

S.No. 5604

P 16 BCE 3

(For candidates admitted from 2016–2017 onwards)

M.Sc. DEGREE EXAMINATION, APRIL 2019.

Biochemistry — Elective

GENETIC ENGINEERING

Time : Three hours

Maximum : 75 marks

SECTION A — (10 × 2 = 20)

Answer ALL questions

1. Define cloning.
2. Define gene.
3. What are shuttle vectors?
4. How SI nuclease functions?
5. Define a probe.
6. Define point mutation.
7. What are liposomes?
8. Define SNP.

9. Patent — comment.

14. (

10. Define gene therapy.

SECTION B — (5 × 5 = 25)

Answer ALL questions, choosing either (a) or (b)

11. (a) Explain the isolation of total cellular DNA.

15.

Or

(b) What are the specialized tools and techniques used in genetic engineering?

12. (a) Write a note on types of restriction endonucleases and its mechanism of action with suitable examples

Or

(b) What are binary vectors. Explain with suitable example how a binary vectors is used in rDNA technology?

13. (a) Differentiate southern and western blotting. How DNA is transferred from the gel to membrane?

Or

(b) How genomic DNA library is constructed and screened?

14. (a) What are molecular markers? Enumerate the application of any two molecular markers in genetic engineering.

Or

- (b) What are microarrays?. Enumerate it types and explain DNA microarray and its applications.

15. (a) What are peptide hormones? How insulin is produced recombinantly using *E.coli* and yeast?

Or

- (b) Write a note on legal issues and hazards of genetic engineering.

SECTION C — (3 × 10 = 30)

Answer any THREE questions .

16. Explain the isolation and purification of mRNA from mammalian cells
17. Write a note on
- (a) phage vectors and
 - (b) Agrobacterium based vectors with suitable illustrations
18. Define PCR. Enumerate the different types of PCR and its applications in forensic sciences.

19. Write a note on

- (a) liposome mediated direct transfer and
- (b) biolistics for gene transfer

20. Define somatic cell nuclear transfer. How transgenic animals are produced? What are the applications of transgenic animals?

S.No. 1104

P 16 BCE 3

(For candidates admitted from 2016–2017 onwards)

M.Sc. DEGREE EXAMINATION, NOVEMBER 2018.

Biochemistry – Elective

GENETIC ENGINEERING

Time : Three hours

Maximum : 75 marks

SECTION A — (10 × 2 = 20)

Answer ALL questions.

1. Define rDNA technology.
2. What are the benefits of Gene cloning?
3. Define cosmids.
4. Differentiate plasmids and phagemids.
5. Define DNA foot printing.
6. What is chromosomal jumping?
7. Explain RFLP.
8. What are microarrays?

9. Define gene therapy.

10. What is IPR?

SECTION B — (5 × 5 = 25)

Answer ALL the questions, choosing either (a) or (b).

11. (a) Explain the isolation of mRNA from mammalian cells.

Or

(b) Explain the isolation and purification of DNA.

12. (a) Write a note on yeast vectors.

Or

(b) Explain the types and applications of restriction endonucleases.

13. (a) Write a note on cDNA library.

Or

(b) Explain southern blotting and its applications in genetic engineering.

14. (a) Discuss the introduction of DNA into living cells by particle bombardment method.

Or

(b) Write a note on restriction analysis of DNA and its applications.

15. (a) Explain the importance of transgenic animals.

Or

- (b) Explain the ethical, legal issues and hazards of genetic engineering.

SECTION C — (3 × 10 = 30)

Answer any THREE questions.

16. Explain
- (a) Plant cell DNA isolation
 - (b) Preparation of total cellular DNA.
17. Write a note on plant and animal viruses as vectors.
18. Explain the different types of PCR and its application.
19. Discuss on human genome project.
20. Write a note on
- (a) antisense RNA and its application
 - (b) recombinant insulin.

S.No. 7104

P 16 BCE 3

(For candidates admitted from 2016-2017 onwards)

M.Sc. DEGREE EXAMINATION, APRIL 2018.

