of MTT assay ?

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13. What are the advantages of serum free media ?
14. Write in detail about the scaling up of animal cell culture.
15. What is the role of CO₂ incubator and sterile work surface in animal cell culture ?
16. What is the intrinsic path way of apoptosis ?

SECTION – C

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

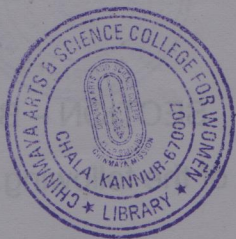
17. What are the applications of transgenic animals ?
18. Write detailed layout of animal cell culture laboratory with a properly labelled diagram.



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BIOTECHNOLOGY

BTG 3 C 10 : Plant Biotechnology

Time : 3 Hours

Max. Marks : 40

Instruction : Draw diagrams *wherever* necessary.

SECTION – A

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

1 mark.

(10×1=10)

1. What is an explant ?
2. What is embryo rescue ?
3. What are DH lines ?
4. Comment on totipotency and pluripotency.
5. What are cybrids ?
6. What is hormone habituation ?
7. What is in vitro pollination ?
8. What are nurse cells ?
9. What is the role of auxins in plant regeneration ?
10. Name any two cytokinins used in plant cell culture.

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SECTION – B

Write note on or discuss **any four** of the following. **Each** question carries **five** marks.

(5×4=20)

11. What are the methods of production and application of haploids ?
12. What is adventitious root culture ? How does it help in secondary metabolite isolation?
13. What is biotransformation ? Explain with a suitable example.
14. Narrate the production and application of artificial seeds.
15. What are the different methods of protoplast isolation ?
16. What are the applications of callus and suspension culture ?

SECTION – C

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

17. What are the applications of plant tissue culture ?
18. Detail the organisation of an ideal plant cell culture facility with a labelled diagram.



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III Semester M.Sc. Degree (CBSS – Reg./Suppl./Imp.)
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BIOTECHNOLOGY
BTG 3 C 09 : Recombinant DNA Technology

Time : 3 Hours

Max. Marks : 40

Instruction : Draw diagrams *wherever* necessary.

SECTION – A

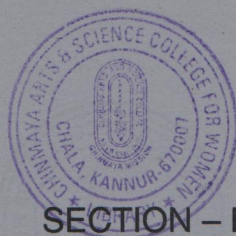
Write about **each** of the following in **2** or **3** sentences. **Each** question carries **1** mark.

(1×10=10)

1. Comment on nick translation labelling of nucleic acid probes.
2. What is alpha complementation ?
3. What is biolistics ?
4. Comment on nested PCR.
5. What is pyrosequencing ?
6. How does multiple His tags help in recombinant protein purification ?
7. What is micro RNA ?
8. What are complementary cell lines ?
9. What is the role of ZEBRA in lytic replication of EBV replicons ?
10. What are adenoviral vector vaccines ?

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SECTION – B

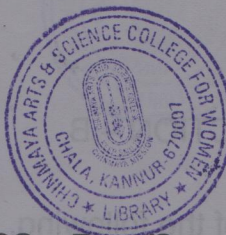
Write a note on or discuss **any four** of the following. **Each** question carries **five** marks. (5×4=20)

11. Compare Lambda replacement and Lambda insertion vectors with suitable examples ? Why certain Lambda vectors have an additional CHI site introduced into them ?
12. What are the factors to be considered while designing a PCR primer ?
13. How does antisense RNA technology help in gene knocking out ? Narrate with a suitable example.
14. Narrate the Capture method of full-length cDNA cloning.
15. What is pronuclear microinjection ? How does it differ from ES cell mediated gene transfer ?
16. Comment on South Western screening of expression libraries ? How does it differ from immunological screening of expression libraries ?

SECTION – C

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

17. What are the applications of DNA fingerprinting ?
 18. What is yeast two hybrid system ? How does it work in ascertaining protein protein interactions ? What are the differences between yeast two hybrid and yeast three hybrid systems ?
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BIOTECHNOLOGY

BTG3C08 : Biostatistics and Bioinformatics

Time : 3 Hours

Max. Marks : 40

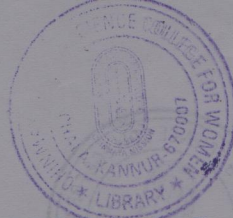
SECTION – A

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

1. Define continuous data.
2. What is Variance ?
3. Define ANOVA.
4. Define Probability.
5. Define Standard error.
6. FASTA.
7. PDB.
8. Define SAGE.
9. Homology modelling.
10. GenBank.

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SECTION – B

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

11. Find coefficient of variation for the following data.

12, 18, 24, 26, 30, 34.

12. From the following data find median and mode.

0 – 10 5

10 – 20 7

20 – 30 12

30 – 40 8

40 – 50 4

13. Explain correlation.

14. Describe about structure visualization tools.

15. Explain genome sequencing.

16. Biological database.

SECTION – C

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

17. Describe on graphical representation of data.

18. Explain about the importance of Bioinformatics.
