

B-42

Roll No.....

Total No. of Questions : 27]

[Total No. of Printed Pages : 4

XIIKDAR21
5042
BIOTECHNOLOGY

Time : 3 Hours]

[Maximum Marks : 70

Section-A

(Objective/Do as directed)

1 each

4. Expand the term :

MALDI

2. is one of the most popular software tools in biological research. (Fill up)

3. To increase the efficiency of oxygen transfer further, baffles are fixed to the walls off the fermentor. (Yes/No)

4. Digoxin having a plant source digitalis lanata is a cardiac tonic. (True/False)

5. Define the term :

Centrifuges

XIIKDAR21-5042

B-42

Turn Over

(2)

Section-B

(Very Short Answer Type Questions)

2 each

6. What does genomic library represent ? Is it useful in case of eukaryotic organism ?
7. Why DNA sequencing is important ?
8. Write down the significance of Van der Waals contact distance.
9. What do you mean by Nutraceutical Proteins ?
10. What is Humulin ? How is it derived ?
11. Name any two 'BLAST' groups.
12. What do you mean by functional genomics ?

Section-C

(Short Answer Type Questions)

3 each

13. Name three steps involved in PCR. Why are they repeated several times ?
14. Write a short note on DNA sequencing.
15. What is Protein Sequencing ? Give its significance in brief.

XIIKDAR21-5042

B-42

(3)

16. Define Strain Preservation. Explain with an example.

17. Write down the significance of Lyophilisation.

18. What do you mean by 'Growth Kinetics' ? How is it related to specific growth rate ?

19. Write down the importance of molecular farming.

20. Write down the uses of cell suspension culture (at least three).

21. Write a short note on biotic and abiotic stress tolerance.

22. What is the significance of continuous cell lines ?

23. Write applications of monoclonal antibodies in diagnostics.

24. Name the steps involved in creation of a chimeric mouse.

Section-D

(Long Answer Type Questions)

5 each

25. What do you mean by Hybridisation Techniques ? Add a short note on DNA sequencing.

Or

Write down the steps involved in introduction of recombinant DNA into host cells.

XIIKDAR21-5042

B-42

Turn Over

(4)

26. What are Non-catalytic functional proteins ? Explain them in brief with examples.

Or

What is Proteomics ? Why do you think the study of this area as rewarding in future ?

27. What are different types of molecules on which sequence data is obtained and deposited in the database ?

Or

Why is it important to create bio-informatics database ? Explain in brief.

XIIKDAR21-5042

B-42

Total No. of Questions : 27]

[Total No. of Printed Pages : 4

XIARWZJDN20
2131
BIOTECHNOLOGY

Time : 3 Hours]

[Maximum Marks : 70

Note :- All questions are compulsory.

(Very Short Answer Type Questions)

1 each

1. Lack of beta chain in haemoglobin results in which disease.
2. What will you call complements of mRNA ?
3. The term genomics was coined by
4. The bacteria not utilizing biotin on minimal medium is called
5. Name the transgenic tomato with delayed ripening

(Short Answer Type Questions-I)

2 each

6. Write *two* distinguishing features of pBR322 and pUC19 vectors.
7. Explain briefly the palindromic sequence.

XIARWZJDN20-2131

Turn Over

C-31

(3)

20. Write a explanatory note on single cell proteins.

21. Write various applications of Zygotic embryo culture.

22. Write short notes on the following :

- (i) Organogenesis
- (ii) Somatic embryos

23. What is triploid production ? State the role of triploid production in plant improvement.

24. Differentiate between polyclonal and monoclonal antibodies.

(Long Answer Type Questions)

5 each

25. Write explanatory notes on the following :

- (i) cDNA
- (ii) DNA probe

Or

How has use of recombinant DNA technology conferred beneficial traits to plants ? Explain.

IARWZJDN20-2131

Turn Over

-31

(2)

8. How does chymotrypsin work ?

9. What are nutraceutical proteins ?

10. What is structural proteomics ?

11. What is subtilisin ?

12. T-cells reject transplant. How is kidney transplantation successfully done ?

(Short Answer Type Questions-II)

3 each

13. Why are plasmids and bacteriophages used as cloning vectors ?

14. What are restriction sites ?

15. Expand BLAST. What kind of analysis can be undertaken with this search tool ?

16. Write the differences between expression sequence tags (EST) and sequence tagged sites.

17. What are main branches of genomics one can study ?

18. What is feedback culture ? Why is it better than a batch culture ?

19. Indicate various precautions to be observed for maximal stability of proteins during purification.

XIARWZJDN20-2131

C-31

(4)

26. What is 3D shape of proteins ? Write in detail about structural organisation of proteins.

Or

Give an illustrated account of protein engineering and design.

