**MASTERS PU COLLEGE, HASSAN**

**BIOLOGY PRACTICE QUESTIONS**

**TOPIC: Biotechnology principles and processes**

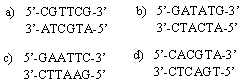
1. **Which of the following process is employed to check the progression of restriction digestion?**

a) PCR b) Molecular Diagnosis c) Agarose Gel Electrophoresis d) RFLP

1. **A thermostable DNA polymerase used in PCR is isolated from a bacterium**

a) *E.coli* b) *Thermus aquaticus* c) *Salmonella* d) *Thermus coccus*

1. **Which of the following Palindromic base sequences in DNA can be easily cut at about the middle by some particular restriction enzyme**



1. **In DNA recombinant technique, the term vector refers to**
2. Donor DNA, identified and picked up through electrophoresis
3. Plasmid, transfers foreign DNA into living cell
4. Collection of entire genome in form of plasmid
5. Enzyme cuts the DNA at specific sites.
6. **Microbes found to be very useful in genetic engineering**

a*. Escherichia coli* and *Agrobacterium tumefaciens* b*. Vibrio cholera and tailed bacteriophage*

c. *Diplococcus* sp. and *Pseudomonas* sp. d. Crown gall bacterium and *Caenorhabditis elegans*

1. **During the process of isolation of DNA, chilled alcohol is added to**

a) Break open the cells to release DNA b) Facilitate action of restriction enzymes

c) Remove proteins such as histones d) Precipitate DNA

1. **Construction of recombinant DNA involves**
2. Cleaving and rejoining DNA segments with endonuclease alone.
3. Cleaving DNA segments with ‘endonucleases’ and rejoining them with ‘ligase’.
4. Cleaving DNA segments with ‘ligase’ and rejoining them with ‘endonuclease’.
5. Cleaving and rejoining DNA segments with ‘ligase’ alone.
6. **In biotechnical processes, cDNA is prepared from**

a) B – DNA b) hnRNA c) Z – DNA d) mRNA

1. **PCR proceeds in three distinct steps governed by temperature. They are in order**

a. Denaturation, synthesis, Annealing b. Annealing, Synthesis, Denaturation

c. Synthesis, Annealing, Denaturation d. Denaturation, Annealing, Synthesis

1. **‘Restriction’ in restriction enzyme refers to**

a. Cleaving of phosphodiester bond in DNA by the enzyme

b. Cutting of DNA at specific position only

c. Prevention of multiplication of phage in bacteria.

d. All the above

1. **The bands obtained by gel electrophoresis during DNA separation are stained with**

a) Methyl blue b) Ethidium bromidec) Crystal violet d) Aceto-orcein

1. **Match the following columns**

|  |  |  |  |
| --- | --- | --- | --- |
| A | Eco RI | 1 | *Escherichia coli* R 245 |
| B | Hind III | 2 | *Bacillus amyloliquefaciens* |
| C | Bam HI | 3 | *Haemophilus influenza* |
| D | Eco RII | 4 | *Escherichia coli* RY 13 |

A B C D A B C D

a. 1 2 3 4 b. 3 2 1 4

A B C D A B C D

c. 4 3 2 1 d. 4 2 3 1

1. **Commonly used vectors for human genome sequencing are:**

a. T-DNA b. BAC and YAC c. Expression vectors d. T/A cloning vectors

1. **Which one of the following statements is not correct about a plasmid?**

a. It has ability of autonomous replication b. It is circular DNA

c. It’s DNA is long as chromosomal DNA d. It has antibiotic resistance gene

**15. An enzyme catalyzing the removal of nucleotides from the ends of DNA is:**

a. endonuclease b. exonuclease c. DNA ligase d. Hind – II

**16. While isolating DNA from bacteria, which of the following enzymes is not used?**

a. Lysozyme b. Ribonuclease c. Deoxyribonuclease d. Protease

**17. Significance of 'heat shock' method in bacterial transformation is to facilitate:**

a. Binding of DNA to the cell wall

b. Uptake of DNA through membrane transport proteins

c. Uptake of DNA through transient pores in the bacterial cell wall

d. Expression of antibiotic resistance gene

**18. Which of the following steps are catalysed by Taq polymerase in a PCR reaction?**

a. Denaturation of template DNA

b. Annealing of primers to template DNA

c. Extension of primer end on the template DNA

d. All of the above

**19. RNA interference is useful for..**

a. Micropropagation b. Cell defense c. Cell proliferation d. Cell differentiation

