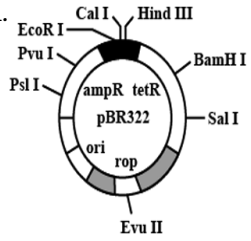
Visit QB365-SLMS - https://www.qb365.in/slms/ Complete Questions and Answers

Questions:

V. Case Study Questions

1. 

The E.coli cloning vector pBR322 is shown above.
(a) Identify and name two selectable markers.
(b) Identify and name the restriction enzymes that can be used to ligate an alien DNA fragment at the tetracycline gene.
(c) Identify EcoRI.
(d) Name the gene that controls the copy number of the vector.

2. The diversity of rice in India is one of the richest in the world. There are an estimated 200,000 varieties of rice in India alone. Among these, Basmati rice is distinct for its unique aroma and flavour. In 1997, an American company got patent rights on Basmati rice, which allowed the company to sell a 'new' variety of Basmati in the U.S and abroad.
(a) How many documented varieties of Basmati are grown in India?
(b) What is the 'new' variety of Basmati, developed by the U.S. company?
(c) Name two other medicinal plants for which the MNCs have been attempting to get patents.

Assertion and reason

3. Assertion: Selectable marker is meant for distinguishing a recombinant from non-recombinant.
Reason: Every recombinant can flourish in medium having both ampicillin and tetracycline, while the non - recombinants cannot.
Codes:
(a) Both assertion and reason are true and reason is the correct explanation of assertion.
(b) Both assertion and reason are true but reason is not the correct explanation of assertion.
(c) Assertion is true but reason is false.
(d) Both assertion and reason are false.

4. Assertion (A) The first restriction endonuclease was Hind II.
Reason (R) The Hind II always cut DNA molecule at particular point by recognising a specific sequence of 6-base pair.
(a) If both A and R are true and R is the correct explanation of A
(b) If both A and R are true, but R is not the correct explanation of A
(c) If A is true, but R is false
(d) If A is false, but R is true

5. Assertion (A) : Down's syndrome, Klinefelter's syndrome and Turner's syndrome are chromosomal disorders.
Reason (R) : In Klinefelter's syndrome females are sterile.
(a) If both A and Rare true and R is the correct explanation of A
(b) It both A and R are true, but R is not the correct explanation of A
(c) If A is true, but R is false
(d) If A is false, but R is true

6. Assertion (A): In gel electrophoresis, DNA fragments get seperated and move towards anode electrode.
Reason (R) : DNA fragments are negetively charged molecules.
Codes:
a)Both (A) and (R) are true and (R) is the correct explanation of (A)
b)Both (A) and (R) are true and (R)is not the correct explanation of (A)
c)(A) is true but (R) is false
d)Both (A) and (R) are false

IV. Answer the following.

7. Using Punnett square, show the F_2 results of a dihybrid cross, where the pure-bred parents contrasting traits with reference to seed shape and seed colour in pisum sativum. Give the phenotypic ratio.

8. You are given a red flower-bearing pea plant and a red flower-bearing snapdragon plant. How would you find the genotypes of these two plants with respect to the colour of the flower? Explain with the help of crosses. Comment upon the pattern of inheritance seen in these two plants.

9. (a) Why is Bacillus thuringiensis considered suitable for developing GM plant?
(b) Explain how it has been used to develop Gm crops.

10. What are bioreactors? Sketch the two types of bioreactors. What is the utility? Which is the common type of bioreactors?

11. (a) Describe the different steps in one complete cycle fPCR.
(b) State the purpose of such an amplified DNA sequence.

12. (a) What is a plasmid?
(b) What is meant by ADA deficiency ? How is gene therapy a solution to this problem ? Why is it not a permanent cure?

III. Answer the following. (Any Seven)

13. What is the cause of phenylketonuria? Explain the disorder.

14. (a) Name the technique used for the separation of DNA fragments.
(b) Write the type of matrix used in this technique
(c) How is the separated DNA visualised and extracted for use in recombinant DNA technology.

15. (a)Why are restriction endonucleases so called?
(b)What is a palindromic nucleotide sequences? How do restriction endo-nucleases act on palindromic sites to create 'sticky ends'?

16. (i) A bacterial cell is shown in the figure given below. Label the part 'A' and 'B'. Also mention the use of part 'A' in rDNA technology.



(ii) Suppose a linear DNA fragment and a plasmid has three restriction sites for Eco RI. How many fragments will be produced from linear DNA and plasmid respectively.

