

M.Sc. ZOOLOGY  
FIRST SEMESTER [SPECIAL REPEAT]  
BIOINSTRUMENTATION  
MSZ-103

**SET  
A**

[USE OMR SHEET FOR OBJECTIVE PART]

Duration: 1hr. 30 mins.

Full Marks: 35

Time: 15 mins.

( Objective )

Marks: 10

Choose the correct answer from the following:

$1 \times 10 = 10$

- Which of the following statements about Polymerase chain reaction is incorrect?  
P. Annealing involves the binding of primer between  $40^{\circ}\text{C}$  to  $60^{\circ}\text{C}$ .  
Q. Newly synthesized DNA must be heat-denatured before the next round of DNA synthesis begins.  
R. Multiple copies of the gene (or DNA) of interest are synthesized in vitro using two primers and the enzyme RNA polymerase.  
S. Denaturation involves heating at  $72^{\circ}\text{C}$ .  
a. P, Q    b. Only S  
c. R, S    d. Only Q
- How many DNA duplex is obtained from one DNA duplex after 4 cycles of PCR?  
a. 4    b. 8  
c. 16     d. 32
- Which membrane is used in blotting?  
a. Agarose    b. Sucrose  
c. Polythene    d. Nylon
- Some of the steps of Southern blotting technique are given below. Identify their correct sequence from the options given:  
A. Electrophoresis of DNA fragments  
B. Hybridization with DNA probe  
C. Digestion of DNA by restriction endonucleases  
D. Autoradiography  
E. Blotting of DNA fragments nitrocellulose membrane  
a. C-A-B-E-D    b. C-A-E-B-D  
c. A-E-C-B-D    d. A-C-E-D-B
- Chemicals that react with stain to form precipitates are called as.....  
a. Mordant    b. Peptidoglycan  
c. Safranin    d. All of the above
- What is used to remove colour from tissues fixed in Zenker's solution?  
a. Alcohol    b. Lugol's iodine  
c. Tap water    d. Acetone

7. Which of the following statement is/are true about ELISA?  
P. In ELISA, Ag-Ab interaction is monitored by enzyme measurement.  
Q. Sandwich ELISA is used for detecting an antigen in the given sample.  
R. ELISA test is based on antigen-antibody interaction.  
S. The enzyme linked to the secondary antibody is the HRP enzyme.  
a. P, Q  
b. R, S  
c. P, Q, R  
d. P, Q, R, S
8. In photometers, the readings of the specimen are initially obtained in the form of which of the following parameters?  
a. Volume  
b. Wavelength  
c. Transmittance  
d. Absorption
9. Which type of molecules is used for labeling the cellular entities in the autoradiography technique?  
a. Glycoproteins  
b. Radioisotopes  
c. Stereoisomers  
d. Enantiomers
10. Which technique separates charged particles using electric field?  
a. Hydrolysis  
b. Electrophoresis  
c. Protein synthesis  
d. Protein denaturing

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( Descriptive )

Time : 1 hr. 15 mins.

Marks : 25

[ Answer question no.1 & any two (2) from the rest ]

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| 1. Write short note on- ( <i>any one</i> )   | 5  |
| a) ELISA   |    |
| b) Beer-Lambert Law  |    |
| 2. Define electrophoresis. Write on the working principle of electrophoresis. State the effect of various factors on electrophoresis.                            | 10 |
| 3. What is PCR? Write about procedure and application of PCR technique.  | 10 |
| 4. What is a fixative? Write about different types of fixatives with examples.   | 10 |
| 5. What is a blotting technique? Mention different types of blotting technique. Discuss the principle, procedure and application of Southern blotting technique. | 10 |

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