

READY RECKONER LNH-DEPARTMENT OF BIOCHEMISTRY

S.No.	TEST NAME	SPECIMENS	MINIMUM VOLUME OF BLOOD/SPECIMEN REQUIRED.	NORMAL REFERENCE RANGE	SPECIAL INSTRUCTIONS	Processing @R/E
1	Alpha Feto Protein (AFP)	-Serum	-2 ml blood collected in RED/GOLD TOP[®] vacutainer.	<7.22 IU/mL	-	R
2	ALBUMIN -Serum	-Serum	-2 ml blood collected in RED/GOLD TOP[®] vacutainer.	3.5 - 5.0 g/dL	-	E
3	ALKALINE PHOSPHATASE (ALP)	-Serum	-2 ml blood collected in RED/GOLD TOP[®] vacutainer.	<p><i>Adult</i> :38-126 IU/L</p> <p><u>Males:</u> 0-14 days: 83-248 U/L 15 days- <1 year: 122-469 U/L 1-<10 years: 142-335 U/L 10-<13 years: 129-417 U/L 13-<15 years: 116-468 U/L 15-<17 years: 82-331 U/L 17-<19 years: 55-149 U/L</p> <p><u>Females</u> 0-14 days: 83-248 U/L 15 days-<1 year: 122-469 U/L 1- <10 years: 142-335 U/L 10-<13 years: 129-417 U/L 13-<15 years: 57-254 U/L 15-<17 years: 50-117 U/L</p> <p><u>Pregnancy:</u> Blood levels of alkaline phosphatase may increase by two to four times during pregnancy. This is a result of additional alkaline phosphatase produced by the placenta.</p>	-	E
4	ALANINE AMINO TRANSFERASE (ALT/SGPT)	-Serum	-2 ml blood collected in RED/GOLD TOP[®] vacutainer.	<p><i>-Male:</i> 5-50 IU/L <i>-Female:</i>5-35 IU/L</p>	-Hemolysis may lead to false high values.	E
5	Anti Mullerian Hormone (AMH)	-Serum	-2 ml blood collected in RED/GOLD TOP[®] vacutainer.	<p><i>Normal:</i> 2.5 ng/mL <i>High:</i> >5 ng/mL <i>Low Normal:</i> 1-2 ng/mL <i>Low:</i> 0.5- 1.0 ng/mL <i>Very Low:</i><0.5 ng/mL</p>	-	R
6	AMYLASE –Serum	-Serum	-2 ml blood collected in RED/GOLD TOP[®]	30-110 IU/L	-	E
7	Anti-SARS-CoV-2, IgG (Antibody -Qualitative)	-Serum	-2 ml blood collected in RED/GOLD TOP[®] vacutainer.	<p><i>Non Reactive:</i> <1.0 <i>Reactive:</i> ≥ 1.0</p>	-	R

