Sri Manakula Vinayagar Medical College and Hospital

Department of Biochemistry

Specific Learning Objectives - Practicals

Number	**BI11.1**	**Time**
Competency	Describe commonly used laboratory apparatus and equipments, good safe laboratory practice and waste disposal	1 hour
SLO	At the end of this session the I MBBS students shall be able to	
1.	Describe the uses of biochemical laboratory apparatus and equipments	
2.	Explain in detail about the safe laboratory practice	
3.	Discuss about the methods of waste disposal in the laboratory	
Vertical Integration		
Horizontal Integration		
Number	**BI11.2**	1 hour
Competency	Describe the preparation of buffers and estimation of pH	
SLO	At the end of this session the I MBBS students shall be able to	
1.	Describe the methods of preparation of commonly used buffers in laboratory	
2.	Explain the estimation of pH	
Vertical Integration		
Horizontal Integration		
Number	**BI11.3**	
Competency	Describe the chemical components of normal urine	1 hour
SLO	At the end of this session the I MBBS students shall be able to	
1.	Describe & discuss the chemical components of normal urine	
Vertical Integration		
Horizontal Integration		
Number	**BI11.4**	
Competency	Perform urine analysis to estimate and determine normal and abnormal constituents	2 hours
SLO	At the end of this session the I MBBS students shall be able to	
1.	Perform the analysis of normal urine constituents under supervision of faculty	
2.	Perform the analysis and determine the abnormal constituents of urine under supervision of faculty	
Vertical Integration	General Medicine	
Horizontal Integration	Physiology	
Number	**BI11.5**	
Competency	Describe screening of urine for inborn errors & describe the	1 hour

	use of paper chromatography	
SLO	At the end of this session the I MBBS students shall be able to	
1.	Describe the screening of urine of various inborn errors of metabolism	
2.	Describe the uses of paper chromatography	
Vertical Integration	General Medicine	
Horizontal Integration		
Number	**BI11.6**	
Competency	Describe the principles of colorimetry	1 hour
SLO	At the end of this session the I MBBS students shall be able to	
1.	Describe the basic principles of colorimetry	
Vertical Integration		
Horizontal Integration		
Number	**BI11.7**	
Competency	Demonstrate the estimation of serum ceatinine and creatinine clearance	1 hour
SLO	At the end of this session the I MBBS students shall be able to	
1.	Perform the estimation of serum creatinine	
2.	Explain the estimation of creatinine clearance	
Vertical Integration		
Horizontal Integration		
Number	**BI11.8**	
Competency	Demonstrate the estimation of serum proteins, albumin and A:G ratio	1 hour
SLO	At the end of this session the I MBBS students shall be able to	
1.	Perform the estimation of serum protein	
2.	Perform the estimation of serum albumin	
3.	Perform the estimation of A:G ratio	
Vertical Integration		
Horizontal Integration		
Number	**BI11.9**	
Competency	Demonstrate the estimation of serum total cholesterol and HDL cholesterol	1 hour
SLO	At the end of this session the I MBBS students shall be able to	
1.	Perform the estimation of serum total cholesterol	
2.	Perform the estimation of serum HDL cholesterol	
Vertical Integration		
Horizontal Integration		
Number	**BI11.10**	
Competency	Demonstrate the estimation of triglycerides	1 hour
SLO	At the end of this session the I MBBS students shall be able to	
1.	Perform the estimation of serum triglycerides	

Vertical Integration		
Horizontal Integration		
Number	**BI11.11**	
Competency	Demonstrate estimation of calcium and phosphorus	1 hour
SLO	At the end of this session the I MBBS students shall be able to	
1.	Perform the estimation of serum calcium	
2.	Perform the estimation of serum phosphorus	
Vertical Integration		
Horizontal Integration		
Number	**BI11.12**	
Competency	Demonstrate the estimation of serum bilirubin	1 hour
SLO	At the end of this session the I MBBS students shall be able to	
1.	Perform the estimation of serum bilirubin	
Vertical Integration		
Horizontal Integration		
Number	**BI11.13**	
Competency	Demonstrate the estimation of SGOP/SGPT	1 hour
SLO	At the end of this session the I MBBS students shall be able to	
1.	Perform the estimation of serum SGOT	
2.	Perform the estimation of serum SGPT	
Vertical Integration		
Horizontal Integration		
Number	**BI11.14**	
Competency	Demonstrate the estimation of alkaline phosphatase	1 hour
SLO	At the end of this session the I MBBS students shall be able to	
1.	Perform the estimation of serum alkaline phosphatase	
Vertical Integration		
Horizontal Integration		
Number	**BI11.15**	
competency	Describe & discuss the composition of CSF	1 hour
SLO	At the end of this session the I MBBS students shall be able to	
1.	Describe in detail about the composition of CSF	
Vertical Integration		
Horizontal Integration		
Number	**BI11.16**	
Competency	Observe use of commonly used equipments/techniques in biochemistry laboratory including: pH meter, paper chromatography of amino acid, protein electrophoresis, TLC, PAGE, electrolyte analysis by ISE, ABG analyser, ELISA, Immunodiffusion, autoanalyser, quality control and DNA isolation from blood/tissue	
SLO	At the end of this session the I MBBS students shall be able	

