BIOLOGY

BOTANY AND ZOOLOGY FOR NEET AND AIIMS

PRINCIPLES AND PROCESSES

Exercise I

1. When an alien DNA fragment is linked with the origin of replication, so that this alien

piece of DNA can replicate and multiply itself in the host organism, then this can be called as

A. gene transfer

B. gel electrophoresis

C. gene cloning

D. transformation

Answer: C

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2. The cutting of DNA by restriction endonucleases results in the fragments of DNA. These fragments can be separated by a technique known as

A. PCR

B. molecular diagonsis

C. isolation of DNA

D. gel electrophoresis

Answer: D

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3. Now a days, the most commonly used matrix in gel electrophoresis is

A. agarose

B. ethidium bromide

C. sulphate bromide

D. sulphite bromide

Answer: A

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4. In addition to ori, the vector requires a ....., which helps in identifying and elimination of non transformants and selectively permitting the growth of the transformats.

A. selectable marker

B. cloning sites

C. antibiotic resistance genes

D. bacteriophage

Answer: A

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5. Retroviruses in animals have the ability to transform normal cell into

A. Tumour

B. RNA containing cell

C. DNA containing cell

D. Cancerous cell

Answer: D

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6. A thermostable DNA polymerase, which remains active during the high temperature induced denturation of double j- stranded DNA is isolated from a bacterium

A. E.coli

B. Thermus aquaticus

C. Salmonella typhimurium

D. Thermus occus

Answer: B

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7. A stirred-tank reactor is usally cylindrical or with a curved base to

A. give a large surface area

B. facilitate the mixing of the reactor content

C. avoid the mixing of the reactor contents

D. increase the oxygen transfer area

Answer: B

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8. The process by which multiple copies of the gene of interest is synthesized in vitro using two sets of primers is known is

A. PCR

B. gel electrophoresis

C. downstream processing

D. genetic printing

Answer: A

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9. The cutting of DNA at specific locations became possible with the discovery of

A. Clonning

B. restriction endonucleases

C. restriction exonucleases

D. vectors

Answer: B

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10. The linking of antibiotic resistance gene with the plasmid vector became possible with:

A. DNA ligase

B. RNA polymerase

C. DNA polymerase

D. All of the above

Answer: A

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11. A procedure, through which a piece of DNA is introduced into a host bacterium

A. Transduction

B. Transformation

C. Conjugation

D. rDNA technology

Answer: B

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12. When DNA molecule is cut by the same restriction enzyme, the resultant DNA fragments have the same kind of 'sticky-ends' and these can be joined together (end to end) using

A. E.coli

B. DNA ligase

C. DNA polymerases

D. restriction enzymes

Answer: B

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13. The name biological scissors is given to

A. Enzymes

B. restriction endonucleases

C. restriction exonucleases

D. restriction DNAse

Answer: B

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14. Extrachromosomal self replicating double-stranded circular DNA in bacterial cell is called

A. plasmid

B. cosmid

C. phagemid

D. all of these

Answer: A

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15. Which of the following is a cloning vector?

A. cosmid

B. Phagemid

C. plasmid

D. All of these

Answer: D

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16. Indespensable tool of genetic engineering is

A. cloning vector

B. restriction endonuclease enzyme

C. Pseudomonas putida

D. plasmids

Answer: B

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17. Transgenic plants are produced by using Ti-plasmid from

A. Agrobacterium tumefaciens

B. Pseudomonas putida

C. Rhizobium leguminosarum

D. E.coli

Answer: A

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18. Ori sequence in plasmid refers to sequence

A. that supports high copy number of the linked DNA

B. from which replication will start in plasmid

C. for restriction site

D. Both 1 and 2

Answer: D

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19. Which enzyme is used in the polymerase chain reaction?

A. Restriction enzymes

B. Reverse transcriptase

C. Ligase

D. DNA polymerase

Answer: D

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20. The 'sticky' end of a fragmented DNA molecule are made of

A. calcium salts

B. endonuclease

C. unpaired bases

D. methyl groups

Answer: C

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21. In recombinant DNA technology, a plasmid vector must be cleaved by

A. Four separated enzymes

B. Modified DNA ligase

C. A heated alkaline solution

D. the same enzyme that cleaves the donor gene

Answer: D

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22. Bacterial resistance to antibiotics is a generic trait carried in the bacterial

A. Intron

B. Chromosome

C. Plasmid

D. centromere

Answer: C

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23. Which of the statement is correct in the context of observing DNA separated by agarose gel electrophoresis?