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8	Anti Thyroperoxidase Antibody (Anti TPO Ab)	-Serum	-2 ml blood collected in RED/GOLD TOP[®] vacutainer.	<34 IU/mL	-	R
9	ASPARTATE AMINOTRANSFERASE (AST/SGOT)	-Serum	-2 ml blood collected in RED/GOLD TOP[®] vacutainer.	-Male:17-59 IU/L -Female:14-36 IU/L	-Hemolysis may lead to false high values.	E
10	BILIRUBIN -DIRECT	-Serum	-2 ml blood collected in RED/GOLD TOP[®] vacutainer.	0.0 - 0.30 mg/dL	-Hemolysed samples are not acceptable.	E
11	BILIRUBIN -TOTAL	-Serum	-2 ml blood collected in RED/GOLD TOP[®] vacutainer.	0.2-1.3 mg/dL	-Hemolysed samples are not acceptable.	E
12	CA 19.9	-Serum	-2 ml blood collected in RED/GOLD TOP[®] vacutainer.	≤37U/L	-	R
13	CA-125	-Serum	-2 ml blood collected in RED/GOLD TOP[®] vacutainer.	≤35U/L	-	R
14	CALCIUM - Ionized	-Serum -Plasma (Sodium heparin)	-2 ml blood collected in RED/GOLD TOP[®] vacutainer. - 0.5 to 1 ml Heparinized whole blood collected in ABG syringe.	1.10 - 1.40 mmol/L	-Avoid use of tourniquet and fist clenching during sampling.	E
15	CALCIUM - Total	-Serum	-2 ml blood collected in RED/GOLD TOP[®] vacutainer.	8.4 -10.2 mg/dL	-Avoid use of tourniquet and fist clenching during sampling.	E
16	Carcino-Embryonic Antigen (CEA)	-Serum	-2 ml blood collected in RED/GOLD TOP[®] vacutainer.	≤3.0 ng/mL	-	R
17	CHLORIDE	-Serum	-2 ml blood collected in RED/GOLD TOP[®] vacutainer.	98 - 107 mmol/L	-	E
18	CHOLESTEROL - Total	-Serum	-2 ml blood collected in RED/GOLD TOP[®] vacutainer.	-Desirable:<200 mg/dL -Borderline high:200-239 mg/dL -High:≥240 mg/dL	8-12 hour of overnight fasting is mandatory.	R
19	CREATINE KINASE, CK (TOTAL) -	-Serum	-2 ml blood collected in RED/GOLD TOP[®] vacutainer.	-Male:55-170 IU/L -Females:30-135 IU/L	-	E
20	CK-MB	-Serum	-2 ml blood collected in RED/GOLD TOP[®] vacutainer.	0-25 IU/L	-	E

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21	CORTISOL- (MORNING/EVENING)	-Serum	-2 ml blood collected in RED/GOLD TOP[®] vacutainer.	<i>Morning:</i> 123-626 nmol/L <i>Evening:</i> 46.20-389 nmol/L	Morning: Sample must be drawn between 7-11AM. Evening; Sample must be drawn between 3-5PM. -Specify time on sample.	R		
22	CREATININE -Serum	-Serum	-2 ml blood collected in RED/GOLD TOP[®] vacutainer.	<i>Male:</i> 0.66 - 1.25 mg/dL <i>Female:</i> 0.52 - 1.04 mg/dL	-Hemolysed and Icteric samples cause interference	E		
23	CSF- PROTEIN AND SUGAR	- CSF	- Min. 1 ml in a sterile screw capped container.	- <i>Protein:</i> 12 - 60 mg/dL - <i>Sugar:</i> 40 - 70 mg/dL	-Samples should reach to laboratory immediately after collection.	E		
24	Dehydro-epiandrosterone sulphate (DHEAS)	-Serum	-2 ml blood collected in RED/GOLD TOP[®] vacutainer.	Age	Male (mcg/dL)	Female (mcg/dL)	-	R
				<1 month	<316	1-261		
				1-6 month	<58	<74		
				7-11 month	<26	<26		
				1-3 Years	<15	<22		
				4-6 Years	<27	<34		
				7-9 Years	<91	<92		
				10-13 Years	<138	<148		
				14-17 Years	38-340	37-307		
25-34 Years	160-449	98.8-340						
25	Direct HDL –Cholesterol	-Serum	-2 ml blood collected in RED/GOLD TOP[®] vacutainer.	- <i>Low:</i> <40 mg/dL - <i>High:</i> ≥60 mg/dL	8-12 hour of overnight fasting is mandatory.			
26	Direct LDL – Cholesterol	-Serum	-2 ml blood collected in RED/GOLD TOP[®] vacutainer.	- <i>Optimal:</i> <100 mg/dL - <i>Near to above optimal:</i> 100-129 mg/dL - <i>Borderline high:</i> 130-159 mg/dL - <i>High:</i> 160-189 mg/dL - <i>Very high:</i> ≥190 mg/dL	8-12 hour of overnight fasting is mandatory.	R		
27	Direct Total Iron-Binding Capacity (TIBC)	-Serum	-2 ml blood collected in RED/GOLD TOP[®] vacutainer.	<i>Male:</i> 261-162 µg/dL <i>Female:</i> 265-497 µg/dL	-	R		
28	ESTRADIOL (E2)	-Serum	-2 ml blood collected in RED/GOLD TOP[®] vacutainer.	<i>Follicular Phase:</i> 26.6-161pg/mL <i>Pre-Ovulatory:</i> 187-382 pg/mL <i>Luteal Phase:</i> 32.7-201pg/mL <i>Post Menopause:</i> 5.37-38.4 pg/ML <i>Males:</i> 5.37-65.9 pg/ML	-	R		
29	FERRITIN	-Serum	-2 ml blood collected in RED/GOLD TOP[®] vacutainer.	<i>Females</i> <50 yrs: 6.24-137 ng/mL <i>Female</i> ≥50 yrs:11.1-264 ng/mL <i>Males:</i> 17.9-464 ng/mL	-	E		
30	FOLATE	-Serum	-2 ml blood collected in RED/GOLD TOP[®] vacutainer.	2.76 – 20 ng/mL		R		

