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63/1(SEM-5) DSE2 ZOOHE5026

2024

**ZOOLOGY**

Paper : ZOOHE5026

**(Animal Biotechnology)**

Full Marks : 60

Pass Marks : 24

Time : Three hours

**The figures in the margin indicate full marks for the questions.**

1. Choose the correct answer: **(any five)**

1×5=5

(a) \_\_\_\_\_ is used as a template for a cDNA product.

(i) DNA

(ii) mRNA

(iii) tRNA

(iv) rRNA

(b) PCR technique was discovered by \_\_\_\_\_ in 1985.

(i) Emily Lilly

(ii) Georges Kohler

(iii) Kary Mullis

(iv) Alexander Fleming

(c) A circular extra chromosomal DNA that replicates independently is known as

(i) Virus

(ii) Bacteria

(iii) Plasmid

(iv) Nitrogen base

(d) Humulin is associated with

(i) gene therapy

(ii) tissue culture

(iii) vaccine production

(iv) human insulin

(e) The DNA molecule used for integrating foreign gene for cloning is called

(i) vector

(ii) carrier

(iii) template

(iv) recombinant DNA

(f) The repeat sequences present in introns, anywhere from 20 to 1000 base pairs are known as

(i) VNTR

(ii) PCR

(iii) RAPD

(iv) STR

(g) A transgenic food crop which may help in solving the problem of night blindness is

(i) BT soybean

(ii) Starlink maize

(iii) Golden rice

(iv) Flavr Savr tomatoes

(h) In 1990, the first gene therapy was given to treat which deficiency?

- (i) Small pox
- (ii) Vitamin E deficiency
- (iii) Protein deficiency
- (iv) Adenosine deaminase deficiency

(i) \_\_\_\_\_ is a single-stranded sequence of DNA or RNA used to search for its complementary sequence in a sample genome.

- (i) Probe
- (ii) Genetic marker
- (iii) Adapter
- (iv) Linker

(j) Which of the following bacterium is extensively used in genetic engineering work?

- (i) Clostridium septium
- (ii) Xanthomonas citri
- (iii) Bacillus coagulens
- (iv) Agrobacterium tumefaciens

2. Answer the following questions: **(any five)**  
2×5=10

- (a) What is cDNA?
- (b) Define gene therapy.
- (c) What is restriction enzyme?
- (d) Define electroporation.
- (e) What is chimeric DNA?
- (f) Write about DNA microinjection.
- (g) Knockout mice.

3. Answer the following questions: **(any five)**  
5×5=25

- (a) Describe briefly about the scope of biotechnology.
- (b) What is DNA fingerprinting? Write any three applications of DNA fingerprinting. 2+3=5
- (c) Write a short note on Southern blotting.
- (d) How molecular diagnosis is carried out for cystic fibrosis?
- (e) Write in short about applications of DNA microarray.

(f) Explain in brief about retroviral method of production of transgenic animal.

(g) What do you mean by DNA sequencing? Explain Sanger method of sequencing in brief.  $1+4=5$

(h) Describe briefly the importance of animal cell culture.

(i) Discuss about Lambda Bacteriophage cloning vector.

4. Answer the following questions : **(any two)**  
 $10 \times 2 = 20$

(a) What do you mean by genomic DNA library? Write about screening of clones by Plaque hybridization method.  
 $2+8=10$

(b) Explain recombinant DNA in medicine with special reference to recombinant insulin and human growth hormone.  
 $5+5=10$

(c) What do you mean by transgenesis? Write in detail about Agrobacterium mediated transformation in plants.  
 $2+8=10$

(d) Define restriction endonuclease enzyme. How it differ from restriction exonuclease? Explain applications of restriction endonuclease in genetic engineering.  $2+3+5=10$

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