A. DNA can be seen in visible light

B. DNA can be seen without staining in visible light

C. Ethidium bromide stained DNA can be seen in visible light

D. Ethidium bromide stained DNA can be seen under exposure to UV light.

Answer: D

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24. The most important feature in a plasmid to be used as a vector is

A. Origin of replication

B. Presence of a selectable marker

C. Presence of sites for restriction endonuclease

D. Its size

Answer: A

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25. The separated DNA fragments can be visualised only after staining the DNA with a compound known as

A. ethidium sulphide

B. ethidium bromide

C. ethidium sulphite

D. ethidium bromite

Answer: B

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26. You can see bright orange-coloured bands of DNA in ethidium bromide stained gel exposed to

A. X-rays

B. sun rays

C. UV rays

D. gamma rays

Answer: C

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27. The method, in which recombinant DNA is directly injected into the nucleus of an animal cell is

A. micro-injection

B. biolistics

C. gene gun

D. Both (2) and (3)

Answer: A

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28. E.coli cloning vector pBR 322 contains restriction sites (Hind III,Eco RI, Bam HI, Sal I, Pvu II, Pst I, Cla I), ori, amp^R, tet^R, and rop. In this rop codes for the

A. antibiotic resistance genes

B. foreign DNA

C. selection of recombinants from nonrecombinants

D. proteins involved in the replication of the plasmid

Answer: D

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29. In the year 1963, the two enzymes responsible for restricting the growth of bacteriophage in E.coli were isolated. One of these added methyl groups to host DNA, while the other cut DNA. The latter was called

A. restriction endonuclease

B. restriction exonuclease

C. Type III restriction enzyme

D. plasmid

Answer: A

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30. DNA is a negatively charged molecule, hence it moves towards the

A. cathode

B. anode

C. equator

D. all of these

Answer: B

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31. Which of the following could be restriction enzyme recognition site ?

A. ATGCAT

B. ATCATC

C. AAAGGA

D. ATCCTA

Answer: A

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32. Cleavage style of restriction enzymes includes

A. blunt end style

B. sticky end style

C. no style

D. Both (1) and (2)

Answer: D

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33. When cell wall of a bacterial cell is partially and completely removed, protoplasm takes a spherical shape, it is called as

A. protoplast

B. spheroplast

C. bacterioplast

D. DNA

Answer: B

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34. A piece of DNA, cut by restriction enzyme, forms bonds with other DNA molecules which have

A. methyl groups attached to them

B. unpaired bases

C. plasmid components

D. been fragmented by the same restriction enzyme

Answer: D

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35. Genetic engineering would not have been possible if one of these were absent

A. DNA polymerase

B. Reverse transcriptase

C. DNA ligase

D. RNA synthetase

Answer: C

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36. cDNA stands for

A. copy DNA

B. coupled DNA

C. complementary DNA

D. compound DNA

Answer: C

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37. The unique enzyme used in PCR is

A. Taq polymerase

B. gyrase

C. transcriptase

D. hexokinase

Answer: A

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38. A plasmid has two antibiotic-resistance genes, one for tetracycline. It is treated with a restriction enzyme that cuts in the middle of

the ampicillin gene. DNA fragments containing a haemoglobin gene were cut with the same enzyme. The plasmids and fragments are mixed, treated with ligase and used to transform bacterial cells. Clones that have taken up the recombinant DNA are the ones that

A. can grow on plates with both antibiotics

B. can grow on plates with ampicillin but not with tetracycline

C. can grow on plates with tetracycline but not with ampicillin

D. cannot grow with any antibiotic

Answer: C

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39. If the first three nucleotides in a six-nucleotides-recognition sequence are CTG, what would be the next three nucleotides most likely?