27. What are stem cells ? Give a detailed account of embryonic stem cell culture.

Or

What is hybridoma technology ? Write therapeutic uses of monoclonal antibodies.

Total No. of Questions : 27]

[Total No. of Printed P

XIIARKDN20 2036 BIOTECHNOLOGY

Time : 3 Hours]

[Maximum Mar

Note :- All questions are compulsory.

(Very Short Answer Type Questions)

1. Define Cosmid.
2. What will you call the complements of mRNA ?
3. Write full form of NCBI.
4. High ratio of Auxin : Cytokinin promotes
5. Why is Bt cotton insect resistant ?

(Short Answer Type Questions-I)

- What is BAC Vector ?
- What is expression tag sequence ?

XIIARKDN20-2036

-36

8. What is Structural Genomics ?
9. What is Cryopreservation ?
10. List the various components of Large Scale Culture Media.
11. What is Knockout mice ?
12. How are monoclonal antibodies produced ?

(Short Answer Type Questions-II)

3 each

13. What is Chimera ? Why ES cell culture is used to produce chimera ?
14. What is ELISA ? Write the steps of ELISA testing.
15. Why does the public view GM food with concern ? Indicate possible reasons.
16. How is aeration of microbial cultures achieved in laboratory and in fermentors ?
17. What are the various applications of microbial culture technology ? Explain any one of them.
18. What are SNPs ? Indicate the importance of generating SNP maps.
19. "The relationship between the number of genes and the number of proteins is non-linear." Explain this statement.

XIIARKDN20-2036

D-36

(3)

20. Explain how biomolecules are identified by X-ray crystallography.
21. Write a brief note on future of Proteomics.
22. What do you mean by Northern blotting technique ? Explain its significance.
23. Write various applications of PCR.
24. What do you mean by DNA sequencing ? Explain.

(Long Answer Type Questions)

5 each

25. Schematically describe Site-directed mutagenesis and explain one application of this technique.

Or

- What is Restriction Enzyme ? Write types of restriction enzymes and cleavage by restriction enzymes.

26. Indicate three important non-covalent forces that contribute to protein folding and explain how they arise.

Or

Write in detail the structure and function of Proteins.

XIIARKDN20-2036

D-36

Turn O.

(4)

27. Write short notes on the following :

- (i) Explant
- (ii) Organogenesis
- (iii) Somatic embryos
- (iv) Protoplast culture
- (v) Plant cell culture

Or

Write an extended note on Molecular Farming.

B-33

Roll No.

Total No. of Questions : 21]

[Total No. of Printed Pages : 4

XIIBASZND20**1833****BIOTECHNOLOGY**

Time : 3 Hours]

[Maximum Marks : 70

(Long Answer Type Questions)

5 each

1. Explain the purification of proteins.

Or

Explain mass spectrometry.

2. What are restriction enzymes ? Explain their applications.

Or

Explain western blotting technique of Hybridization.

3. Explain the methods of gene sequencing.

Or

Explain briefly DNA Microarray Technology.

XIIBASZND20-1833

Turn Over

B-33

(3)

18. What are parthenogenetic embryos ?

19. What is a surrogate mother ?

20. Write the role of Erythropoietin.

(Objective Type Questions/MCQS)

1 each

21. Do as directed :

- (i) Insulin was produced in year 1982. (Yes/No)

- (ii) Inactive form of chymotrypsin is called

(Fill in the blank)

- (iii) Who invented PCR ?

(A) EM Southern

(B) Kary Mullis

(C) Maxam and Gilbert

(D) Paul Berg

(Choose the correct one)

- (iv) Radio-labelled small fragment of DNA molecule complementary to foreign DNA is called (Fill in the blank)

- (v) Plant propagation through tissue culture is called Micro propagation. (True/False)

XIIBASZND20-1833

Turn Over

B-33

(2)

4. How can Microbial growth be measured ? Explain its methods.

Or

How is bioethics on Microbial technology important ? Explain.

