Write the following information in the first page of Answer Script before starting answer

ODD SEMESTER EXAMINATION: 2020-21

Exam ID Number_____

Course_____ Semester_____

Paper Code_____Paper Title_____

Type of Exam: _____ (Regular/Back/Improvement)

Important Instruction for students:

1. Student should write objective and descriptive answer on plain white paper.
2. Give page number in each page starting from 1st page.
3. After completion of examination, Scan all pages, convert into a single PDF, rename the file with Class Roll No. (2019MBA15) and upload to the Google classroom as attachment.
4. Exam timing from 10am – 1pm (for morning shift).
5. Question Paper will be uploaded before 10 mins from the schedule time.
6. Additional 20 mins time will be given for scanning and uploading the single PDF file.
7. Student will be marked as ABSENT if failed to upload the PDF answer script due to any reason.

M. Sc. BIOTECHNOLOGY
THIRD SEMESTER
GENETIC ENGINEERING
MBT - 301

Duration : 3 hrs. **Full Marks : 70**

〔 PART-A: Objective 〕

Time : 20 min. **Marks : 20**

Choose the correct answer from the following: ***1×20=20***

1. Transfection is technique of …….
- **a.** Animals
- **b.** Plants
- **c.** Microbes
- **d.** Plant cells

2. Liposomes are ……..of lipids.
- **a.** Vesicles
- **b.** Uni membrane
- **c.** Bi membrane
- **d.** Tri laminar

3. Agrobacterium is used for gene delivery in……...
- **a.** Plants
- **b.** Animals
- **c.** Bacteria
- **d.** Fungus

4. Heat shock method is used for gene delivery in ……
- **a.** Plants
- **b.** Animals
- **c.** Bacteria
- **d.** Fungus

5. 5′GAATTC3′ is the palindrome of…….
- **a.** Eco RI
- **b.** Hind II
- **c.** Hind III
- **d.** Eco RV

6. Enzyme that can add P at the end of DNA is……..
- **a.** Phosphatase
- **b.** Ligase
- **c.** Kinase
- **d.** Polymerase

7. Most common endonuclease used in genetic engineering is…….
- **a.** Type II
- **b.** Type I
- **c.** Type III
- **d.** All are equally used

8. ssDNA can be prepared in …….
- **a.** Plasmid
- **b.** Cosmid
- **c.** Lambda phage
- **d.** M13

9. The end product of expression vector is……..
- **a.** Polyamides
- **b.** Polysaccharide
- **c.** Polynucleotide
- **d.** Polypeptide

10. SV40 based vectors are…….vectors.
- **a.** Plant
- **b.** Mammalian
- **c.** Fungus
- **d.** Bacterial

11. Blotting by which protein can be checked is……..

a. Western **b.** Southern
c. Northern **d.** Eastern

12. mRNA is required for……library preparation.

a. Copy DNA **b.** Complementary DNA
c. Genomic DNA **d.** Both A and B

13. Nitrocellulose membrane is used in…….

a. Library preparation **b.** Fingerprinting
c. Blotting **d.** None of the above

14. Joining of primer with template is an example of…….

a. Detection **b.** Extension
c. Screening **d.** Hybridization

15. For visualization in blotting……can be used.

a. Autoradiography **b.** X-Ray
c. Both are correct **d.** Optional

16. Choose the correct information for AFLP

a. Enzyme based **b.** Probe based
c. PCR based **d.** All are correct

17. Gene expression can be studied by ……..

a. Microarray **b.** AFLP
c. VNTR **d.** DNA fingerprinting

18. The GC content for primer must be……. % for PCR.

a. 30-60 **b.** 40-60
c. 40-70 **d.** 50-60

19. Choose the correct option.

a. RFLP=AFLP=PCR **b.** PCR-RFLP=AFLP
c. PCR=RFLP=AFLP **d.** PCR+RFLP=AFLP

20. In …….., polymerase chain reaction two sets of different primers are used.

a. Nested **b.** Asymmetric
c. Anchored **d.** Real time

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〔PART-B : Descriptive〕

Time : 2 hrs. 40 min. **Marks : 50**

[Answer question no.1 & any four (4) from the rest]

1.	Explain the cycles of PCR with suitable diagram.	**10**
2.	**a.** Write a note on RFLP.	**5**
	b. Differentiate RAPD and RFLP.	**5**
3.	**a.** What do you understand by DNA library?	**3**
	b. Write the basic steps of cDNA library preparation.	**7**
4.	**a.** What is blotting?	**2**
	b. Write a note on Southern blotting.	**8**
5.	Describe the action of restriction endonuclease with one example of restriction site.	**10**
6.	What is vector? Explain plasmid as vector in brief.	**2+8=10**
7.	**a.** Mention some of examples of modifying enzymes.	**6+4=10**
	b. Compare linker and adaptor.	
8.	**a.** What is the scope of genetic engineering in agriculture?	**5+5=10**
	b. Write in brief about any one genetically modified food.	

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