A. AGG

B. GTC

C. CTG

D. CAG

Answer: D

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40. Having becomes an expert on gel electrophoresis, you are asked to examine a gel for a

colleague, Where would you find the smallest segment of DNA?

A. Near the positive electrode, farthest away from the wells

B. Near the negative electrode, close to the wells

C. Near the top, near the negative pole

D. Near the middle, they tend to slow down after the first few minutes

Answer: A

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41. An enzyme catalysing the removal of nucleotides from the ends of DNA is

A. Endonuclease

B. Exonuclease

C. DNA ligase

D. Hind-II

Answer: B

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42. Which of the following steps are catalysed by Taq polymerase in PCR reaction?

A. Denaturation of template DNA

B. Annealing of primers to template DNA

C. Extension of primer on both the template strands of DNA

D. All the above

Answer: C

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43. This figure shows the restriction site of Eco RI. This restriction enzyme recognition site is palindromic and have specified base base pairs. This means that the recognition sites have

$5^{|}\ldots\ldots G^{\downarrow}$ AATT C$\ldots\ldots\ldots 3^{|}$

$3^{|}\ldots\ldots$ CTTAA $_{\uparrow}G\ldots\ldots\ldots 5^{|}$

A. base sequence identical to one another

B. base sequence that consist of only four bases

C. the base sequence in one DNA strand reading from one end the same as the sequence in the complementary strand reading from the opposite end.

D. base sequences in which a single letter, representing the base may be present at either location in the recognition site for cutting to occur.

Answer: C

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Exercise I More Than One Options Correct

1. A good vector must have

A. ability to replicate anutonomously

B. Single sites for a large number of restriction enzymes

C. easy transformation to the host cells

D. high molecular weight for enhanced stability

Answer: A

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2. Match each term on the right with the definition on the left,

Column - I

A) Bacterial enzymes used to cut DNA at

defined sequences

B) Sequences cut by restriction enzymes

C) Ends left on DNA segments cut by DNA restriction enzymes

D) Circular pieces of DNA found in bacteria

E) Bacterial viruses

F) Process by which bacteria take up pieces of DNA from the environment

G) Plasmid DNA that has incorporated human DNA

H) Term used to describe any vehicle that moves DNA from the organism to another

Column - II

I) Transformation

II) Cloning vector

III) Recombinant

IV) Recognition sequences

V) Plasmids

VI) Sticky ends

VII) Restriction enzymes

VIII) Bacteriophages

A. A-VII,B-IV,C-VI,DI-V,E-VIII,F-I,G-III,H-II`

B. A-IV,B-VI,C-I,D-III,E-V,F-VII,G-VIII,H-II

C. A-III,B-V,C-VII,D-VIII,E-II,F-IV,G-VI,H-I

D. A-IV,B-III,C-V,D-VI,E-VII,F-I,G-VIII,H-II

Answer: A

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3. Which of the following steps are involved in recombinant DNA technology?

A. The cells having desired DNA molecule are separated and cultured to increase their number

B. A suitable vector and donor DNA both are treated with similar restriction endonucleases

C. self ligation is increased with alkaline phosphate

D. The host cell cannot be a bacterium

Answer: B

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4. The polymerase chain reaction

A. quickly amplifies the small samples of DNA

B. is involved in the production of transgenic organisms

C. is used to make literally billions of copies in only a few hours

D. starts with one gene sized piece of RNA

Answer: D

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5. Match the following terms in Column-I with their descriptions by writing the appropriate letters from Column-II.

Column-I

A) A molecule used to carry foreign

B) A rapid way to amplify DNA

C) A way to separate DNA fragments

D) Molecular scissors

E) A gene sequence from more than one origin

Column - II

I) Restriction enzymes genes into bacteria

II) Recombinant DNA in the laboratory

III) PCR based on their size

IV) Vector

V) Gel electrophoresis

A. $\begin{matrix} A & B & C & D & E \\ IV & III & V & I & II \end{matrix}$

B. $\begin{matrix} A & B & C & D & E \\ V & I & III & II & IV \end{matrix}$

C. $\begin{matrix} A & B & C & D & E \\ V & I & III & II & IV \end{matrix}$

D. $\begin{matrix} A & B & C & D & E \\ II & V & IV & I & III \end{matrix}$

Answer: A

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6. The reverse order of nucleotide sequence found in the opposite DNA strands recognized by RE's are called

