

QB365 Question Bank Software Study Materials

Botany - Principles and Processes of Biotechnology 50 Important 1 Marks Questions With Answers (Book Back and Creative)

12th Standard

Biology

Total Marks : 50

Multiple Choice Question

50 x 1 = 50

- 1) Restriction enzymes are ____.
- (a) Not always required in genetic engineering (b) Essential tools in genetic engineering
(c) Nucleases that cleave DNA at specific sites **(d) both b and c**
- 2) Plasmids are ____.
- (a) circular protein molecules (b) required by bacteria (c) tiny bacteria **(d) confer resistance to antibiotics**
- 3) EcoRI cleaves DNA at ____.
- (a) AGGGTT (b) GTATATC **(c) GAATTC** (d) TATAGC
- 4) Genetic engineering is ____.
- (a) making artificial genes. **(b) hybridization of DNA of one organism to that of the others.**
(c) production of alcohol by using micro organisms.
(d) making artificial limbs, diagnostic instruments such as ECG, EEG etc.,
- 5) Consider the following statements:
I. Recombinant DNA technology is popularly known as genetic engineering is a stream of biotechnology which deals with the manipulation of genetic materials by man invitro
II. pBR322 is the first artificial cloning vector developed in 1977 by Boliver and Rodriguez from E.coli plasmid
III. Restriction enzymes belongs to a class of enzymes called nucleases.
Choose the correct option regarding above statements
- (a) I & II (b) I & III (c) II & III **(d) I,II & III**
- 6) The process of recombinant DNA technology has the following steps
I. amplication of the gene
II. Insertion of recombinant DNA into the host cells
III. Cutting of DNA at specific location using restriction enzyme .
IV. Isolation of genetic material (DNA) Pick out the correct sequence of step for recombinant DNA technology.
- (a) II, III, IV, I **(b) IV, II, III, I** (c) I, II, III, IV (d) IV, III, I, II
- 7) Which one of the following palindromic base sequence in DNA can be easily cut at about the middle by some particular restriction enzymes?
- (a) 5' CGTTCG 3' 3' ATCGTA 5' (b) 5'GATATG 3' 3' CTAATA 5' **(c) 5'GAATTC 3' 3' CTTAAG 5'**
(d) 5'CACGTA 3' 3' CTCAGT 5'
- 8) pBR 322, BR stands for ____.
- (a) Plasmid Bacterial Recombination (b) Plasmid Bacterial Replication **(c) Plasmid Boliver and Rodriguez**
(d) Plasmid Baltimore and Rodriguez
- 9) Match the Following :

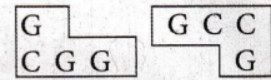
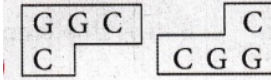
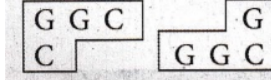
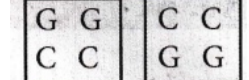
Column A	Column B
1 Exonuclease	a. add or remove phosphate

2 Endonuclease	b. binding the DNA fragments
3 Alkaline Phosphatase	c. cut the DNA at terminus
4 Ligase	d. cut the DNA at middle

