

DEPARTMENT OF BOTANY
MARWARI COLLEGE,RANCHI

Question bank-paper- 13
M.Sc. Botany sem-IV,2020- by Dr.(Mrs.) A.S. Khalkho

BIOCHEMICALS AND MOLECULAR TECHNIQUES

Multiple choice questions:

1. The technique used to identify specific DNA sequence in bacterial colonies is:
 - a. Colony hybridization
 - b. In situ hybridization
 - c. Dot blot technique
 - d. Western blotting
2. Southern hybridization is:
 - a. Used to identify a specific protein
 - b. Used to identify a specific DNA
 - c. Used to identify a specific RNA
 - d. Used to identify both DNA and RNA
3. Which of the following statements are true regarding Southern blotting?
 - a. Developed by E.M. Southern
 - b. DNA-DNA hybridization is the basis
 - c. The transfer of DNA fragments from gel to nitrocellulose membrane is called blotting
 - d. All of these
4. Applications of southern blotting includes:
 - a. DNA fingerprinting
 - b. Preparation of RFLP maps
 - c. Identification of transferred genes
 - d. All of these
5. The technique used to detect the presence of DNA or RNA in a non-fractionated DNA sample is:
 - a. Colony hybridization
 - b. In situ hybridization
 - c. Dot blot technique
 - d. Western blotting
6. Northern hybridization is:
 - a. Used to identify both DNA and RNA
 - b. Used to identify a specific RNA
 - c. Used to identify a specific protein
 - d. Used to identify a specific DNA
7. The technique used to locate specific genes in chromosomes is:
 - a. Colony hybridization
 - b. Dot blot technique
 - c. Western blotting
 - d. In situ hybridization

8. The separation technique of charged molecules under the influence of electric current is called :
 - a. Western blotting
 - b. Colony hybridization
 - c. Dot blot technique
 - d. Electrophoresis
9. In western blotting:
 - a. Agarose gel is commonly used
 - b. Polysaccharide gel is commonly used
 - c. Both a and b
 - d. High resolution gels
10. All are differences in procedure between northern and southern hybridization except:
 - a. DBM membrane is used in northern hybridization
 - b. RNA DNA hybrids are formed in northern hybridization
 - c. Initially fragments are separated by electrophoresis in northern hybridization
 - d. DNA denaturation is required before blotting southern hybridization

Answers: 1-a,2-a,3-d,4-d,5-c,6-b,7-d,8-d,9-b,10-c

Write short notes on the following:

- i. Affinity chromatography
- ii. Bright field microscope
- iii. Centrifugation
- iv. Column chromatography
- v. Fluorescence microscopy
- vi. Fluorescence spectrophotometer
- vii. Gel filtration
- viii. GLC
- ix. HPLC
- x. Paper chromatography
- xi. SEM
- xii. Spectrophotometer
- xiii. TEM
- xiv. Thin layer chromatography
- xv. Chromosome walking
- xvi. Restriction mapping
- xvii. RAPD
- xviii. RFLP
- xix. ISSR
- xx. Polymorphism
- xxi. PCR
- xxii. RT-PCR
- xxiii. Tag polymerase
- xxiv. Q-PCR
- xxv. Application of PCR
- xxvi. 2D-PAGE

- xxvii. Protein microarray
- xxviii. Differential fluorescence gel electrophoresis
- xxix. Protein profiling
- xxx. DNA sequencer
- xxxi. Cell fractionation
- xxxii. FISH
- xxxiii. Genomic library
- xxxiv. Translation expression vectors
- xxxv. Strong promoter
- xxxvi. Plasmid DNA isolation

Long answer questions:

1. Define PCR. Discuss different variations of basic PCR technique and its applications.
2. What are molecular markers? Describe applications of molecular markers in solving biological problems.
3. What is RFLP? Compare this technique with RAPD.
4. What are restriction endonucleases? Discuss their role in biotechnology.
5. How proteins help in genomics?
6. Describe the isolation and purification of genomic DNA.
7. Briefly describe southern blotting, northern blotting and Western blotting.
8. Compare different blotting techniques.
9. What is DNA finger printing? Describe with diagram method of DNA finger printing.
10. What is the importance and role of promoter in transgenic expression? How gene transcription is regulated?
11. Describe with diagram electron microscope.
12. What is the basic concept of spectrophotometer?
13. What are the uses of polyacrylamide gel electrophoresis?