A. Plasmids

B. Cosmids

C. Vectors

D. Palindromes

Answer: D

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7. Plasmids are found in

A. Bacteria

B. Yeast

C. Viruses

D. (1) and (2)

Answer: D

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8. P^{BR322} cloning vector has the genes for resistance against

A. Chloramphenicol and Ampicillin

B. Chloramphenicol and Tetracycline

C. Ampicillin and Tetracycline

D. Steptomycin and Penicillin

Answer: C

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9. DNA finger printing involves the use of

A. cDNA

B. mRNA

C. r-RNA

D. t-RNA

Answer: A

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10. Restriction endonucleases are commonly called as

A. Molecular scissors

B. Molecular knives

C. Nature's scalpels

D. All

Answer: D

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11. Generally the palindromic sequence in dsDNA at which restriction enzymes act and cut into small segments contain

A. Always 4 base pairs only

B. Always 6 base pairs only

C. Always 5 pairs only

D. 4 to 6 base pairs

Answer: D

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12. DNA ligase is also called

A. Genetic scissors

B. Biotechnological knive

C. Nature's scalpel

D. Molecular stitches

Answer: D

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13. Computer based study and designing of genome is called

A. Proteomics

B. Genomics

C. Fermentor

D. Bioreactor

Answer: B

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14. Golden rice variety produced by incorporating three genes in Taipei variety of rice to produce which of the vitamin

A. Vitamin 'D'

B. Vitamin 'A'

C. Vitamin 'B'

D. Vitamin 'C'

Answer: B

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15. In 1963 the two enzymes responsible for restricting the growth of bacteriophage in E.coli were isolated and one of these is used

A. to remove methyl groups to DNA

B. to cut DNA

C. to join DNA fragments

D. to add ethyl enzyme is

Answer: B

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16. The first restriction endonuclease enzyme is

A. Hind-II

B. Hind-III

C. EcoRI

D. BamH_1

Answer: A

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17. More thean 900 restriction enzymes have been isolated from

A. More than 230 strains of viruses

B. 230 strains of prokaryotes

C. 230 strains of Bacteria

D. More than 230 strains of Bacteria

Answer: D

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18. In EcoRI the letter R is derived from the name of

A. Genus

B. Species

C. Both genus and species

D. Strain

Answer: D

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19. Identify the true statement regarding genetic engineering

A. A gene can be synthesized artificially

B. A gene from eukaryotic cell can be made to function in a prokaryote

C. A gene from animal cell can be made to function in a plant cell

D. All

Answer: D

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20. During the construction of the first rDNA, plasmid of which bacterium is used

A. Haemophilus influenzae

B. Escherichia coli

C. Bacillus amyloliquifaciens

D. Salmonella typhimurium

Answer: D

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21. The first r-DNA constructed by gene encoding the following character

A. Frost resistance

B. Drought resistance

C. Pest resistance

D. Antibiotic resistance

Answer: D

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22. An enzyme used to replicate and produce multiple copies of r-DNA in the suitable host is

A. DNA ligase

B. DNA polymerase

C. DNAse

D. Nuclease

Answer: B

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23. Identify the tools of r-DNA technology

A. Restriction enzymes, polymerase enzymes and ligases

B. Vectors

C. Host organisms

D. All

Answer: D

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Exercise Ii

1. In which of the process the electric current of high voltage is applied to transfer foreign DNA

A. Shot gun method

B. Micro injection method

C. Electroporation

D. biolistic method

Answer: C

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2. F.Boliver and R. Rodrigeuz constructed first artificial vector plasmid was

A. pUC19

B. pUC 101

C. pBR 322

D. Ti plasmid

Answer: C

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3. cDNA is synthesized from mRNA by the following enzyme

A. DNA dependent DNA polymerase

B. RNA polymerase

C. Reverse transcriptase

D. DNA dependent RNA polymerase

Answer: C

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4. Gene tranfer between unrelated organisms i.e., (i.e., prokaryote and eukaryote) is possible by