(Short Answer Type Questions)

3 each

5. What is knockout mice ?

6. Explain molecular scissors.

7. Differentiate between In-vivo Gene bank and In-vitro Gene bank.

8. What is Emulsification ? Explain.

9. What is similarity nucleotide polymorphism ?

10. Explain molecular archaeology.

11. What are bacteriophage vectors ?

12. What are whey proteins ?

(Very Short Answer Type Questions)

2 each

13. Name two genetic diseases.

14. What is Transfection ?

15. What is a Database ?

16. Define Cryopreservation.

17. What is Gymnogenesis ?

XIIBASZND20-1833

B-33

(4)

- (vi) Larkson and Scowcroft coined which of the following term in 1981 ?

(A) Somaclonal variation

(B) Virus indexing

(C) Transgenic plants

(D) Androgenesis

(Choose the correct one)

- (vii) Somatic embryos are called as

(Fill in the blank)

- (viii) Which of the following cannot be tested by ELISA ?

(A) Herpes

(B) HIV

(C) Hepatitis

(D) Otitis

(Choose the correct one)

- (ix) Who cultured animal cells first ?

- (x) How are animal cells cemented together ?

XIIBASZND20-1833

B-33

B-36

Roll No.

Total No. of Questions : 21]

[Total No. of Printed Pages : 4

XIIKDRO/N19**24836****BIOTECHNOLOGY**

Time : 3 Hours]

[Maximum Marks : 70

(Long Answer Type Questions) 5 each

1. Explain in detail structure-function relationship in proteins with suitable example.

Or

Write physical and computational techniques of protein design.

2. Discuss in detail how is recombinant DNA constructed ? Support your answer with suitable diagrams.

Or

With the help of suitable diagrams explain how the transfer of recombinants into host cell is accomplished ?

3. Write detailed notes on the following :

- (i) Application of microbial culture technology
(ii) Bioreactor

XIIKDRO/N19-24836

B-36

Turn Over

Write in detail the methods of measurement of microbial growth.

4. Write in detail the methods of plant cell, tissue and organ culture.

Or

How is production of virus free plants accomplished in plant tissue culture ? Explain in detail.

(Short Answer Type Questions)

3 each

5. Write short note on Protein Data Bank.
6. Write short note on Shuttle Vectors.
7. Briefly explain single nucleotide polymorphism.
8. What do you mean by Nomenclature of DNA sequences ? Explain.
9. How is Isolation of microbial strains done ? Explain briefly.
10. What are the application of haploids ? Explain.
11. What is the role serum in culturing the animal cells ?
12. Write a short note on Gene Therapy.

(Very Short Answer Type Questions)

2 each

13. What is Mass Spectrometry ?
14. What is Probiotics ?
15. What are Nutraceutical Proteins ?

XIIKDRO/N19-24836

B-36

(3)

16. Write function of Alkaline Phosphate.

17. What is DNA Library ?

18. What is Cloning Vector ?

19. What is Genome Similarity ?

20. What is Knockout Gene ?

(Objective Type Questions)

1 each

21. (i) T-cell population can be eliminated by using polyclonal antibodies. (True/False)
(ii) Hybridoma is a fusion product of which cells ?
(A) B-cells and T-cells
(B) T-cells and Leucocytes
(C) B-cells and Myeloma cells
(D) B-cells and Cancerous cells
(iii) On which cell lines recombinant erythropoietin was produced ?
(A) Hela cells (B) CHO
(C) Kb (D) None of these
(iv) In which of the following the vascular system is absent ?
(A) Leaf (B) Axillary buds
(C) Meristem (D) Stem

XIIKDRO/N19-24836

B-36

Turn Over

(4)

- (v) The bacteria not utilizing biotin on minimal medium is called (Fill in the blank)

- (vi) The intracellular products are recovered by :

- (A) Downstream processing
(B) Using chemostat
(C) Increasing Cell density
(D) Cell disruption and Centrifugation

- (vii) Which of the following is an official central repository for genome mapping and database ?

- (A) MGD (B) GDB
(C) OMIM (D) Pubmed

- (viii) Expand FISH.

- (ix) Cos site is present on which type of DNA molecule ?

- (A) $\phi \times 174$ (B) T₄ DNA
(C) Phage λ (D) M 13

- (x) Specific nucleotide sequence of a gene can be changed by :

- (A) Site directed mutagenesis
(B) r-DNA technology
(C) Cell transformation
(D) Using exonuclease

XIIKDRO/N19-24836

B-36