

Total No. of Questions: 6

Total No. of Printed Pages:3

Enrollment No.....



Faculty of Science
End Sem (Odd) Examination Dec-2022
FS3EL07 Forensic Serology

Programme: B.Sc. (Hons.)

Branch/Specialisation: Forensic
Science

Duration: 3 Hrs.

Maximum Marks: 60

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d.

- Q.1 i. The system that protects our body against disease-causing pathogens- 1
(a) Respiratory system (b) Immune system
(c) Digestive system (d) Respiratory system
- ii. The serologist will perform the test to determine whether a bloodstain is of human or animal origin. 1
(a) RT-PCT test (b) Precipitin test
(c) PCR test (d) All of these
- iii. The study of antigen and antibody reactions and the immune response produced by the antigens in a living being- 1
(a) Zoology (b) Immunology
(c) Biology (d) Serology
- iv. There are _____ types of antibodies in the human body. 1
(a) Five (b) Three (c) Two (d) Four
- v. The screening test for blood depends on the peroxidase activity of _____. 1
(a) Haeme (b) Antibody (c) Urine (d) Protein
- vi. If blood is found to have both A and B antigens it is typed as- 1
(a) A (b) B (c) AB (d) O
- vii. ELISA (enzyme-linked immunosorbent assay) allows for rapid screening and quantification of the presence of _____ in a sample. 1
(a) Amino acid (b) DNA
(c) Antigen (d) Protein

P.T.O.

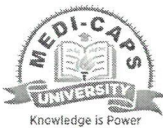
[2]

- viii. The _____ reaction is utilized for human blood types in the ABO blood group identification. **1**
 (a) Agglutination test (b) Precipitin test
 (c) Lattes test (d) Duffy test
- ix. The technique that separates charged particles using electric field is known as- **1**
 (a) Ultracentrifuge (b) Centrifuge
 (c) Electrophoresis (d) Chromatography
- x. The centrifugation is based on the principle of- **1**
 (a) When a force is less than the gravity desired
 (b) When a force is more than the gravity
 (c) When the force and gravity is constant
 (d) None of these
- Q.2 i. Define antigen-antibody interaction. **2**
 ii. Mention the sequence for a blood examination. **3**
 iii. Mention any five precautions during the collection of blood evidence from cloth. **5**
- OR iv. Mention any five duties of a forensic serologist in a forensic science laboratory. **5**
- Q.3 i. Define haptens. **2**
 ii. What are the main bonds found during antigen-antibody interactions? **3**
 iii. Briefly describe the immune response. **5**
- OR iv. Discuss (in short) the principle of antigen-antibody interaction. **5**
- Q.4 i. Define ABO blood grouping. **3**
 ii. Describe the Absorption-inhibition method for blood stains. **7**
- OR iii. Discuss the secretor and non-secretor status of body fluids. **7**
- Q.5 i. What is ELISA? **4**
 ii. What are the steps involved in an immunochromatographic test? **6**
- OR iii. Discuss the principle and application of immunoelectrophoresis in forensic science. **6**

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- Q.6 Attempt any two: **5**
 i. Describe the procedure of electrophoresis. **5**
 ii. Discuss (in short) the principle of centrifugation. **5**
 iii. Discuss capillary electrophoresis. **5**

Scheme of Marking

	Faculty of Science		
	End Sem (Odd) Examination Dec-2022		
	Forensic serology (FS3EL07)		
	Programme: B.Sc.		Branch/Specialisation:

Note: The Paper Setter should provide the answer-wise splitting of the marks in the scheme below.