A. r-DNA technology

B. Hybridization

C. Polyploid breeding

D. Mutation breeding

Answer: A

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5. During the production on r-DNA the use of DNA ligase forms

A. Peptide bonds

B. Phosphodiester bonds

C. Ionic bonds

D. Hydrogen bonds

Answer: B

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6. The technology used to clean environment by removing toxic substance from soil and water is called

A. Bioaccumulation

B. Biotechnology

C. Bioinformatics

D. Bioremediastion

Answer: D

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7. The unique enzyme used in PCR is

A. Cellulase

B. RNA polymerase

C. Taq DNA polymerase

D. Helicase

Answer: C

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8. Who produced first recombinant DNA molecule?

A. Arber, Smith and Nathans

B. Watson and Crick

C. Kornberg and H.G. Khorana

D. Boyer and Cohen

Answer: D

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9. A small fragment of radio labelled DNA molecule molecule complementary to the foreign DNA is called

A. Palindromic DNA

B. Z DNA

C. B DNA

D. DNA probe

Answer: D

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10. Which of the following chemical substance acts as molecular sieve?

A. DNA ligase

B. Endonuclease

C. Agarose

D. DNA polymerase

Answer: C

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11. Identify the the mismatch from the following

A. Precipitation of DNA-Chilled ethanol

B. Separation of DNA fragments -Gel electro-phoresis

C. Staining of DNA-Ethidium bromide

D. Multiple copies of DNA fragments-ultra centrifugation

Answer: D

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12. Artificial restructured plasmids are

A. P^{BR322}

B. P^{UC19}

C. P^{UC101}

D. All

Answer: D

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13. The features that are required to facilitate cloning into a vector

A. Origin of replication

B. Selectable markers

C. Cloning sites

D. All

Answer: D

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14. The separated DNA fragments can be viualized by staining with

A. Iodine

B. Crystal violet

C. Janus green B

D. Ethidium bromide

Answer: D

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15. The bacterial cell made competent to absorb the plasmid DNA by treating with a specific concentration of

A. Calcium

B. Chloride

C. Zinc

D. Ethidium bromide

Answer: A

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16. The most commonly used matrix for gel electrophoresis is

A. Agarose

B. Proteins

C. Lipids

D. Organic acids

Answer: A

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17. The process by extraction of the separated bands of DNA from agarose gel is known as

A. Spooling

B. Down streaming

C. Elution

D. Emasculation

Answer: C

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18. To which class to restriction nucleases belong?

A. Lyases

B. Ligases

C. Nucleases

D. Oxidoreductases

Answer: C

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19. Exonulceases remove

A. Nitrogen bases from the ends of DNA

B. Phosphates from the ends of DNA

C. Nucleosides from the ends of DNA

D. Nucleotides from the ends of DNA

Answer: D

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20. RE's are isolated from

A. Bacteria

B. Viruses

C. Plants

D. Animals

Answer: A

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21. A pair of bacteria used during the construction of first asrtificial recombinant DNA molecules

A. Haemophilus and Salmonella

B. Salmonella and Bacillus

C. Escherichia and Haemophilus

D. Salmonella Escherichia

Answer: D

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22. The correct sequential steps that are involved in PCR are

A. Annealing, Denaturation and Extension

B. Denaturation, Extension and Annealing

C. Extension, Denaturation and Annealing

D. Denaturation, Annealing and Extension

Answer: D

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23. Enzyme used is gene cloning is

A. RNA dependent RNA polymerase

B. RNA dependent DNA polymerase

C. DNA dependent DNA polymerase

D. DNA dependent RNA polymerase

Answer: C

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24. Identify the mismatch from the following with regard to cell wall digesting enzymes

A. Bacterial cell wall - Lysozyme

B. Plant cell wall - Cellulose

C. Fungus cell wall - Pectinase

D. Prokaryotic cell wall-Lysozyme

Answer: C

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25. Select the incorrect statement from the following

A. Plasmid DNA+COS sites of DNA of λ phage = Cosmid

B. M_{13} phage DNA + Ecoli plasmid DNA = Phagemid

C. Cosmid is a modified circular, ds vector DNA

D. Cosmid carry selectively very small foreign DNA fragments into the host cells

Answer: D

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26. The transfer of chimeric DNA gene into host cells can be done by

