

**Master of Science (M.Sc.) Third Semester (CBCS) (Microbiology) Examination  
RECOMBINANT DNA TECHNOLOGY AND NANO-BIOTECHNOLOGY (RDTN)**

**Compulsory Paper—2**

**Paper—II**

Time : Three Hours]

[Maximum Marks : 80

**N.B. :—** (1) All questions are compulsory and carry equal marks.

(2) Draw well labelled diagrams wherever necessary.

- |   |    |
|---|----|
| 1. Describe expression of vectors in the host cell in detail.                         | 16 |
| <b>OR</b>   |    |
| Write steps involved in PCR and add a note on its limitations and applications.       | 16 |
| 2. Discuss DNA finger printing and Dnase foot printing in detail.                     | 16 |
| <b>OR</b>   |    |
| Explain reporter gene transcription in detail.  | 16 |
| 3. Give a detailed account on present perspective of stem cell technology.            | 16 |
| <b>OR</b>   |    |
| What is cell line ? Discuss different types of cell lines and their cryopreservation. | 16 |
| 4. Discuss production and applications of tissue growth factor B and Dnase in detail. | 16 |
| <b>OR</b>   |    |
| Discuss various products produced by transgenic plant.                                | 16 |
| 5. Write a brief notes on :   |    |
| (a) cDNA library.   | 4  |
| (b) Pyrosequencing.   | 4  |
| (c) Immortalization.  | 4  |
| (d) Tissue plasminogen activator.   | 4  |

Master of Science (M.Sc.) Third Semester Choice Based Credit System (CBCS)  
(Microbiology) Examination  
RECOMBINANT DNA TECHNOLOGY AND NANOBIO TECHNOLOGY (RDTN)

Compulsory Paper-2

Paper-II

Time : Three Hours]

[Maximum Marks : 80

N.B. :— All questions are compulsory and carry equal marks.

1. Discuss the techniques employed for generating cDNA library. 16

OR

Discuss the procedure for PCR amplification and add a note on its limitations. 16

2. Describe in detail the principle and applications of pyrosequencing. 16

OR

Discuss the procedure, applications and limitations of DNA fingerprinting. 16

3. Discuss in detail the quantitation and characterization of cells grown by tissue culture technique. 16

OR

Describe in detail suspension culture technique. 16

4. Describe in detail the production of platelet derived growth factor and give its applications. 16

OR

Give a comprehensive account of transgenic plant products. 16

5. Write notes on :

(a) Expression vectors 4

(b) Reporter gene 4

(c) Sites of stem cell occurrence 4

(d) Genetically modified organism. 4

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NRJ/KW/17/4056

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[Maximum Marks : 80

N.B. :- (1) All questions are compulsory and carry equal marks.

(2) Draw well labelled diagrams wherever necessary.

✓ 1. Describe in detail the steps involved in PCR amplification and add a note on RT-PCR. 16

OR

Give a comprehensive account of vectors used in recombinant DNA technology. 16

✓ 2. Describe in detail the pyrosequencing method. 16

OR

Describe the process and applications of DNA fingerprinting 16

3. Describe in detail suspension culture techniques used in tissue culture. 16

OR

Give a comprehensive account of stem-cell technology. 16

✓ 4. Describe in detail the production and application tissue plasminogen activator. 16

OR

Give a comprehensive account of transgenic plants and their products. 16

✓ 5. Write notes on :

✓ (a) CDNA library 4

✓ (b) DMS footprinting 4

(c) Serum-free media 4

✓ (d) PDGF. 4

S.S.E.S. Amt's Science College, Congress Nagar, Nagpur

Terminal Examination - 2019

M.Sc.II (Microbiology)

Semester III

Paper II- Recombinant Dna technology And Nanobiotechnology

Time: 3hrs

Marks: 80

Note: All the questions are compulsory and carry equal marks.

Draw diagrams wherever necessary.

Que1. Give detailed account of PCR and its application. 16

OR

Give an account of genomic and c-dna library.