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31	Follicle Stimulating Hormone (FSH)	-Serum	-2 ml blood collected in RED/GOLD TOP[®] vacutainer.	<i>Female Follicular Phase:</i> 1.98-11.6 mIU/L <i>Female mid cycle peak (Observed range):</i> 5.14-23.4 mIU/L <i>Female Luteal Phase:</i> 1.38-9.58 mIU/L <i>Post-Menopausal female:</i> 21.5-131 mIU/L <i>Males:</i> 1.55-9.74 mIU/L	- Sampling time is Day 2/Day 3 of menstrual cycle.	R
32	Free Triiodothyronine (FT3)	-Serum	-2 ml blood collected in RED/GOLD TOP[®] vacutainer.	4.26-8.10 pmol/L	-Fasting sample preferred.	R
33	Free Thyroxine (FT4)	-Serum	-2 ml blood collected in RED/GOLD TOP[®] vacutainer.	10.0-28.2 pmol/L	-Fasting sample preferred.	R
34	Gamma Glutamyltransferase (GGT)-	-Serum	-2 ml blood collected in RED/GOLD TOP[®] vacutainer.	<i>Female:</i> 12-43U/L <i>Male:</i> 15-73 U/L	-	E
35	GLUCOSE (Fasting/Post Prandial/Random)	-Plasma (fluoride)	-2 ml whole blood collected in GREY TOP[®] vacutainer.	<i>-Fasting :</i> 70 - 110mg/dL <i>-Post Prandial/meal:</i> 70 -140 mg/dL <i>-Random:</i> 70 -140 mg/dL	-For fasting glucose, 8 - 12 hours fasting is mandatory. -Post Prandial: Collect sample exactly 2hrs. Post-meal.	E
36	*GLUCOSE TOLERANCE TEST-75/100 g glucose (GTT)	-Plasma (fluoride)	-2 ml whole blood collected in GREY TOP[®] vacutainer.	<i>Fasting:</i> 70-110 mg/dL <i>1 hour:</i> <180 mg/dL <i>2 hour:</i> <155 mg/dL	- Withdraw fasting sample. - Dissolve 75/100g glucose in 300ml plain water. -Administer orally over a period of 5 minutes. (Do not eat anything after having glucose. -Draw additional specimens after 1.0, 2.0 & 3.0 hours. -Note time drawn on each vial. - Send all the samples together.	R

