Name: **Enrolment No:**	UPES UNIVERSITY OF TOMORROW

UPES

End Semester Examination, December 2024

Course: Diagnostic Biochemistry — **Semester : III**

Program: MSC-N-D — **Duration : 3 Hours**

Course Code: HSBC8001O_3 — **Max. Marks: 100**

Instructions: Read all questions carefully.

S. No.	Section A Short answer questions/ MCQ/T&F (20Qx1.5M= 30 Marks)	Marks	COs
Q 1	Give the importance of enzyme immobilization in diagnosis.	1.5	CO1
Q 2	Define anticoagulants? Give examples.	1.5	CO2
Q 3	Mention the different ways of sample collection.	1.5	CO2
Q 4	Define isoenzymes? Give examples.	1.5	CO1
Q 5	The restriction of enzyme mobility in a fixed space is known as _____ a) enzyme immobilization b) enzyme inhibition c) enzyme kinetics d) biosensor	1.5	CO3
Q 6	Which of the following is not true for isoenzymes? a) Many enzymes occur in several molecular forms called isoenzymes b) Different isoenzyme catalyze same chemical reaction, but differ in their primary structure and kinetic properties c) Isoenzymes are coded by different gene d) Enzymes having other site	1.5	CO2
Q 7	Mention the advantage and disadvantages of enzymes assay.	1.5	CO2
Q 8	How to prepare 0.1 Molar sodium hydroxide for one liter.	1.5	CO2
Q 9	The normality of a solution is defined as ----------	1.5	CO1
Q 10	State any five reasons to justify the importance of diagnosis	1.5	CO2
Q 11	Write the collection procedure for blood and stool samples	1.5	CO1
Q 12	Which of the following solutions contains a low solute concentration relative to another solution? (a) Hypotonic solution (b) Isotonic solution (c) Hypertonic solution (d) None of the above	1.5	CO1

Q 13	**Which of the following is a suitable transport medium for stool specimens in cases of suspected bacterial enteric pathogens?** **a) Buffered glycerol saline** **b) Cotton swab** **c) Dry container** **d) Urine container**	**1.5**	**CO1**
Q 14	**Identify the information crucial in transportation instructions for collected specimens?** **a) The patient's preferred method of communication** **b) Time and temperature constraints** **c) The patient's weight** **d) None of the above**	**1.5**	**CO3**
Q 15	**The important label should NOT be affixed to bags used for transporting clinical specimens (True/ False)**	**1.5**	**CO1**
Q 16	**Why are anticoagulants used in specimen collection for microbiological testing, such as blood, bone marrow, and synovial fluid?** **a) To prevent clotting and allow for the isolation of microorganisms** **b) To prevent the growth of microorganisms** **c) To enhance the color of the specimen** **d) To accelerate the growth of microorganisms**	**1.5**	**CO1**
Q 17	**Light blue-top tubes contain sodium citrate and are used to collect blood specimens for……** **a) CBCs** **b) Blood cultures** **c) Coagulation studies (PT/INR)** **d) Blood sugars**	**1.5**	**CO2**
Q 18	**Identify the color topped tube you would use to draw a BUN (Blood Urea Nitrogen) and Creatine in?** **a) Grey** **b) Blue** **c) Tiger topped** **d) None of the above**	**1.5**	**CO1**
Q 19	**The primary lipoprotein secreted from the liver is at least partially composed of dietary derived lipids is…** **a) Chylomicrons** **b) HDL** **c) VLDL** **d) LDL**	**1.5**	**CO1**
Q 20	**Mention the basic difference between Phosphorescence, chemiluminescence and bioluminescence.**	**1.5**	**CO1**
Section B **(4Qx5M=20 Marks)** **Attempt any four**			

<table>
<tr><td>Q 1</td><td>Discuss the pre-analytical factors associated with the handling and processing of laboratory specimens.</td><td>2+3</td><td>CO1</td></tr>
<tr><td>Q 2</td><td>Explain the blood sugar monitoring methods</td><td>5</td><td>CO2</td></tr>
<tr><td>Q 3</td><td>Explain the inborn errors of metabolism? Give special emphasis on glycogen storage disease.</td><td>2+3</td><td>CO2</td></tr>
<tr><td>Q 4</td><td>Write a note on Lesch-Nyhan syndrome.</td><td>5</td><td>CO3</td></tr>
<tr><td>Q 5</td><td>Discuss the differential diagnosis of gout</td><td>5</td><td>CO3</td></tr>
<tr><td colspan="4">Section C
(2Qx15M=30 Marks)</td></tr>
<tr><td>Q 1</td><td>A 10-year-old neutered male Labrador cross dog was presented for a routine health examination in conjunction with annual vaccinations. As part of this program a routine chemistry was performed, and the following abnormal parameters were found:
<table><tr><td></td><td></td><td></td><td>Reference</td></tr><tr><td>BUN</td><td>9.9 nmol/l</td><td>H</td><td>1.8 – 8.3</td></tr><tr><td>Creatinine</td><td>150 umol/l</td><td>H</td><td>38 – 140</td></tr><tr><td>Albumin</td><td>48 g/l</td><td>H</td><td>27 – 38</td></tr><tr><td>Total Protein</td><td>110 g/l</td><td>H</td><td>50 – 82</td></tr><tr><td>Calcium</td><td>4.5 mol/l</td><td>H</td><td>2.1 – 3.3</td></tr></table>a. Additional information required?
b. Your next step will be?
c. Differential diagnoses would include?</td><td>5+10</td><td>CO1</td></tr>
<tr><td>Q 2</td><td>A patient was presented with symptoms of burning when urinating, cloudy urine, and fever. Write in detail how you would diagnose the disease.
a. Discuss the preferred sample for analysis, its collection, and the transport procedure?
b. Elaborate on preferred staining and culture method?
c. Explain the molecular methods you would use to identify the microorganism and why?</td><td>5+5+5</td><td>CO3</td></tr>
<tr><td colspan="4">Section D
(2Qx10M=20 Marks)
Attempt any two</td></tr>
<tr><td>Q 1</td><td>Write a note on a) Inborn errors of carbohydrate metabolism, Galactosemia b) Transport of specimens</td><td>5+5</td><td>CO2</td></tr>
<tr><td>Q 2</td><td>Explain the various types of clinical specimens commonly collected for the diagnosis of infectious diseases. Discuss the importance of proper specimen collection and handling in achieving accurate diagnostic results.</td><td>5+5</td><td>CO1</td></tr>
<tr><td>Q 3</td><td>Discuss a) radioisotope in diagnosis b) Radioimmunoassay</td><td>5+5</td><td>CO3</td></tr>
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