DEPARTMENT OF BOTANY
MARWARI COLLEGE,RANCHI

Question bank-paper- 14
M.Sc. Botany sem-IV,2020- by Dr.(Mrs.) A.S. Khalkho

SPECIAL THEORY PAPER- MICROBIOLOGY AND PLANT PATHOLOGY

Write short notes on the following:

- i. Characteristic features of plant pathogenic bacteria
- ii. Nature of viruses
- iii. Structure of virus
- iv. Transmission of viruses
- v. Ultrastructure of T2 phage virus
- vi. Virusoids
- vii. Composition of virus
- viii. Biological control
- ix. Immunity
- x. Obligate parasite
- xi. Pathogen
- xii. Mildews
- xiii. Witches broom
- xiv. Smuts
- xv. Necrosis
- xvi. Antibiotics
- xvii. Economic importance of virus
- xviii. Leaf curl of papaya
- xix. Citrus canker
- xx. Early blight of potato
- xxi. Wilt of arhar
- xxii. Tobacco mosaic
- xxiii. Nomenclature of viruses
- xxiv. Antigen
- xxv. Antibody
- xxvi. Serological reactions
- xxvii. Pathogenecity
- xxviii. Host resistance
- xxix. Epiphytotic disease
- xxx. Quarantine
- xxxi. Crop rotation
- xxxii. Fungicides
- xxxiii. Trap crops

- xxxiv. Sanitation
xxxv. Tikka disease of groundnut

Long answer type questions:

1. Give an account of the structure and nature of plant viruses.
2. Give an account of symptoms of viruses. Describe their nature also.
3. What are viruses? Are they living or non-living agents? Give the methods of their transmission.
4. Give an account of multiplication of plant viruses .
5. Describe the general structure of the virus.
6. Describe the reproduction in virus.
7. Give an account of different mode of transmission of plant viruses.
8. Briefly describe the plant Quarantines.
9. What is biological control? Describe the mechanisms of biological control.
10. Briefly describe the management of plant disease through chemical treatment.
11. What are antibiotics? Describe its general mode of action.
12. Discuss pathogenesis with reference to any rust you have studied.
13. Describe the symptoms, disease cycle and control measures of stem rust of wheat.
14. Discuss the causal organisms,disease cycle and control measures loose smut of wheat.
15. What are the control measures for the disease “loose smut of wheat”.
16. Explain the annual recurrence of wheat rust in the plains of northern India. Give some measures to control the disease.
17. What is late blight? Describe the life history of the fungus causing late blight disease of potato, with suitable diagrams.
18. What do you understand by Mosaic? Describe any mosaic disease with diagram.
19. Describe the symptoms, ethology and methods of control of sugarcane mosaic disease.
20. Give an illustrated account of the morphology and chemical structure of viruses.
21. What are antibiotics? Give an account of antibiotics of bacterial origin.
22. Antibiotics are generally more effective against bacterial infections than against viral infections. What are some of the reasons for this?
23. Enumerate the qualities essential in a good antibiotic. Which genera of micro-organisms produce most of the antibiotics?
24. What is plant quarantine? When and where was first quarantine enacted?
25. What is biological control of plant pathogens? Give some examples where it has been successfully used to control plant disease.
26. What are fungicides? Give an account of systematic fungicides.
27. Comment briefly on the chemical control plant disease.
28. Describe the symptoms,etiology and methods of control of powdery mildew of peas.
29. Describe the symptoms ,etiology and methods of control of yellow vein mosaic in bhindi.
30. Describe the symptoms ,etiology and methods of control of red rot of sugarcane.