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37	GLYCATED HEMOGLOBIN (HbA1c)	-Whole blood (EDTA)	-3 ml whole blood collected in LAVENDER TOP³ vacutainer.	<i>Non diabetic adults ≥18 years: <5.7%</i>	-	R
				<i>At risk (Prediabetes): 5.7% - 6.4%</i>		
				<i>Diabetes: ≥ 6.5%</i>		
38	high sensitive C-Reactive Protein (HsCRP)	-Serum	-2 ml blood collected in RED/GOLD TOP² vacutainer.	0 - 5 mg/dL	-	E
39	Hs Troponin I (hsTnI)	-Serum	-2 ml blood collected in RED/GOLD TOP² vacutainer.	<i>Male: <12 pg/mL</i> <i>Female: <9 pg/mL</i>	-	E
40	INSULIN- (Fasting/PP)	-Serum	-2 ml blood collected in RED/GOLD TOP² vacutainer.	Fasting: 2.30 -26.0 µIU/mL PP: 5 - 55 µIU/mL	-For fasting insulin ,8 - 12 hours fasting is mandatory. Post Prandial: Collect sample exactly 2hrs/Post-meal.	R
41	IL -6 , Interleukin -6	-Serum	-2 ml blood collected in RED/GOLD TOP² vacutainer.	<7 pg/mL	-	R
42	IRON (Fe)	-Serum	-2 ml blood collected in RED/GOLD TOP² vacutainer.	<i>Female:37-170 µg/dL</i> <i>Male:49-181 µg/dL</i>	Overnight fasting is preferred. Avoid iron supplements for minimum 24 hours prior to specimen collection.	R
43	LACTATE -(PLASMA)	-PLASMA -Whole blood (sodium heparinized)	-2 ml whole blood collected in GREY TOP¹ vacutainer. or -0.5 to 1 ml Heparinized whole blood collected in ABG syringe.	0.70 - 2.50 mmol/L	-Collect sample without applying tourniquet. -Send Sample immediately to the lab. -if delay is anticipated, place the syringe in ice slurry.	E
44	LDH- LACTATE DEHYDROGENASE	-Serum	-2 ml blood collected in RED/GOLD TOP² vacutainer.	120-246 IU/L	Hemolysed specimens are not acceptable.	E
45	LDH- (FLUID: ASCITIC /PLEURAL /PERICARDIAL/SYNOVIAL)	-FLUID	-2 ml fluid in a sterile screw capped container.	Reference range for LDH is not established for body fluids. Physician to correlate clinically	-Samples should reach to laboratory immediately after collection.	E

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46	Luteinizing hormone (LH)	-Serum	-2 ml blood collected in RED/GOLD TOP [®] vacutainer.	<p>Female Follicular Phase:2.58-12.1 mIU/L</p> <p>Female mid cycle peak (Observed range):27.396.9 mIU/L</p> <p>Normal Female Luteal Phase:0.833-15.5 mIU/L</p> <p>Post-Menopausal female:13.1-86.5 mIU/L.</p> <p>Males:19-70 yrs: 1.5 - 9.3 mIU/mL</p> <p>Males:>70 yrs: 3.10 - 34.60 mIU/mL</p>	- Sampling time is Day 2/Day 3 of menstrual cycle.	R
47	LIPASE	-Serum	-2 ml blood collected in RED/GOLD TOP [®] vacutainer.	23-300 IU/L	-	E
48	MAGNESIUM	-Serum	-2 ml blood collected in RED/GOLD TOP [®] vacutainer.	1.6-2.3 mg/dL	-Hemolysis interferes with values.	E
49	NT-proBNP II (N-terminal pro brain Natriuretic peptide)	-Serum	-2 ml blood collected in RED/GOLD TOP [®] vacutainer.	Normal : <300 pg/mL	-	E
50	Procalcitonin (PCT)	-Serum	-2 ml blood collected in RED/GOLD TOP [®] vacutainer.	<p>-Upper reference limit for normal healthy subjects:0.077 ng/mL</p> <p>-Systemic infection (sepsis) is unlikely:<0.500 ng/mL</p> <p>-Systemic infection (sepsis) is possible:≥0.500 and ≤2.0 ng/mL</p>	-	E
51	PHOSPHORUS	-Serum	-2 ml blood collected in RED/GOLD TOP [®] vacutainer.	2.5 - 4.5 mg/dL	-	E
52	POTASSIUM - Serum	-Serum	-2 ml blood collected in RED/GOLD TOP [®] vacutainer.	<p>Adult : 3.5 - 5.1 mmol/L</p> <p>0 – 1 wk: 3.2 - 5.5 mmol/L</p> <p>1 wk – 1 month: 3.4 - 6.0 mmol/L</p> <p>1-6 months: 3.5 - 5.6 mmol/L</p> <p>6 months-1 yr: 3.5 - 6.1 mmol/L</p> <p>Over 1 year: 3.3 - 4.6 mmol/L</p> <p>1-15 yr: 3.7 - 5.0 mmol/L</p>	-Hemolysed sample are not acceptable, may lead to erratic values.	E

