Chapter- 11

BIOTECHNOLOGY PRINCIPLES AND PROCESS

VERY SHORT ANSWER QUESTIONS (1 mark)

01. What do you mean by cloning?
02. Who first constructed r-DNA?
03. Name the stain used during gel electrophoresis.
04. What is microinjection?
05. What is the host called that produces a foreign gene product? What this obtained product is called?
06. Explain briefly:- (i) Chitinase (ii) Plasmid
07. Name and expand the technique to obtain multiple copies of DNA segment of interest, synthesized in vitro.
08. Distinguish exonucleases and endonucleases.
09. Enlist any two optional condition required for growth of microbes in fermentors.
10. What is Ti plasmid?

SHORT ANSWER TYPE QUESTIONS (2 marks)

11. Explain the work carried out by Cohen and Boyer.
12. Write down the convention for naming restriction endonucleases.
13. (a) Mention the recognition sequence of ECORI.
(b) Which bonds of DNA are cut by restriction enzymes?

14. (a) Which one is the 1st restriction enzyme to be isolated?
(b) Name the types of ends produced by restriction enzymes.

15. (a) How purified DNA is precipitated? (b) Define spooling.
16. Tag notes upon (a) Elution (b) Ori (c) Cloning sites (d) AmpR
17. Enlist two essential techniques for biotechnology.
18. Expand EFB and mention the defination of biotechnology given by EFB.
19. How biolistic method is carried out and write the role of metals used in this method.
20. Difine transformation and give role of rop.

SHORT ANSWER TYPE QUESTIONS (3 marks)

21. (a) Mention the role of DNA ligase in cloning.
(b) Write down the principle of gel-electrophoresis.
(c) Why DNA move toward anode in gel electrophoresis?
22. Elaborate the easier method for selection of transformants.

23. Diagramatically represent the steps in formation of r-DNA by action of enzyme ECORI.

24. Draw pBR-322 and labell the following

(a) tet R (b) BamHI (c) Rop (d) ClaI (e) Hind III (f) Pst - I

25. (a) Define insertional inactivation.

(b) Name the bacteria known as natural genetic engineer.

(c) What do you mean by disarmed pathogens?

LONG ANSWER TYPE QUESTIONS (5 marks)

26. (a) Explain PCR. (b) Why ligation is easy with sticky ends?

27. (a) Discuss the isolation of genetic material from a bactrieal cell.

(b) How heat shock method is operated?

28. (a) Explain two different methods for selection transformations.

(b) Which one is preferred and why?

29. (a) Diagrammatically represent simple stirred-tank bioreactor (6 labeling)

(b) Elaborate downstream processing.

30. (a) What do you mean by elution? (b) Mention the range of copy no. in plasmids of bacterias.

(c) Why a single recognition site is preferred in cloning experiment.

(d) Name the DNA present in Ti plasmid and state its role.

HOTS/MODEL QUESTIONS:

01. How does EcoRI differ from exonuclease?

02. How can bacterial DNA be released from the bacterial cell for biotechnology experiments.

03. Mention the source of thermostable DNA polymerase.

04. Why is the enzyme cellulase used for isolating genetic material from plant cells but not for animal cells?

05. What are cry genes? In which organism are they present?

06. State what happens when an alien gene is ligated at PVUI site of BR 322 plasmid.

07. Calculate the molar concentration of human DNA.

08. How are sticky ends forming on a DNA strand? Why are they so called?

09. How is DNA isolated in purified form from a bacterial cell?

10. Explain the role of Ti plasmid in biotechnology.

11. Name two commonly used bioreactors. State the importance of using a bireactor.

12. Why is the coding sequence of an enzyme (- galactosidase) preferred selectable marker?

13. Draw a labelled sketch of sparged stirred tank biorector. Write its application.

14. Prepare a flow chart in formation of r-DNA by the action of restriction endonuclease enzyme. EcoRI.

15. Describe the role of heat, primers and the bacterium *Thermus* aquaticus in process of PCR.