**20. DNA or RNA segment tagged with a radioactive molecule is called…**

a. Probe b. Clone c. Plasmid d. Vector

**21. Which of the following is commonly used as a vector for introducing a DNA fragment in human lymphocytes?**

a. Retrovirus b. Ti plasmid c. Lambda phage d.pBR322

**22. Recombinant DNA or rDNA technology was discovered by**

a. Khorana b.Bateson and De Vries c. Sutton and Bovery d. Cohen and Boyer

**23. Biolistic gun is suitable for:**

a. Transformation of plant cells b. Disarming of pathogen vectors

c. DNA fingerprinting d. Construction recombinant DNA

**24. Match the following**:

1. Restriction endonuclease p. Kary Mullis

2. DNA Finger printing q. Kohler and Milstein

3. Polymerase chain reaction r. Alec Jaffreys

4. Monoclonal antibodies s. Smith and Arber

1. 1-s, 2-r, 3-p, 4-q b. 1-s, 2-r, 3-q, 4-p c. 1-q, 2-r, 3-p, 4-s d. 1-s, 2-p, 3-q, 4-r

**25. RFLP is**

1. restriction fragment length polymorphism
2. repeated fragment length polymorphism
3. renewed fragment length polymorphism
4. required fragment length polymorphism

**26. With reference to biotechnology, microinjection is a method of**

1. injecting a solution of DNA into the nucleus of a cell
2. injecting nutrients into a cell culture media
3. injecting microbes into a cell culture media
4. injecting medicine to human beings

**27. Some of the steps involved in Gene Cloning are given below**

i) Insertion of isolated gene to the vector

ii) Introduction of recombinant vector to the host

iii) Isolation of desired gene

iv) Expression of recombinant gene in host

v) Extraction of recombinant gene product

The correct sequence of steps involved are

a. iii, i, iv, ii, v b. iii, i, ii, iv, v c. i, ii, iii, iv, v d. ii, i, iii, iv, v

**28. Restriction endonucleases, when present in a host cell act on foreign DNA molecule and cleave them, but they do not act on host DNA molecule. It happens because**

* 1. Restriction endonuclease cannot act on host DNA
  2. Host DNA is packed into chromosomes
  3. Host DNA is methylated hence restriction endonucleases can’t act.
  4. Restriction endonucleases become inactive when they reach host DNA

**29. A hybridoma is**

* 1. a hybrid cell obtained by fusing a β–lymphocyte with a myeloma cell in vitro
  2. a hybrid cell obtained by fusing a β–lymphocyte with a myeloma cell in vivo
  3. a hybrid cell obtained by fusing 2 β–lymphocyte cells in vitro
  4. a hybrid cell obtained by fusing any 2 body cells in vitro

**30. Monoclonal antibodies are nowadays used in**

a. disease diagnosis b. detection of specific type of pathogen

c. very early and accurate detection of cancer d. all of these

|  |  |  |  |
| --- | --- | --- | --- |
| **Sl.no** | Key answer | **Sl.no** | Key answer |
| **1** | C | **16** | C |
| **2** | B | **17** | C |
| **3** | C | **18** | C |
| **4** | B | **19** | B |
| **5** | A | **20** | A |
| **6** | D | **21** | A |
| **7** | B | **22** | D |
| **8** | D | **23** | A |
| **9** | D | **24** | A |
| **10** | C | **25** | A |
| **11** | B | **26** | A |
| **12** | C | **27** | B |
| **13** | B | **28** | C |
| **14** | C | **29** | A |
| **15** | B | **30** | D |