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53	PROGESTERONE	-Serum	-2 ml blood collected in RED/GOLD TOP[®] vacutainer.	<i>Follicular Phase:</i> 0.14-2.03 ng/mL <i>Periovulatory:</i> 0.40-4.47 ng/mL <i>Mid Luteal Phase:</i> 5.22-22.7 ng/mL <i>Luteal Phase:</i> 1.42-16.6 ng/mL	-	R
54	PROLACTIN	-Serum	-2 ml blood collected in RED/GOLD TOP[®] vacutainer.	<i>Female (Non Pregnant):</i> 64-395 mIU/L <i>Males:</i> 78-380 mIU/L	-Sample to be collected 4 hours after the patient has awakened. -Overnight fasting preferred.	R
55	Prostate specific Antigen-Total (tPSA)	-Serum	-2 ml blood collected in RED/GOLD TOP[®] vacutainer.	<5.0 ng/mL	-Do not give sample within 7 days of Digital Rectal Examination (DRE) or Rectal Prostatic Ultrasonography.	R
56	Para Thyroid Hormone-Intact (iPTH)	-Serum	-2 ml blood collected in RED/GOLD TOP[®] vacutainer.	13.6-85.8 pg/mL	-Fasting sample to be given between 8-10 AM	R
57	SODIUM- Serum	-Serum	-2 ml blood collected in RED/GOLD TOP[®] vacutainer.	137 - 145 mmol/L	-	E
58	SUGAR AND PROTEIN-FLUID- ASCITIC /PLEURAL /PERICARDIAL/SYNOVIAL)	-FLUID	-2 ml in a sterile screw capped container.	Reference range for glucose/Protein is not established for body fluids. Physician to correlate clinically	-Samples should reach to laboratory immediately after collection.	E
59	TESTOSTERONE	-Serum	-2 ml blood collected in RED/GOLD TOP[®] vacutainer.	<i>Males 20-49yrs:</i> 4.56-28.2 nmol/L <i>Males >50yrs:</i> 2.49-21.6 nmol/L <i>Females with Normal Menstrual cycles:</i> 0.198-2.67 nmol/L.	-	R
60	TOTAL - PROTEIN	-Serum	-2 ml blood collected in RED/GOLD TOP[®] vacutainer.	6.30 -8.20 g/dL	-	E

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61	TRIGLYCERIDES	-Serum	-2 ml blood collected in RED/GOLD TOP² vacutainer.	-Normal:<150 mg/dL -Borderline high:150-199 mg/dL -High:200-499 mg/dL -Very high: ≥500 mg/dL	8-12 hour of overnight fasting is mandatory.	R
62	Thyroid Stimulating hormone (TSH)	-Serum	-2 ml blood collected in RED/GOLD TOP² vacutainer.	0.465-4.68mIU/L	-Fasting sample preferred.	R
63	UREA	-Serum	-2 ml blood collected in RED/GOLD TOP² vacutainer.	19 - 43 mg/dL	-	E
64	URIC ACID	-Serum	-2 ml blood collected in RED/GOLD TOP² vacutainer.	-Male:3.5 - 8.5 mg/dL -Female:2.5 - 6.2 mg/dL	-	E
65	Vitamin B12	-Serum	-2 ml blood collected in RED/GOLD TOP² vacutainer.	Adults:239-391 pg/mL	-Overnight fasting preferred.	R
66	Vitamin D-Total, 25 OH	-Serum	-2 ml blood collected in RED/GOLD TOP² vacutainer.	Deficient:<20 ng/mL Insufficient 20-<30 ng/mL Sufficient:30-100 ng/mL Potential Toxicity:>100 ng/mL	-	R
67	Human Chorionic Gonadotropin (β-hCG)	-Serum	-2 ml blood collected in RED/GOLD TOP² vacutainer.	Negative/non -Pregnant:≤5 mIU/mL Positive/Pregnant : ≥25 mIU/mL	-	E
68	**ADENOSINE DEAMINASE ACTIVITY. (ADA) -ADA (SERUM/PLASMA) -ADA (CSF) -ADA (FLUID: ASCITIC /PLEURAL etc.)	-CSF -FLUID -SERUM -PLASMA	-1 ml CSF in a sterile screw capped container. (for CSF ADA estimation) - 2 ml FLUID in a sterile screw capped container.(for Fluid ADA estimation) -2 ml blood collected in RED/GOLD TOP vacutainer.(for Serum ADA estimation) -2 ml whole blood collected in LAVENDER TOP³ vacutainer.(for Plasma ADA estimation)	-CSF: <5.0 U/L -SERUM/PLASMA:<15 U/L -FLUID:<24 U/L	-Samples should reach to laboratory immediately after collection.	E

