DPP
DAILY PRACTICE PROBLEMS

Class : XIIth
Date :

Solutions

Subject : BIOLOGY
DPP No. : 4

Topic :- Biotechnology Principles & Processes

3 **(c)**

During extension, the enzymes *Taq* polymerase synthesizes the DNA segment between the primers. The two primers extend towards each other in order to copy the DNA segment typing between the two primers

This step requires presence of deoxynucleoside triphosphate (*d*NTPs) and Mg^{2+} and occurs at 72°C

4 **(c)**

Both are true in the process for the isolation of DNA, after several treatments the purified DNA is precipitated by adding chilled ethanol. The bacterial/plant, animal cell is broken down by enzymes to release DNA, along with RNA, proteins, polysaccharide and lipids

5 **(c)**

Bioreactors are vessels of large volumes (100-1000 litres) in which raw materials are biologically converted into specific products. It provides all the optimal conditions for achieving the desired product by providing optimal growth conditions like temperature, pH, substrate, salts vitamins and oxygen. Stirred-tank bioreactors are commonly used bioreactors. There are cylindrical with curved base to facilitate proper mixing of the contents. The stirrer mixes the contents and makes oxygen available throughout the bioreactor

6 **(a)**

Thermus aquaticus.

DNA polymerase which is stable at high temperature (>90°C) is required to carry out the synthesis of new DNA. The DNA polymerase like *Taq* polymerase is generally used in PCR reactions

which is isolated from a bacterium *Thermus aquaticus*

9 **(c)**

The first restriction endonuclease type II was isolated by Smith, Wilcox and Kelley from *Haemophilus influenza* bacterium. It was formed to cut DNA molecules at a particular point of recognizing a specific sequence of six base pairs, known as the recognition sequence

10 **(b)**

In gel electrophoresis, the separated DNA fragments are visualized after staining the DNA with ethidium bromide followed by exposure to UV radiation

13 **(b)**

In gel electrophoresis a molecule of DNA can be cut into fragments by the enzyme restriction endonuclease. DNA fragments move towards the anode according to their molecular size through the agarose gel

The separated DNA fragments can be observed only after staining them with a solution of ethidium bromide. The bright orange coloured bands of DNA can be seen only under UV light. These bands of DNA fragments are cut out from the gel and extracted by using convenient technique. This step is called elution

15 **(a)**

DNA polymerase which is stable at high temperature (>90°C) is required to carry out the synthesis of new DNA. The DNA polymerase like *Taq* polymerase is generally used in PCR reactions which is isolated from a bacterium *Thermus aquaticus*

16 **(a)**

Most sensitive technique to detect malignant cell in non-hodgkins lymphoma is polymerase chain reaction. In recent times, PCR is being used in the detection of HIV (Virus of AIDS)

19 **(c)**

The Pribnow box (also known as the Pribnow – Schaller box) is the sequence TATAAT of six nucleotides that is an essential part of a promoter

site on DNA for transcription to occur in bacteria

ANSWER-KEY										
Q.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
A.	**D**	**C**	**C**	**C**	**C**	**A**	**A**	**C**	**C**	**B**
Q.	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
A.	**D**	**D**	**B**	**A**	**A**	**A**	**D**	**A**	**C**	**D**