Biochemistry

GENETIC ENGINEERING

Time : Three hours

Maximum : 75 marks

SECTION A — (10 × 2 = 20)

Answer ALL questions.

1. Define r DNA.
2. What is a bacteriophage?
3. Define phagemids.
4. Name two HAC vectors.
5. What are probes?
6. Define C.DNA library.
7. Define a liposome.
8. State SSR and AFLP as molecular markers.

9. What is gene therapy?
10. Expand IPR write its significance.

SECTION B — (5 × 5 = 25)

Answer ALL questions, choosing either (a) or (b).

11. (a) Describe in short the purification of plant cell DNA.

Or

- (b) Outline the specialized tools adopted in gene cloning.

12. (a) What are cloning vectors? Discuss about BAC and PUC vectors.

Or

- (b) Give an brief account on reverse transcriptase and polymerase in gene cloning.

13. (a) Deduce the protocol for western blot.

Or

- (b) Discuss about PCR types and its application.

14. (a) Explain the gene transfer by biolistics and electroporation.

Or

- (b) Discuss in brief on restriction analysis of DNA.

15. (a) Write an account on recombinant vaccines.

Or

(b) Explain herbicide resistant plants by transgenesis approach.

SECTION C — (3 × 10 = 30)

Answer any THREE questions.

16. Describe the isolation and purification of m-RNA from mammalian cells.

17. Write a detailed essay on expression vectors for eukaryotes.

18. Construct cDNA library and how will you select and screen the recombinants? Describe in detail.

19. What are proteomics? Describe its types and applications in HGP.

20. Discuss on the following :

(a) Patenting

(b) Ethical and legal issues

(c) Hazards of Genetic Engineering.

S.No. 8097

P 16 BCE 3

(For candidates admitted from 2016 – 2017 onwards)

M.Sc. DEGREE EXAMINATION, NOVEMBER 2017.

Biochemistry – Elective

GENETIC ENGINEERING

Time : Three hours

Maximum : 75 marks

PART A — (10 × 2 = 20)

Answer ALL the questions.

1. Define gene cloning.
2. Enlist any two merits of gene cloning.
3. What are cosmids?
4. What is expression cassettes?
5. Define genomics library.
6. Define chromosome jumping.
7. Define ultrasonication.
8. What are VNTR, SCAR? State their use as markers?

9. What are transgenic plants? Give examples. 15.

10. State any two ethical issues underlying in GE.

PART B — (5 × 5 = 25)

Answer ALL questions.

11. (a) Discuss the mode of preparation of isolation of total cellular DNA. 16

Or

(b) Give a brief account of rDNA technology. 17

12. (a) Comment on Agrobacterium as cloning vectors. 18

Or

(b) Discuss in brief plant viruses as vectors. 19

13. (a) How probes for DNA are synthesized and give their uses? 20

Or

(b) Give the basic principle of southern blotting and its application.

14. (a) Discuss indirect method gene transfer.

Or

(b) Write an account on "HGP".

9. What are transgenic plants? Give examples. 15.
10. State any two ethical issues underlying in GE.

PART B — (5 × 5 = 25)

Answer ALL questions.

11. (a) Discuss the mode of preparation of isolation of total cellular DNA. 16.
- Or
- (b) Give a brief account of rDNA technology. 17.
12. (a) Comment on Agrobacterium as cloning vectors. 18.
- Or
- (b) Discuss in brief plant viruses as vectors. 19.
13. (a) How probes for DNA are synthesized and give their uses? 20.
- Or
- (b) Give the basic principle of southern blotting and it's application.
14. (a) Discuss indirect method gene transfer.
- Or
- (b) Write an account on "HGP".

15. (a) What is gene therapy? Discuss in short.

Or

(b) Give a note on transgenic animals and its application.

PART C — (3 × 10 = 30)

Answer any THREE questions.

16. How will you isolate and purify bacteriophage DNA- Discuss in detail?

17. What are vectors? Describe in detail on binary and shuttle vectors.

18. Write an essay on DNA finger and foot printing and give its application.

19. Detail on microarrays and its application.

20. Discuss the Antisense RNA technology and its application in Genetic engineering.