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URINE SECTION

1	URINARY- SODIUM AND POTASSIUM	-Urine	-3-5 ml urine in a screw capped plastic container.	<p>SODIUM 24hrs. URINE 6-10 yrs. Males:41-115 mmol/day 6-10 yrs. Female: 20-69 mmol/day. 10-14 yrs Male: 63-117 mmol/day. 10-14 yrs. Female: 48-168 mmol/day. >14 yrs.: 40-220 mmol/day.</p> <p>SODIUM RANDOM URINE: <40 yrs Male:25-301 mmol/L <40 yrs Female:15-267 mmol/L >40 yrs Male:18- 214 mmol/L >40 yrs Female:15-237 mmol/L</p> <p>POTASSIUM 24 hrs URINE 6-10 yrs Males:17-54 mmol/day. 6-10 yrs Female: 8-37 mmol/day. 10-14 yrs Male: 25-57 mmol/day. 10-14 yrs Female: 18-58 mmol/day. >14 yrs : 25-125 mmol/day.</p> <p>POTASSIUM RANDOM URINE <40 yrs Male:11-80 mmol/L <40 yrs Female:17-145 mmol/L >40 yrs Male:17- 99 mmol/L >40 yrs Female:22-164 mmol/L</p>	-	E
2	URINARY PROTEIN - Total (24 Hour/Random Urine)	-Urine	- 10 mL aliquot in a tight screw-cap plastic container.(From the whole urine collected in last 24 hours after thoroughly mixing it.) -10 mL Random urine in a tight screw cap plastic container.	-Random Urine: <12mg/dL -24 hrs. Urine: 42 - 225 mg/day.	-	R

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3	MICRO ALBUMIN –URINE (24 Hour)	-Urine	- 10 mL aliquot in a tight screw-cap plastic container.(From the whole urine collected in last 24 hours after thoroughly mixing it.) -10 mL Random urine in a tight screw cap plastic container.	<p><u>24 hour Urine</u> <i>Normal:</i><30 mg/24 hr <i>Microalbuminuria:</i>30-300 mg/24hr <i>Clinical albuminuria:</i>>300 mg/24hr</p> <p><u>Spot Urine:</u> <i>Normal:</i><30 µg/mg Creatinine <i>Microalbuminuria:</i> 30-300 µg/mg Creatinine <i>Clinical albuminuria:</i> >300 µg/mg Creatinine</p>	-	R
4	MICROALBUMIN : CREATININE RATIO- (Random Urine)	-Urine	-10 mL Random urine in a tight screw cap plastic container.	<p><i>Normal:</i> <30 mg/g Creatinine <i>Microalbuminuria:</i> 30 - 300 mg/g Creatinine. <i>Clinical albuminuria:</i> >300 mg/g Creatinine</p> <p><u>Creatinine Value (Random Urine)</u> Male: 39 – 259 mg/dL Female: 28 – 217 mg/dL</p>	-	R
5	URINE-UREA (24 Hours)	-Urine	-10 mL aliquot in a tight screw-cap plastic container. (From the whole urine collected in last 24 hours after thoroughly mixing it.)	26-43 g/day	-	R
6	URINE-CALCIUM (24 Hours)	-Urine	- 10 mL aliquot in a tight screw-cap plastic container. (From the whole urine collected in last 24 hours after thoroughly mixing it.)	<p><i>Ca⁺ Free :</i>5 - 40 mg/day <i>Low to average:</i> 50 - 150 mg/day <i>Average:</i>100 - 300 mg/day</p>	-	R
7	URINE-CHLORIDE (24 Hour/Random)	-Urine	- 10 mL aliquot in a tight screw-cap plastic container. (From the whole urine collected in last 24 hours after thoroughly mixing it.) -10 mL Random urine in a tight screw cap plastic container	<p><i>Random:</i>18-209 mmol/L <i>24 hours:</i>110-250 mmol/day</p>	-	R
8	URINE-AMYLASE (Random)	-Urine	-10 mL Random urine in a tight screw cap plastic container	32-641 U/L	-	R