Q.1	i)	<p>The system that protects our body against disease-causing pathogens?</p> <p>(a) Respiratory system (b) Immune system (c) Digestive system (d) Respiratory system</p> <p>(b) Immune system ✓</p>	1
	ii)	<p>The serologist will perform the test to determine whether a bloodstain is of human or animal origin.</p> <p>a) RT-PCT Test b) Precipitin Test c) PCR Test d) All of the above.</p> <p>b) Precipitin Test</p>	1
	iii)	<p>The study of antigen and antibody reactions and the immune response produced by the antigens in a living being?</p> <p>a) Zoology b) Immunology c) Biology d) Serology</p> <p>b) Immunology ✓</p>	1
	iv)	<p>There are _____ types of antibodies in the human body.</p> <p>(a) Five. (b) Three. (c) Two. (d) Four.</p>	1

		(a) Five. ✓	
	v)	<p>The screening test for blood depends on the peroxidase activity of _____.</p> <p>a) Haeme b) Antibody c) Urine d) Protein</p> <p>a) Haeme ✓</p>	1
	vi)	<p>If blood is found to have both A and B antigens it is typed as?</p> <p>a) A b) B c) AB d) O</p> <p>c) AB ✓</p>	1
	vii)	<p>ELISA (enzyme-linked immunosorbent assay) allows for rapid screening and quantification of the presence of _____ in a sample.</p> <p>a) amino acid b) DNA c) antigen d) protein</p> <p>c) antigen ✓</p>	1
	viii)	<p>The _____ reaction is utilized for human blood types in the ABO blood group identification.</p> <p>a) agglutination test. b) precipitin test. c) lattes test. d) Duffy test</p> <p>b) precipitin test. ✓ <i>correct ans. a) agglutination test.</i></p>	1
	ix)	<p>The technique that separates charged particles using electric field is known as?</p> <p>a) Ultracentrifuge b) Centrifuge c) Electrophoresis d) Chromatography</p> <p>c) Electrophoresis ✓</p>	1

x)

	x)	The centrifugation is based on the principle of when a force is less than the gravity desired. a) True a) when a force is less than the gravity desired b) False b) When a force is more than the gravity b) False -	1
Q.2	i.	Define Antigen-Antibody interaction. For Systematic definition- 02	2
	ii.	Mention the sequence for a blood examination. Benzidine test – Heamin crystal test- immunological test- elution test = 3 Benzidine test – Heamin crystal test- immunological test= 2 Benzidine test – Heamin crystal test = 1	3
	iii.	Mention (5) precautions during the collection of blood evidence from cloth. Major precautions= 03 Minor Precautions = 02 Both= 05	5
OR	iv.	Mention (5) duties of a forensic serologist in a forensic science laboratory. Five duties= 05 Three duties=04 Two duties= 01	5
Q.3	i.	Define haptens. Systematic Definition=02	2
	ii.	What are the main bonds found during antigen-antibody interactions? 2 bonds= 01 3 bonds= 02 4 bonds= 03	3
	iii.	Briefly describe the immune response. Diagram= 02 Explanation= 03	5
OR	iv	Discuss (in short) the principle of antigen-antibody interaction. Diagram= 02 Explanation= 03	5
Q.4	i.	Define ABO Blood grouping? Systematic Definition=02 Diagram=01	3
	ii.	Describe the Absorption-inhibition method for blood stains. Definition=01	7

		Diagram= 02 Explanation= 02 Proper procedure= 02	
OR	iii.	Discuss the secretor and non-secretor status of body fluids. Definition=01 Explanation= 03 Proper procedure and reagents name= 03	7
Q.5	i.	What is ELISA? Systematic Definition=02 Diagram with proper labelling=02	4
	ii.	What are the steps involved in an immunochromatographic test? Diagram= 02 Explanation= 02 Proper steps= 02	6
OR	iii.	Discuss the principle and application of immunoelectrophoresis in forensic science. Definition= 01 Principle= 03 Applications= 02	6
Q.6		Attempt any two:	
	i.	Describe the procedure of electrophoresis. Definition= 01 Diagram=01 Procedure= 03	5
	ii.	Discuss (in short) the principle of centrifugation. Definition= 02 Principle= 03	5
	iii.	Discuss capillary electrophoresis. Definition= 01 Diagram=01 Procedure= 03	5

Verified
Alankar
13/12/22

for
15/12/22
(Sum Vaidya)