K20P 1105

Reg. No. : .....

Name : .....

III Semester M.Sc. Degree (CBSS – Reg./Suppl./Imp.) Examination, October 2020
(2014 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. Write the formula to calculate median from a grouped data.
2. Name two methods of graphical representation of data.
3. What is null hypothesis ?
4. What is data ? Write any two types of numerical data.
5. What is a scatter diagram ?
6. What is standard error ? How is it calculated ?
7. What is the significance of a completely randomized block design ?
8. What is gene annotation ?
9. What are expressed sequence tags ?
10. What is BLAST search ?

P.T.O.

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SECTION – B

Write short notes on or discuss **any four** of the follo**ch** question carries **5** marks : **(4×5=20)**

11. What is Standard Deviation ? How is it calculated and what are its merits and demerits ?

12. What is probability ? Describe various theorems associated with it.

13. What is Chi-square test ? What are its applications ?

14. How is ANOVA test useful in testing three or more variables ?

15. Discuss the role of Microarray technique in functional genomics.

16. Elaborate on data acquisition using protein sequencing.

SECTION – C

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

17. Write short notes on :
    a) Correlation coefficient
    b) Students t-test
    c) Latin square design
    d) Cumulative frequency
    e) Arithmetic mean.

18. Describe various bioinformatics tools used in protein sequence data analysis.

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III Semester M.Sc. Degree (CBSS – Reg./Suppl./Imp.) Examination, October 2020
(2014 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. Restriction enzymes do not chew up the genomic DNA of the host organisms from which they are isolated. Why ?
2. Differentiate between isoschizomers and neoschizomers.
3. Name 3 most commonly used end modifying enzymes and their use in R-DNA technology.
4. What are the essential features of cloning vector ?
5. Explain briefly the process of transformation.
6. Write a brief note on multiplex PCR.
7. Why recombinant proteins are expressed as fusion proteins ? Give two examples of fusion tags used in expression vectors.
8. Differentiate between random and site directed mutagenesis.
9. Explain briefly the gene transfer mediated by Ti plasmid.
10. Define SSCP. Briefly explain the technique.

P.T.O.

SECTION – B

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

11. Describe briefly the different methods of nucleic acid labeling.

12. What are the advantages of pUC over pBR322 ? Explain the basic principle of direct blue white selection.

13. Discuss on the production of heterologous proteins in eukaryotes. Add a note on its advantages.

14. Comment on RNAi.

15. Give an account of the DNA based diagnosis of genetic.

16. Discuss on DNA Microarray.

SECTION – C

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

17. Differentiate between genomic and cDNA library. Explain the essential steps involved in the construction of genomic library using phage vectors.

18. Discuss in detail on recombinant vaccines.

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Reg. No. : .....

Name : .....

III Semester M.Sc. Degree (CBSS – Reg./Suppl./Imp.) Examination, October 2020
(2014 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. Comment on redifferentiation and dedifferentiation.
2. What is embryo rescue ?
3. What are cybrids ?
4. What is the role of gibberellins in tissue culture ?
5. What is the most noteworthy contribution of S. S. Bhojwani in tissue culture ?
6. Can you assure clonal fidelity via tissue culture ? Substantiate your answer with valid points.
7. What is the role of elicitors in tissue culture ?
8. What is the importance of border sequences in Ti plasmid ?
9. Why biolistic gene transfer employs tungsten as a carrier for DNA ?
10. How will you produce virus-free plants in culture ?

P.T.O.

SECTION – B

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

11. Discuss the various steps in somatic embryogenesis and add notes on its advantages.

12. Give an account on the role of suspension culture in the production of plant secondary metabolites.

13. What are somaclonal variations ? How do somaclonal variations occur in culture ?

14. How will you preserve germplasm for the conservation of endangered plants ?

15. How is protoplast isolated and fused ? Explain.

16. Write a short note on the synthesis and merits of artificial seeds

SECTION – C

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

17. What are molecular markers ? Explain their role in crop improvement.

18. How will you produce interspecific hybrids via somatic hybridisation ? What are its applications ?

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III Semester M.Sc. Degree (CBSS – Reg./Suppl./Imp.) Examination, October 2020
(2014 Admission Onwards)
BIOTECHNOLOGY
BTG3C11 : 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. **(1×10=10)**

1. What is meant by cell synchronization ?
2. Briefly mention the names and roles of cell adhesion molecules.
3. What is the purpose of scaling up of cell cultures ?
4. How does a stem cell differ from a normal adult cell ?
5. Explain what is meant by 'Animal pharming'.
6. Differentiate between cell proliferation and differentiation.
7. Distinguish polyclonal from monoclonal antibodies.
8. Give two applications of RFLP technique.
9. Mention three features of cells undergoing apoptosis.
10. Why is carbon dioxide used in CO_2 incubator for animal cell culture ?

SECTION – B

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

11. What is the purpose of using HAT medium ?
12. Explain how three-dimensional cell cultures are established.
13. What are caspases ? Discuss on their role in the apoptotic process.
14. Discuss on the techniques used for cell separation.
15. Describe the essential steps involved in DNA fingerprinting.
16. Briefly discuss on the role of serum and supplements in animal cell culture.

SECTION – C

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

17. Discuss in detail on the various methods of producing transgenic animals.
18. Describe the procedure for obtaining primary cell cultures and established cell lines.

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III Semester M.Sc. Degree (CBSS – Reg./Suppl./Imp.) Examination, October 2020

(2014 Admission Onwards)

BIOTECHNOLOGY

BTG3E04 : Bio-safety, 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. Briefly explain various biosafety levels.
2. What is copyright ?
3. What is farmer's right ?
4. What is biological containment ?
5. What is meant by a geographical indication ?
6. Comment on the term patent infringement.
7. Mention an example of traditional knowledge protection.
8. Can a gene be patented ? Comment.
9. How is the release of pathogenic microbes controlled by ethical interference ?
10. Give an account on Sui-generis plant variety protection.

P.T.O.

SECTION – B

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

11. List the important biosafety practices in a containment lab.

12. Give an account on the revised guidelines for transgenic plant research.

13. Why is interfering in natural processes unethical ? Explain.

14. Explain the major aspects of GAAT and its implications.

15. Briefly explain transfer of technology and benefit sharing policy.

16. What is Institutional Biosafety ? Explain.

SECTION – C

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

17. Give an account on the various guidelines for r DNA research.

18. What is a patent ? How is a patent filed and what are the procedures for granting a patent ?
