D.K.M.COLLEGE FOR WOMEN (AUTONOMOUS),VELLORE-1.

SUB: ADVANCES IN BIOTECHNOLOGY-(15CPMB3C)

UNIT-1: PLANT BIOTECHNOLOGY

SECTION-A

1. Write a note on Bt cotton.
2. Write a note on Bt brinjal.
3. List out the herbicide resistance plants.
4. Brief note on Golden rice.
5. Write a note on Edible vaccine.
6. What is mean by plantibodies and give some examples?
7. Write a short note on Flavr- savr tomato.

SECTION-B

1. Write a detail about Transgenic plants.
2. Elaborate on Antisense RNA technology and its role in plant improvement.

UNIT-2: ANIMAL BIOTECHNOLOGY

SECTION-A

1. Explain viral methods in gene transfer technology.
2. Write a brief note on non-viral microinjection method.
3. Explain ES cell methods gene transfer.
4. Write about transgenic sheep. Add a note on wool production.
5. Give an account on transgenic fishes.
6. Explain in detail about transgenic poultry. Add a note on its applications.
7. Describe about transgenic goat. Explain about production of transgenic kids.

8. What is Cryopreservation?
9. Write a note on steps involving in cryopreservation technique to preserve the plant materials.
10. Explain about the steps involved in preservation of animal cell line.

SECTION-B

1. What is gene transfer technology. Write a notes on methods involving in gene transfer technology
2. Explain about transgenic animals. Add a note on production of sheep, goat, fish and poultry.
3. Write in detail about cryopreservation. How the plant materials are preserved in cryopreservation.

UNIT-3: MEDICAL BIOTECHNOLOGY

SECTION-A

1. Explain gene therapy.
2. Gene therapy strategies.
3. Gene augmentation therapy
4. Gene inhibition therapy
5. Approaches for gene therapy
6. Somatic cell gene therapy
7. Germ cell gene therapy
8. Types of gene therapy
9. *Ex vivo* gene therapy
10. *In vivio* gene therapy
11. Steps involved in gene therapy
12. Vectors used in gene therapy
13. Viral vectors.
14. Non viral vectors.

15. Role of retroviral vectors in gene therapy.
16. Human artificial chromosomes.
17. Bone marrow cells.
18. Therapy for ADA deficiency.
19. Examples of *Ex vivo* gene therapy.
20. Examples of *in vivo* gene therapy.
21. Role of adenovirus in gene therapy.
22. Adeno associated virus.
23. Herpes simplex virus.
24. Lipoplexes
25. DNA-molecular conjugate.
26. Pure DNA constructs.
27. Gene therapy for cancer.
28. Tumor necrosis factor gene therapy.
29. Suicide gene therapy or prodrug activation gene therapy.
30. Two-gene cancer therapy.
31. Gene replacement therapy.
32. Gene therapy for AIDS.
33. DNA in disease diagnosis.

Infectious disease-> Tuberculosis.
AIDS.
Genetic disease -> Alzheimer's disease.
Cystic fibrosis.

SECTION-B

1. Gene therapy.
2. Approaches for gene therapy.
3. Types of gene therapy.
4. *Ex vivo* gene therapy.
5. *In vivo* gene therapy.
6. Viral and non-viral vectors in gene therapy.

7. Gene therapy for cancer.
8. DNA in disease diagnosis

UNIT-4: ENVIRONMENTAL BIOTECHNOLOGY

SECTION- A

1. What is bioremediation?
2. Write about bioremediation & its types.
3. Write a note on *in situ* & *ex situ* bioremediation.
4. Give a brief account of xenobiotic compounds.
5. Describe how xenobiotic compounds are biodegraded?
6. How bioremediation works?
7. Explain methods of bioremediation
8. Describe about *in situ* bioremediation & its types
9. Write a note on advantages & disadvantages of insitu & exsitu bioremediation
10. What types of compounds can be treated biologically & types of organisms used in bioremediation?
11. Schematic diagram for bioremediation using microbes & environmental conditions.
12. Write a note on advantages & disadvantages of bioremediation
13. Describe about biodegradation of hydrocarbon
14. Write about biodegradation of aliphatic hydrocarbons
15. Write about biodegradation of aromatic hydrocarbons
16. Explain about biodegradation of hydrocarbon using pesticides & herbicides
17. Describe about genetic engineering for bioremediation
18. Write about biodegradation of components using superbug
19. Explain about superbug
20. Write a note on bioagumentation
21. Describe about biosurfactants

22. Briefly explain MEOR
23. Write a note on global warming & acid rain

SECTION- B

1. Write about the significance of biodegradation on hydrocarbons
2. Explain about bioremediation & its types
3. Describe insitu & exsitu bioremediation with its merits & demerits
4. Discuss the types of reactions in bioremediation
5. Explain about bioremediation of hydrocarbons
6. Give a detail note on bioremediation of pesticides & herbicides
7. Give an account on genetic engineering for bioremediation
8. Give detail account on bioagumentation & biosurfactant
9. Describe about MEOR
10. Discuss about the global environmental problems

UNIT-5: NANO BIOTECHNOLOGY

SECTION-A

1. Synthesis of nanoparticles of plants and its application.
2. Synthesis of nanoparticles from microbes and its application.
3. Characterisation of nanoparticles.
4. Describes the nanotoxicology
5. Write a note short of nanomedicine.
6. Write a note on application of nanoparticles in medical field

SECTION-B

1. Describe the history and scope of recent development of nanoparticles.
2. Write notes on synthesis of nanoparticles. Add notes on the characterisation of nanoparticles.
3. Characterisation of nanoparticles of using X-Ray diffraction, FTIR, UV- Vis spectroscopy, SEM and TEM analysis.
4. Explain about the nanotoxicology.