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ROLL NUMBER

WRITTEN TEST FOR THE POST OF SCIENTIFIC ASST. (LAB)

BIOCHEMISTRY

DATE: 30/12/2024 **Part – B**

DURATION: 30 MINUTES **Total Marks: 25**

INSTRUCTIONS TO THE CANDIDATES

1. Write your Roll Number on the top of the Question Booklet and in the answer sheet.
2. Each question carries 1 mark.
3. There will not be any Negative Marking.
4. **Write legibly the alphabet of the most appropriate answer (A, B, C or D) in the separate answer sheet provided.**
5. Over-writing is not permitted.
6. Candidate should sign in the question paper and answer sheet.
7. Candidate should hand over the answer sheet and question paper to the invigilator before leaving the examination hall.

Signature of the Candidate

30/12/24

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VOP: Scientific Assistant (Lab)- Biochemistry

Part B- Biochemistry Max. Marks: 25

1	**In a spectrophotometric assay, which parameter is crucial for selecting the optimal wavelength for protein detection?**	
	a	The absorbance maximum of the chromophore
	b	Scattering angle of incident light.
	c	Enzyme's catalytic activity
	d	Protein's isoelectric point.
2	**Which of the following is a limitation of turbidometric assays?**	
	a	Poor sensitivity in detecting light absorbance
	b	Requires highly sensitive pH electrodes
	c	Cannot measure high concentrations of particles
	d	Affected by high ionic strength of solutions
3	**What chromogenic product is produced when alkaline phosphatase acts on p-nitrophenyl phosphate (pNPP)?**	
	a	Quinoneimine
	b	p-Nitrophenol
	c	Indigo dye
	d	p-Nitrobenzene
4	**Which technique is commonly used to determine the complete blood count (CBC)?**	
	a	Polymerase chain reaction
	b	Western blotting
	c	Flow cytometry
	d	Spectrophotometry
5	**What does a "left shift" in the WBC differential indicate?**	
	a	Increased monocyte count
	b	Increased lymphocyte count
	c	Increase in mature neutrophils
	d	Presence of immature granulocytes
6	**Deficiency of which factor causes Hemophilia B?**	
	a	Factor IX
	b	Factor XII
	c	Factor XI
	d	Factor VIII
7	**Which of the following methods is used to assess fibrinogen levels in plasma?**	
	a	Platelet aggregation test
	b	ELISA
	c	Clauss assay
	d	D-dimer assay

8	**What does a high D-dimer level in a coagulation assay mean?**	
	a	Active platelet aggregation
	b	Increased fibrinolysis and the presence of a thrombus
	c	Low fibrinogen levels
	d	Deficiency in Factor XIII
9	**Which of the following methods is most commonly used for quantifying serum immunoglobulin levels?**	
	a	ELISA
	b	RIA
	c	Immunodiffusion
	d	Flow Cytometry
10	**In nephelometry, what property of light is measured to assess immunoglobulin concentration?**	
	a	Reflection
	b	Light absorption
	c	Fluorescence intensity
	d	Light scattering
11	**What is the main difference between serum protein electrophoresis (SPE) and immunoelectrophoresis?**	
	a	SPE measures only albumin, while immunoelectrophoresis measures all proteins.
	b	SPE identifies proteins by charge, while immunoelectrophoresis detects specific proteins using antibodies.
	c	Immunoelectrophoresis is quantitative, while SPE is qualitative.
	d	SPE uses antibodies for separation, while immunoelectrophoresis relies on charge.
12	**The compensatory mechanism for metabolic acidosis involves:**	
	a	Hyperventilation to decrease CO_2
	b	Decreased renal excretion of hydrogen ions
	c	Hypoventilation to increase CO_2
	d	Increased renal excretion of bicarbonate
13	**What is the role of a blank solution in spectrophotometric enzyme assays?**	
	a	To act as a substrate control.
	b	To reduce enzyme inactivation.
	c	To account for absorbance by solvents and reagents.
	d	To calibrate the spectrophotometer for fluorescence intensity.
14	**What is the clinical significance of neutrophilia in a differential WBC count?**	
	a	Viral infection
	b	Bacterial infection
	c	Autoimmune disorder
	d	Parasitic infection
15	**In a manual differential WBC count, which stain is most commonly used to visualize blood cells under a microscope?**	
	a	Wright-Giemsa stain
	b	Periodic acid-Schiff
	c	Hematoxylin and eosin
	d	Gram stain
16	**Which is the most commonly used to measure the activity of the extrinsic pathway of coagulation?**	
	a	Prothrombin Time (PT)
	b	Activated Partial Thromboplastin Time (APTT)
	c	Thrombin Time (TT)
	d	Fibrin Degradation Products (FDP) Assay

17	**Which immunoglobulin is measured to evaluate allergic reactions in serum?**	
	a	IgA
	b	IgG
	c	IgE
	d	IgM
18	**The pH of a solution is determined by the concentration of:**	
	a	Hydroxide ions
	b	Hydrogen ions
	c	Chloride ions
	d	Sodium ions
19	**What is the primary function of thrombin in the coagulation cascade?**	
	a	Inhibition of Factor VIII
	b	Activation of plasminogen
	c	Activation of Factor IX
	d	Conversion of fibrinogen to fibrin
20	**Which of the following conditions commonly causes a high anion gap metabolic acidosis?**	
	a	Methanol poisoning
	b	Addison's disease
	c	Diarrhea
	d	Renal tubular acidosis
21	**Which feature differentiates double-beam spectrophotometers from single-beam spectrophotometers?**	
	a	Ability to detect scattered light intensity.
	b	Higher sensitivity in fluorescence detection.
	c	Simultaneous measurement of sample and reference.
	d	Direct measurement of enzyme catalytic rates.
22	**Turbidometry is most suitable for measuring:**	
	a	The concentration of small molecules in a solution.
	b	The fluorescence emission from excited molecules.
	c	The rate of light absorption by chromophores.
	d	The scattering of light due to suspended particles
23	**In which clinical scenario is a manual differential WBC count preferred over an automated method?**	
	a	Screening for anemia
	b	Monitoring chemotherapy response
	c	Identifying abnormal cell morphology
	d	Routine health check-up
24	**What is the principle of serum protein electrophoresis**	
	a	Separation of proteins based on charge and size
	b	Quantification of specific proteins
	c	Detection of antigen-antibody complexes
	d	Separation of proteins based on molecular weight
25	**A patient's blood smear shows an elevated percentage of eosinophils. What is the most likely clinical condition?**	
	a	Chronic myeloid leukemia
	b	Viral infection
	c	Allergic reaction
	d	Bacterial infection

Answer Key-VOP: Scientific Assistant Lab – Biochemistry

PART B - Biochemistry

Question No.	Correct answer
1.	A
2.	D
3.	B
4.	C
5.	D
6.	A
7.	C
8.	B
9.	A
10.	D
11.	B
12.	A
13.	C
14.	B
15.	A
16.	A
17.	C
18.	B
19.	D
20.	A
21.	C
22.	D
23.	C
24.	A
25.	C

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