A. Transformation

B. Transduction

C. Transfection

D. All

Answer: D

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27. Taq DNA polymerase was isolated from the hot springs bacterium called

A. Tetrahymenia thermophila

B. Thermophilus aquaticus

C. Clostridium botulinum

D. Bacillus licheniformis

Answer: B

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28. The core techniques that enabled birth of modern biotechnology are

A. Genetic engineering

B. Tissue culture

C. No participation of living organisms

D. Both (1) and (2)

Answer: D

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29. Which of the following is a true for sexual reproduction?

A. It provides opportunities for variations

B. It maintain uniform genetic purity of organisms for successive generations

C. It preserves genetic information for several generations

D. It permits multiplication of desired genes only

Answer: A

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30. The techniques of genetic engineering include

A. Creation of r-DNA

B. Use of gene cloning

C. Gene transfer

D. All

Answer: D

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31. All transformed cells contain

A. cDNA

B. Z DNA

C. r-DNA

D. t-DNA

Answer: C

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32. Thermocycler is a method that helps in

A. Gene transfer

B. Splicing of DNA

C. Gene cloning

D. Gene isolation

Answer: C

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33. Which of the following are used as vectors

A. Bacterial plasmids

B. Yeast plasmids

C. Some bacteriophages

D. All

Answer: D

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34. Enzymes which bring about lysis of DNA/RNA are

A. Ligases

B. Lyases

C. Peptidases

D. Nucleases

Answer: D

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35. Identify the correct statement(s) in relation to RE's

A. RE's show extreme specificity towards the base sequence in DNA strands

B. Each RE's recognises specific base sequence in DNA strands

C. No two different RE's will act on DNA at the same specific base sequence site

D. All

Answer: D

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36. Which of the following bacterial plasmids are commonly used as vectors for gene transfer in higher plants?

A. Ti plasmid of Agrobacterium tumefaciens

B. Ri plasmid of Agrobacterium rhizogenes

C. Yeast integrative plasmid

D. Both (1) and (2)

Answer: D

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37. Most common method of gene transfer in plants is

A. Southern blotting

B. Northern blotting

C. Electrophoresis

D. Infection by Agrobacterium

Answer: D

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38. Select a palindrome sequence from the following

A. AC GC

TC CG

B. TA AC

AT TC

C. AT CT

AT GA

D. AA TT

TT AA

Answer: D

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39. Transformation is due to

A. Transfer of chimeric DNA into host cell

B. Synthesis of C DNA from RNA

C. Synthesis of Polypeptide chain from mRNA

D. Insertion of gene into suitable vector

Answer: A

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40. Probes are employed in

A. Electrophoresis

B. Southern blotting

C. Colony hybridization

D. (2) and (3)

Answer: D

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41. The technique of separating DNA fragments from the mixture is

A. Detergent lysis

B. Gradient centrifugation

C. Elution

D. Electophoresis

Answer: D

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42. In staggered cutting the fragment of DNA contain

A. Sticky, identical ends

B. Non sticky identical ends

C. Sticky complimentary ends

D. Non sticky, Non complimentary ends

Answer: C

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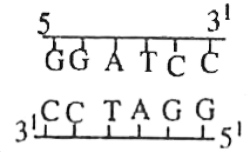
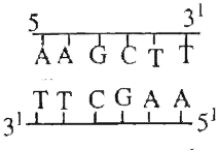
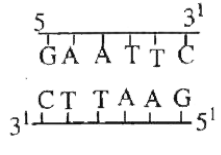
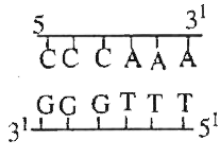
43. The restriction enzyme EcoRI recognize following palindrome sequence.

A. 

B. 

C. 

D. 