(a)	(b)	(c)	(d)
1 2 3 4 a b c d	1 2 3 4 c d b a	1 2 3 4 a c b d	1 2 3 4 c d a b

- 10) In which techniques Ethidium Bromide is used?
 (a) Southern Blotting techniques (b) Western Blotting techniques (c) Polymerase Chain Reaction
(d) Agrose Gel Electroporosis
- 11) **Assertion (A):** Agrobacterium tumifaciens is popular in genetic engineering because this bacterium is associated with the root nodules of all cereals and pulse crops
Reason(R): A gene incorporated in the bacterial chromosomal genome gets automatically transferred to the cross with which bacterium is associated.
(a) Both assertion and reason are true. But reason is correct explanation of assertion.
 (b) Both assertion and reason are true. But reason is not correct explanation of assertion.
 (c) Assertion is true, but reason is false. (d) Assertion is false, but reason is true (e) Both assertion and reason are false.
- 12) Which one of the following is not correct statement
(a) Ti plasmid causes the bunched top disease (b) Multiple cloning site is known as Polylinker
 (c) Non viral method transfection of Nucleic acid in cell
 (d) Polylactic acid is a kind of biodegradable and bioactive thermoplastic.
- 13) An analysis of chromosomal DNA using the southern hybridisation technique does not use _____.
 (a) Electrophoresis (b) Blotting (c) Autoradiography **(d) Polymerase Chain Reaction**
- 14) An antibiotic gene in a vector usually helps in the selection of _____.
 (a) Competent cells **(b) Transformed cells** (c) Recombinant cells (d) None of the above
- 15) Some of the characteristics of Bt cotton are _____.
 (a) Long fibre and resistant to aphids (b) Medium yield, long fibre and resistant to beetle pests
 (c) high yield and production of toxic protein crystals which kill dipteran pests. **(d) High yield and resistant to ball worms**
- 16) Which of the following person coined the term biotechnology?
 (a) Ernst Hoppe (b) Stanley Cohen (c) Ian Wilmet **(d) Karl Ereky**
- 17) Identify the non-fungal species used in SCP production.
 (i) Candida
 (ii) Chlorella
 (iii) Chlamydomonas
 (iv) Cellulomonas
 (a) i and ii (b) ii and iii **(c) ii, iii and iv** (d) All the above
- 18) Select the correct restriction enzyme which breaks the phosphodiester bond within a DNA molecule.
 (i) Ba131
 (ii) Hind II
 (iii) BamHI
 (iv) PvuI
 (a) i and iii (b) i, ii and iii **(c) ii, iii and iv** (d) i only

- 19) Number of base pairs does pBR 322 plasmid contains _____
 (a) 322 (b) 4322 **(c) 4361** (d) 3264
- 20) pUC 19 is an example for _____
 (a) Shuttle vector **(b) Expression vector** (c) Cosmid (d) Phagemid vector
- 21) Statement 1: Liposomes are the artificial lipoprotein vesicles.
 Statement 2: Liposomes are highly used in gene transfer.
 (a) Statement 1 is correct and Statement 2 is also correct. (b) Statement 1 is correct and Statement 2 is incorrect.
 (c) Both the statements are incorrect. **(d) Statement 1 is incorrect and Statement 2 is correct**
- 22) Statement 1: DNA is a hydrophobic molecule.
 Statement 2: T-DNA is a part of E-coli plasmid.
 (a) Statement 1 is correct and Statement 2 is also correct. (b) Statement 1 is correct and Statement 2 is incorrect.
(c) Both the statements are incorrect. (d) Statement 1 is incorrect and Statement 2 is correct.
- 23) Assertion (A): Golden rice helps to overcome childhood blindness.
 Reason (R): It is rich in β -carotene.
 (a) Both A and R are wrong. (b) A is right R is wrong. **(c) R explains A.** (d) A and R are right, R does not explain A.
- 24) Assertion (A): Expression vectors are suitable for expressing foreign proteins.
 Reason (R): pBR 322 is an expression vectors.
 (a) Both A and R are wrong. **(b) A is right R is wrong.** (c) R explains A. (d) A and R are right, R does not explain A.
- 25) The term biotechnology was coined by _____
(a) Karl Ereky (b) Kary Mullis (c) H.G. Khorana (d) Herbert Boyer
- 26) _____ is a common laboratory technique used to make copies of a particular region DNA.
 (a) r-DNA technology (b) Gene cloning **(c) Polymerase chain reaction** (d) Electrophoresis
- 27) Ti plasmid is found in _____
(a) Agrobacterium tumefaciens (b) Arabidopsis thaliana (c) Tumor forming (d) Escherichia coli
- 28) _____ is preferred for the purification of smaller DNA fragments
 (a) Ethidium Bromide (b) Nitrocellulose (c) probes **(d) polyacrylamide**
- 29) Find out the correct statements
 (1) Southern Blotting - transfer of DNA from agarose gel to nitrocellulose membrane
 (2) Northern Blotting - transfer of RNA to nitrocellulose membrane
 (3) Western Blotting - Denatured DNA from agarose gel to nitrocellulose membrane
 (a) 1 & 3 (b) 2.&3 **(c) 1 & 2** (d) 1,2 & 3
- 30) _____ is a group of technologies that has the ability to change an organism's DNA.
 (a) Genome sequencing **(b) Genome/gene editing** (c) CRISPR 8 (d) RNAi pathway
- 31) Find the incorrect pair
 (a) Herbicide tolerant - Basta (b) Bt cotton - Insecticidal activity (c) Bt Brinjal - Crystal protein gene
(d) DMH-II - Virus resistance
- 32) Botryococcus braunii is used to produce _____
 (a) Biopharming (b) Bioaugmentation (c) Bioleaching **(d) Algal biofuel**
- 33) A simplified model for the RNAi pathway is