	to	
1.	Explain the principle and procedure of pH meter	1 hour
2.	Explain the principle and procedure of paper chromatography of amino acids and TLC	1 hour
3.	Explain the principle and procedure of protein electrophoresis	30 minutes
4.	Explain the principle and procedure of PAGE	30 minutes
5.	Explain the principle and procedure of electrolyte analysis by ISE	
6.	Explain the principle and procedure of ABG analyser	1 hour
7.	Explain the principle and procedure of ELISA	30 minutes
8.	Explain the principle and procedure of Immunodiffusion	30 minutes
9.	Explain the principle and procedure of autoanalyzer	30 minutes
10.	Define the term quality control & types of QC materials and explain the various procedures involved in QC monitoring in the lab	1 hour
11.	Explain the principle and procedure of DNA extraction from blood and tissue	1 hour
Vertical Integration		
Horizontal Integration		
Number	**BI11.17**	
competency	Explain the basis and rationale of biochemical tests done in the following conditions: Diabetes mellitus, dyslipidemia, myocardial infarction, renal failure, gout, proteinuria, nephrotic syndrome, edema, jaundice, liver disorders, pancreatitis, disorders of acid-base balance and thyroid disorders	
SLO	At the end of this session the I MBBS students shall be able to	
1.	Explain the biochemical tests done in diabetes mellitus	1 hour
2.	Explain the biochemical tests done in dyslipidemia	1 hour
3.	Explain the biochemical tests done in myocardial infarction	1 hour
4.	Explain the biochemical tests done in renal failure	1 hour
5.	Explain the biochemical tests done in proteinuria &nephrotic syndrome	1 hour
6.	Explain the biochemical tests done in edema	1 hour
7.	Explain the biochemical tests done in jaundice	1 hour
8.	Explain the biochemical tests done in liver diseases	1 hour
9.	Explain the biochemical tests done in pancreatitis and gout	1 hour
10.	Explain the biochemical tests done in disorders of acid-base balance	1 hour
11.	Explain the biochemical tests done in thyroid disorders	1 hour
Vertical Integration	General Medicine, Pathology	
Horizontal Integration		
Number	**BI11.18**	
Competency	Discuss the principles of spectrophotometry	30 minutes
SLO	At the end of this session the I MBBS students shall be able to	
1.	Describe about the basic principles of spectrophotometry	
Vertical Integration		
Horizontal Integration		

Number	**BI11.19**	
Competency	Outline the basic principles involved in the functioning of instruments commonly used in a biochemistry laboratory and their applications	
SLO	At the end of this session the I MBBS students shall be able to	
1.	Explain the basic principles and applications of microscope	
2.	Explain the basic principles and applications of centrifuge	
3.	Explain the basic principles and applications of colorimetry	
4.	Explain the basic principles and applications of spectrophotometry	
5.	Explain the basic principles and applications of semiautoanalyser and autoanalyser	
6.	Explain the basic principles and applications of ABG analyser	
7.	Explain the basic principles and applications of electrolyte analyser	
8.	Explain the basic principles and applications of HbA1c analyser	
9.	Explain the basic principles and applications ofchemiluminescence Immunoassay analyser	
Vertical Integration		
Horizontal Integration		
Number	**BI11.20**	
Competency	Identify abnormal constituents in urine, interpret the finding and correlate these with pathological states	1 hour
SLO	At the end of this session the I MBBS students shall be able to	
1.	Perform and identify the abnormal constituents of urine under supervision of faculty	
2.	Explain the interpretation of the abnormal constituents of urine in correlation with the pathological states	
Vertical Integration		
Horizontal Integration		
Number	**BI11.21**	
Competency	Demonstrate estimation of glucose, creatinine, urea and total protein in serum	
SLO	At the end of this session the I MBBS students shall be able to	
1.	Perform the estimation of serum glucose under supervision of faculty	
2.	Perform the estimation of serum creatinine under supervision of faculty	
3.	Perform the estimation of serum urea under supervision of faculty	
4.	Perform the estimation of serum total protein under supervision of faculty	
Vertical Integration		
Horizontal Integration		

Number	**BI11.22**	
Competency	Calculate albumin:globulin (AG) ratio and creatinine clearance	
SLO	At the end of this session the I MBBS students shall be able to	
1.	Explain the calculation involved in determination of AG ratio	
2.	Calculate the creatinine clearance	
Vertical Integration	General Medicine	
Horizontal Integration		
Number	**BI11.23**	
Competency	Calculate energy content of different food items, identify food items with high and low glycemic index and explain the importance of these in the diet	1 hour
SLO	At the end of this session the I MBBS students shall be able to	
1.	Explain and calculate the energy content of rice, egg, milk, ghee, meat, green leafy vegetables	
2.	Explain the glycemic index and identify the food iems with high & low glycemic index and should know its importance in the diet	
Vertical Integration	General Medicine	
Horizontal Integration		
Number	**BI11.24**	
Competency	Enumerate advantages and/or disadvantages of use of unsaturated, saturated and trans fats in food	
SLO	At the end of this session the I MBBS students shall be able to	
1.	Explain the advantages and disadvantages of unsaturated fats in food	
2.	Explain the advantages and disadvantages of saturated fats in food	
3.	Explain the advantages and disadvantages of trans fats in food	
Vertical Integration	General Medicine	
Horizontal Integration		