Answer: C

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44. Primers are chemically synthesised

A. Oligosaccharides

B. Oligonucleotides

C. Oligopeptides

D. Polypeptides

Answer: B

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45. r-DNA is directly injected into the nucleus of an animal cell is known as

A. Gene gun method

B. Biolistic method

C. Micro injection method

D. Both (1) and (2)

Answer: C

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46. Production of large quantites of proteins and enzymes requires the use of

A. Selectable markers

B. Bioreactors

C. Disarmed pathogens

D. None

Answer: B

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47. Application of DNA finger printing includes

A. Determination of the disputed paternity

B. To identify suspect of criminals

C. Used in immigration cases

D. All

Answer: D

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48. Bacillus thuningiensis is a

A. Biofertilizer

B. Biopesticide

C. Bioherbicide

D. Biofungicide

Answer: B

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49. Biopiracy refers to

A. Patenting without compensation

B. Authorized extraction of biological sources

C. Government bank giving an individual or an organization sole right to make use or sell

D. None

Answer: A

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50. Which of the following is a wrong statement

A. RE's recognize and cut DNA at specific locations

B. Plasmids are linear dsDNA

C. molecules

D. Hybrid DNA formed by both plasmid DNA and desired DNA fragment is called r DNA

Answer: B

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51. If any protein encoding gene is expressed in a heterologous host, is called a

A. recombinant protein

B. primary protein

C. secondary protein

D. tertiary protein

Answer: A

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52. Who discovered PCR (i.e., Polymerase Chain Reaction)?

A. Wilmut

B. A Jeffreys

C. Eithoven

D. Karry Mullis

Answer: D

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53. A 'genomic library' is the term used to describe a

A. collection of books about genes in DNA technology

B. collection of known DNA sequence

C. collection of genes that code for specific protein sequences

D. culture of bacteria that contain DNA fragments representing the genome of

an organism

Answer: D

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54. The procedure in which DNA fragments are separated by gel electrophoresis and then transferred onto a filter from radioactive probing is known as

A. Gene mapping

B. Gene cloning

C. Polymerase chain reaction

D. Southern blotting technique

Answer: D

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55. A molcular probe might be used to

A. find a nucleotide sequence

B. Insert gene into a host cell

C. make DNA for gene cloning

D. cut down pieces of DNA to manageable size

Answer: A

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56. Which of the following is common in sticky ends and molecular probes?

A. They both are parts of RNA molecules

B. They both involve in complementary pairing

C. They, both are important aspects of bacterial conjugation

D. They both are used as gene vectors in genetic engineering

Answer: B

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57. Type - II restriction enzymes

A. recognize the specific sequence and cleave DNA at that specific sequence

B. do not recognize or cleave the specific sequence

C. recognize specific sequence but cleave non-specific sequence.

D. None of the above

Answer: A

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58. Which of the following terms can be translated from the Greek as "to be carried"?

A. Polymerase

B. Phoresis

C. Euphorbia

D. Electra

Answer: B

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59. The technique helps to isolate desired gene/ DNA fragment for the construction of rDNA is

A. Eastern blotting technique

B. Western blotting technique

C. Southern blotting technique

D. Northern blotting technique

Answer: C

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Exercise Iii Previous Aipmt Neet Questions

1. DNA fragments are:

A. Either positively or negatively charged depending on their size

B. Positively charged

C. Negatively charged

D. Neutral

Answer: C

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2. The process of separation and purification of expressed protein before marketing is called:

A. Postproduction processing

B. Upstream processing

C. Downstream processing

D. Bioprocessing

Answer: C

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3. The DNA fragments separated on an agarose gel can be visualised after staining with:

A. Ehthidium bromide

B. Bromophenol blue

C. Acetocarmine

D. Aniline blue

Answer: A

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4. Stirred tank bioreactors have been designed for

A. Availability of oxygen throughout the process

B. Ensuring anaerobic conditions in the culture vesses

C. Purification of product

D. Addition of preservatives to the product

Answer: A

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5. A foreign DNA and plasmid cut by the same restriction endonuclease can be joined to form a recombinant plasmid using

A. Polymerase III

B. Ligase

C. Eco RI

D. Taq polymerase

Answer: B

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6. Which of the following is not a component of downstream processing?

A. Preservation

B. Expression

C. Separation

D. Purification

Answer: B

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7. Which of the following restriction enzymes produces blunt ends?