- (a) The trigger RNA is processed into a short interfering RNA by RNase II enzymes.
 (b) si RNAs are located into the effector complex RNA - induced silencing complex. **(c) Both (a) and (b)**
 (d) The gene editing tools such as CRISPR can be loaded.
- 34) Which is frequently used as reporter of expression?
 (a) GMP (b) Circular protein **(c) GFP** (d) PLA
- 35) Which is the set of fragments obtained by the action Hae III restriction enzyme on
- (a)  (b)  (c)  **(d)** 
- 36) What is the criterion for DNA fragments movement on agarose gel during gel electrophoresis?
(a) The smaller the fragment size, the farther it moves (b) Positively charged fragments move to farther end.
 (c) Negatively charged fragments do not move (d) The larger the fragment size, the farther it moves.
- 37) Which of the following is not a component of downstream processing?
 (a) Separation (b) Purification (c) Preservation **(d) Expression**
- 38) Which of the following is not a feature of the plasmids?
 (a) Transferable **(b) Single-stranded** (c) Independent replication (d) Circular structure
- 39) which of the following is not required for nay of the techniques of DNA Fingerprinting available at present?
 (a) Restriction enzymes (b) DNA-DNA hybridization (c) Polymerase chain reaction **(d) Zinc finger analysis**
- 40) The colonies of recombinant bacteria appear white in contrast to blue colonies of non-recombinant bacteria because of
(a) Insertional inactivation of b-galactosidase in recombinant bacteria
 (b) Inactivation of glycosidase enzyme in recombinant bacteria. (c) Non-recombinant bacteria containing beta galactosidase.
 (d) Insertional inactivation of alpha galactosidase in non-recombinant bacteria.
- 41) During the process of isolation of DNA, chilled ethanol is added to
(a) Precipitate DNA (b) Break open the cell to release DNA (c) Facilitate action of restriction enzymes
 (d) Remove proteins such as histones.
- 42) Biolistics (gene-gun) is suitable for
 (a) disarming pathogen vectors **(b) transformation of plant cells**
 (c) constructing recombinant DNA by joining with vectors (d) DNA fingerprinting.
- 43) Ligase is used for
(a) Joining of two DNA fragments (b) Separating DNA (c) DNA polymerase reaction (d) All of these
- 44) Given below is a sample of a portion of DNA strand giving the base sequence on the opposite strands. what is so special shown in it?
 5'-.GAATTC---3' 3'---CTTAAG---5"
- (a) Palindromic sequence of base pairs** (b) Replication completed (c) Deletion mutation (d) Start codon at the 5'end
- 45) There is a restriction endonuclease called EcoRI. What does 'co'part in it stand for?
 (a) Coelom (b) Colon **(c) Coli** (d) Coenzyme
- 46) A mixture containing DNA fragments a,b,c,d with molecular weights of $a + b = c$, $a > b$ and $d > c$, was subjected to agarose gel electrophoresis. The position of these fragmets from cathode to anode sides of the gel would be
(a) b,a,c,d (b) a,b,c,d (c) c,b,a,d (d) b,a,d,c
- 47) Which of the following statements is not true about somatic embryogenesis?

(a) The pattern of development of a somatic embryo is comparable to that of a zygotic embryo

(b) Somatic embryos can develop from microspores (c) Somatic embryo is induced usually by an auxin such as 2,4-D

(d) A somatic embryo develops from a somatic cell

48) Plasmids are suitable vectors for gene cloning because

(a) These are small circular DNA molecules which can integrate with host chromosomal DNA

(b) These are small circular DNA molecules which can replicate on their own

(c) These can shuttle between prokaryotic and eukaryotic cells (d) These often carry antibiotic genes

49) Plasmid is

(a) Fragment of DNA which acts as vector (b) A fragment which joins two genes (c) mRNA which acts as carrier

(d) An autotrophic fragment

50) Consider the following statements

i. The cutting of DNA was done by molecular scissors.

ii. The cut piece of DNA was then linked with the plasmid DNA by restriction enzymes.

iii Linking of antibiotic resistance gene with the plasmid occurs in the presence of the enzymes DNA ligase.

(a) i & ii correct **(b) i & iii correct** (c) ii & iii correct (d) All correct