17. Make a list of three household products along with the names of the micro-organism producing them.

18. How did an American Company, Elr Lily use the knowledge of r-DNA technology to produce human insulin?

19. Expand 'ELISA'. Why is this method preferred over conventional methods of diagonsis of the disease?

20. (a) What are transgenic animals?
(b) Name the transgenic animal having the largest number amongst all the existing transgenic animals.
(c) Mention any three purposes for which these animals are produced.

II. Answer the following. (Any Five)

21. when a tall pea-plant was selfed, it produced one-fourth of its progeny as dwarf. Explain with the help of a cross.

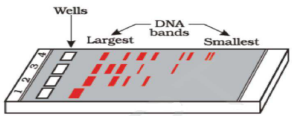
22. What is pedigree analysis? Suggest how such an analysis can be useful.?

23. Why does the son of a carrier mother and a normal father suffer from haemophilia, whereas the son of a haemophilic father and a normal mother would not?

24. Why is 'origin o replication' (Ori) required to facilitate cloning into a vector?

25. Write a note on ZO-ZZ type of sex determination.

26.



i)What dose the fig shows?
ii)What is the matrix used for the above process?
Iii)Name the chemical compound used for staining?
iv)Name the process for the separation of DNA from the agarose gel.

QB 365 Study Material
QUESTION BANK 365

I. Multiple Choice Question

27. Gynaecomastia is the symptom of
(a) Klinefelter's syndrome (b) Turner's syndrome (c) SARS (d) Down syndrome

28. The polymerase chain reaction is a technique that
(a) Is used for in vivo replication of DNA (b) Is used for in vivo synthesis of mRNA (c) Is used for in vitro synthesis of mRNA
(d) Is used for in vitro replication of specific DNA sequence using thermostable DNA polymerase

29. Human insulin is being commercially produced from a transgenic species of
(a) Rhizobium (b) Saccharomyces (c) Escherichia (d) Mycobacterium

30. Main objective of production/use of herbicide resistant GM crops is to
(a) Encourage eco-friendly herbicides (b) Reduce herbicide accumulation in food articles for health safety (c) Eliminate weeds from the field without the use of manual labour
(d) Eliminate weeds from the field without the use of herbicide

31. Isolation of Bt gene from bacterium (Bacillus thuringiensis) was taken up in the year
(a) 1977 (b) 1980 (c) 1997 (d) 1990

32. The first clinical gene therapy was given for treating
(a) diabetes mellitus (b) chicken pox (c) rheumatoid arthritis (d) adenosine deaminase deficiency

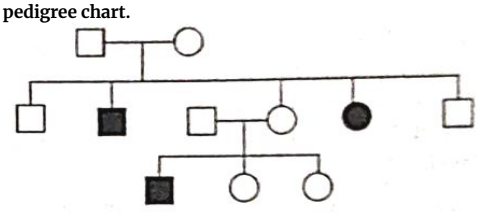
33. Match the sex-chromosome complements in Column I with the male/female organisms in Column II.

Column I	Column II
A. XO	1. Human male
B. XX	2. Male bird
C. XY	3. Male grasshopper
D. ZZ	4. Female Drosophila
	5. Female bird

(a) A - 3, B - 4, C - 1, D - 5 (b) A - 4, B - 3, C - 1, D - 5 (c) A - 3, B - 4, C - 5, D -1 (d) A - 5, B - 4, C - 1, D - 3

34. Gene introduced in the first transgenic cow is
(a) human α-lactalbumin (b) β-1-antitrypsin (c) α-1-antitrypsin (d) cry 1 Ac

35. Study the pedigree chart of a family showing the inheritance pattern of a certain disorder. Select the option that correctly identifies the nature of the trait depicted in the pedigree chart.



(a) Dominant X-linked (b) Recessive X-linked (c) Autosomal dominant (d) Autosomal recessive

36. EcoRI cut DNA in between

(a) T and A from 3′ to 5′ (b) G and A from 3′ to 5′ (c) A and T from 5′ to 3′ (d) G and A from 5′ to 3′

37. Protein coded by which of the following genes controls the corn borer?

(a) Cry I Ac (b) Cry II Ab (c) Cry I Ab (d) Both (1) and (2)

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

(a) Selectable markers (b) Bioreactors (c) Disarmed pathogens (d) Thermal cycler

QB 365 Study Material
QUESTION BANK 365