A. Xho I

B. Hind III

C. Sal I

D. Eco RV

Answer: D

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8. The taq polymerase enzyme is obtained from:

A. Thermus aquaticus

B. Thiobacillus ferroxidans

C. Bacillus subtilis

D. Pseudomonas putida

Answer: A

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9. Which of the following is not required for any of the techniques of DNA fingerprinting available at present ?

A. Polymerase chain reaction

B. Zinc finger analysis

C. Restriction enzymes

D. DNA-DNA hybridization

Answer: B

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10. Which of the following is a restriction endonuclease?

A. Hind II

B. Protease

C. DNase I

D. RNase

Answer: A

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11. Golden rice is a genetically modified crop plant where the incorporated gene is meant for biosyntheis of :

A. Vitamin A

B. Vitamin B

C. Vitamin C

D. Omega 3

Answer: A

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12. An analysis of chromosomal DNA using the Southern hybridization technique does not use:

A. Electrophoresis

B. Blotting

C. Autoradiography

D. PCR

Answer: D

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13. In vitro clonal propagation in plants in characterized by:

A. PCR and RAPD

B. Northern blotting

C. Electrophoresis and HPLC

D. Microscopy

Answer: A

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14. Which vector can clone only a small fragment of DNA?

A. Bacterial artificial chromosome

B. Yeast artificial chromosome

C. Plasmid

D. Cosmid

Answer: C

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15. DNA fragments generated by the restriction endonucleases in a chemical reaction can be separated by:

A. Centrifugation

B. Polymerase chain reaction

C. Electrophoresis

D. Restriction mapping

Answer: C

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16. The colonies of recombinant bacteria appear white in contrast to blue colonies of non-recombinant bacteria because of:

A. Non - recombinant bacteria containing beta - galactosidase

B. Insertional inactivation of alpha - galactosidase in non - reacombinant bacteria

C. Insertional inactivation of alpha - galactosidase in recombinant bacteria

D. Inactivation of glycosidase enzyme in recombinant

Answer: A

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17. For transformation, micro - particles coated with DNA to be bombarded with gene are made up of

A. Silicon or platinum

B. Gold or tungsten

C. Silver or platinum

D. Platinum or zinc

Answer: B

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18. There is a restriction endonuclease called EcoR I . What does "co" part in it stand for?

A. coli

B. colon

C. coelom

D. coenzyme

Answer: A

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19. Agarose extracted from sea weeds finds use in:

A. Gel electrophoresis

B. Spectrophotometry

C. Tissue culture

D. PCR

Answer: A

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20. Which one of the following is used as vector for cloning genes into higher organisms ?

A. Baculovirus

B. Salmonella typhimurium

C. Rhizopus nigricans

D. Retrovirus

Answer: D

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21. Which one of the following palindromic base sequences in DNA can be easily cut at about the middle by some particular restriction enzyme?

A. 5' ____CGTTCG___3'

3'_____ATGGTA___5'

B. 5' ____GATATG___3'

3'_____CTACTA___5'

C. 5' _____GAATTC____3'

3'_____CTTAAG____5'

D. 5' _____CACGTA____3'

3'_____CTCAGT____5'

Answer: C

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22. DNA or RNA segment tagged with a radioactive molecular is called

A. Vector

B. Probe

C. Clone

D. Plasmid

Answer: B

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23. Restriction endonucleases are enzymes which

A. make cuts at specific positions within the DNA molecule

B. recognize a specifice nucleotide sequence for binding of DNA ligase

C. restrict the action of the enzyme DNA plymerase

D. remove nucleotides from the ends of the DNA molecule

Answer: A

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24. Polyethylene glycol method is used for

A. Energy production from sewage

B. Gene transfer without a vector

C. Biodiesel production

D. Seedless fruit production

Answer: B

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25. Gel electrophoresis is used for:

A. construction of recombinant DNA by joining with cloning vectors

B. isolation of DNA molecule

C. cutting of DNA into fragments

D. separation of DNA fragments according to their size

Answer: D

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26. The linking of antibiotic resistance gene with the plasmid vector became possible with:

A. DNA polymerase

B. Exonucleases

C. DNA ligase

D. Endonucleases

Answer: C

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