Que.2 Describe in detail the pyro-sequencing method. 16

OR

Write short notes on:

- a) Dnasefootprinting. 8
- b) Nuclear run on transcription. 8

Que.3 Give a comprehensive account of stem cell technology. 16

OR

- A) Write a note on transformation and immortalization of cell culture. 8
- B) Write a note on cell lines and cryopreservation of cells. 8

Que.4 Describe steps for construction of transgenic plants with the help of examples. 16

OR

Write notes on:

- A) Concept of Nano biotechnology and its application. 8
- B) Tissue plasminogen activator. 8

16

Que.5 Write notes on:

1. Expression Vectors
2. Reporter gene transcription
3. Serum free media
4. PDGF

*Madhuri*  
[ Madhuri S. Walkekar ]

S.S.E.S. Amt's Science College, Congress Nagar, Nagpur

Terminal Examination - 2019

M.Sc.II (Microbiology)

Semester III

Paper II- Recombinant Dna technology And Nanobiotechnology

Time: 3hrs

Marks: 80

Note: All the questions are compulsory and carry equal marks.

Draw diagrams wherever necessary.

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- Que1. Give detailed account of PCR and its application. 16  
OR  
Give an account of genomic and c-dna library.
- Que.2 Describe in detail the pyro-sequencing method. 16  
OR  
Write short notes on:  
a) Dnasefootprinting. 8  
b) Nuclear run on transcription. 8
- Que.3 Give a comprehensive account of stem cell technology. 16  
OR  
A) Write a note on transformation and immortalization of cell culture. 8  
B) Write a note on cell lines and cryopreservation of cells. 8
- Que.4 Describe steps for construction of transgenic plants with the help of examples. 16  
OR  
Write notes on:  
A) Concept of Nano biotechnology and its application. 8  
B) Tissue plasminogen activator. 8
- Que.5 Write notes on: 16  
1. Expression Vectors  
2. Reporter gene transcription  
3. Serum free media  
4. PDGF

*Madhuri*  
[ Madhuri S. Walvekar ]

**Master of Science (M.Sc.) Third Semester Choice Based Credit System (CBCS)**  
**(Microbiology) Examination**  
**RECOMBINANT DNA TECHNOLOGY AND NANOBIO TECHNOLOGY (RDTN)**  
**Compulsory Paper-2**

**Paper-II**

Time : Three Hours]

[Maximum Marks : 80

**N.B. :—** All questions are compulsory and carry equal marks.

- |           |   |    |
|-----------|---|----|
| 1.        | Describe polymerase chain reaction in detail. Write note on RT-PCR. | 16 |
| <b>OR</b> |   |    |
|           | Describe various cloning vectors in detail.                         | 16 |
| 2.        | Explain in detail dideoxynucleotide method for DNA sequencing.      | 16 |
| <b>OR</b> |   |    |
|           | Describe in detail DNA fingerprinting. Write its applications.      | 16 |
| 3.        | Explain stem cell technology and its applications.                  | 16 |
| <b>OR</b> |   |    |
|           | Write in detail on :  | 8  |
|           | (a) Quantitation and characterization of cells.                     | 8  |
|           | (b) Cell lines.   | 16 |
| 4.        | Give an account on transgenic plant products.                       | 16 |
| <b>OR</b> |   |    |
|           | Explain the following :   | 8  |
|           | (a) Nanobiotechnology and its applications.                         | 8  |
|           | (b) Tissue plasminogen activator.                                   | 8  |
| 5.        | Write notes on :  | 4  |
|           | (a) Microarray and its applications                                 | 4  |
|           | (b) Reporter gene transcription                                     | 4  |
|           | (c) Suspension culture techniques                                   | 4  |
|           | (d) PDGF  | 4  |

SSESA's Science College, Congress Nagar, Nagpur

## Preliminary Examination

Winter – 2023

M.Sc Sem-III

Paper II - Recombinant DNA Technology And Nanobiotechnology

Time: 3 Hours

Max. Marks: 80

**Note:**

1) All questions are compulsory and carry marks as indicated.

2) Draw neat and well labelled diagram wherever necessary.

Q.1. A) Describe screening techniques to identify the successful insertion and expression of genes in host cells. 16

OR

C) Explain Cloning Vectors in brief. 16

Q.2. A) Explain Dideoxynucleotide method of DNA sequencing. 16

OR

C) Describe principle, procedure and applications of DNA Fingerprinting.. 16

Q.3. A) Explain types of tissue culture media and supplements used in development of cell lines. 16

OR

B) Write a note on Cryopreservation 8

C) Suspension cell culture technique 8

Q.4. A) Describe steps of construction of transgenic plants and give suitable examples. 16

OR

B) Explain the concept of nanobiotechnology along with its applications. 16

Q.5. Write notes on:

A) cDNA library 4

B) DNase footprinting 4

C) Serum free media 4

D) GMO 4

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