Total number of printed pages–15

3 (Sem–5/CBCS) ZOO RE 1/RE 2

2023

ZOOLOGY

(Regular Elective)

Answer the Questions from any one Option.

OPTION–A

(Animal Biotechnology)

Paper : ZOO–RE–5016

OPTION–B

(Applied Zoology)

Paper : ZOO–RE–5026

Full Marks : 60

Time : Three hours

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

Contd.

OPTION–A

(Animal Biotechnology)

Paper : ZOO–RE–5016

1. Choose the correct option of the following : 1×7=7

(a) Polymerase chain reaction technique is used for

(i) DNA sequencing

(ii) Amplification of DNA

(iii) DNA transformation

(iv) None of the above

(b) Which of the following is not heat stable enzyme ?

(i) Taq Polymerase

(ii) Pfu Polymerase

(iii) Vent polymerase

(iv) DNA Polymerase III

(c) CO_2 incubator in a cell culture help in maintaining

(i) Alkaline nature of the cell culture media

(ii) Acidic nature of the cell culture media

(iii) Act as a buffer to maintain pH of the culture media

(iv) None of the above

(d) Which of the following bacteria is used for genetic modification of plant cells ?

(i) *Arthrobacter globiformis*

(ii) *Agrobacterium tumefaciens*

(iii) *Streptomyces griseus*

(iv) *Streptomyces lavendulae*

(e) DNA fingerprinting technique is based on the presence of which of the following sequence

(i) VNTR

(ii) Palindromic sequence

(iii) Inverted repeal sequence

(iv) None of the above

(f) Western blotting technique is used for the detection

(i) DNA in the sample

(ii) RNA in the sample

(iii) Peptides in a sample

(iv) Amino acids in the sample

(g) Which of the following microscope is essential for cell culture ?

(i) Dark Held microscope

(ii) Inverted microscope

(iii) Phase contrast microscope

(iv) None of the above

2. Answer the following questions : 2×4=8

(a) What is a cell line ?

(b) What is GMO ?

(c) What is BT cotton ?

(d) Mention the name of *two* cell culture media ?

3. Write short notes on the following:
(any three) 5×3=15

(a) Gene therapy

(b) Primary animal cell culture

(c) DNA microarray

(d) Cystic Fibrosis

(e) Gene knockout animals

4. *(a)* What is DNA sequencing? Write in detail about Sanger's DNA sequencing technique with suitable illustration. 3+7=10

Or

(b) Write the principle of PCR reaction. Mention briefly the requirement and procedure of DNA amplification using PCR technique. 2+2+6=10

5. *(a)* What are gene knockout animals? Write briefly about the procedure of creating gene knockout animals and its application in research. 3+7=10

Or

(b) What are blotting techniques? Write the principle and functional applications of southern blotting technique. 3+4+3=10

6. (a) What is sickle cell anaemia? Write in detail about molecular diagnosis of sickle cell anaemia with suitable illustration. 2+2+6=10

Or

(b) Discuss briefly about the Agrobacterium mediated gene transfer technology for production of transgenic plants. 10