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9	URINE-URIC ACID (24 Hours)	-Urine	- 10 mL aliquot in a tight screw-cap plastic container. (From the whole urine collected in last 24 hours after thoroughly mixing it.)	250 -750 mg/day	-	R
10	URINE-CREATININE (24 Hours)	-Urine	- 10 mL aliquot in a tight screw-cap plastic container. (From the whole urine collected in last 24 hours after thoroughly mixing it.)	<i>Male:</i> 1000 - 2000 mg/day <i>Females;</i> 800 - 1800 mg/day	-	R
11	URINE- PHOSPHORUS (24 Hours)	-Urine	- 10 mL aliquot in a tight screw-cap plastic container. (From the whole urine collected in last 24 hours after thoroughly mixing it.)	0.4 -1.3 g/day	-	R
12	URINE-MAGNESIUM (24 Hours)	-Urine	- 10 mL aliquot in a tight screw-cap plastic container. (From the whole urine collected in last 24 hours after thoroughly mixing it.)	73 -122 mg/day	-Use metal free container for collection of urine. Keep refrigerated until analysis.	R

24 hour Urine Collection

- Discard first morning urine sample.
- Collect all the urine samples in the required container including first morning sample of next day.
- Keep the container at 4°C during the entire collection period or alternatively keep the container in a bucket of ice.
- For 24 hour collection a 5 liter urine container suffices.
- Removal of an aliquot is not permissible during 24 hour collection, because excretion of most compounds varies throughout the day and test results will be affected
- Prior to testing, smaller aliquots must be made from the whole urine collected in last 24 hours after thoroughly mixing it, to ensure homogeneity.
- Measure and note the total volume of the well-mixed 24 hour urine collection and send 10 mL aliquot in a screw-cap plastic container refrigerated (2-8°C) for analysis.
- Note down the volume/quantity of Urine collected in 24 hrs.**

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S.No.	TEST NAME	SPECIMENS	MINIMUM VOLUME OF BLOOD/SPECIMEN REQUIRED.	NORMAL REFERENCE RANGE	SPECIAL INSTRUCTIONS	Processing @R/E
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COAGULATION PROFILE

1	Prothrombin Time (PT)	Plasma- Sodium Citrated	Whole blood collected in sodium citrated LIGHT BLUE TOP[®] vacutainer upto the mark indicated on the vacutainer label.	Machine 1 (ACL Elite Pro) 10 – 14 Sec.	-Overnight fasting preferred. -Send Sample immediately after collection. -Under volume/Over volume/Clotted/Hemolysed samples are not acceptable.	E
				Machine 2 (STA Compact Max³) 11 - 15 Sec.		
2	Activated Partial Thromboplastin time (aPTT)	Plasma- Sodium Citrated	Whole blood collected in sodium citrated LIGHT BLUE TOP[®] vacutainer upto the mark indicated on the vacutainer label.	Machine 1 (ACL Elite Pro) 22.2 – 33.0 sec.	-Overnight fasting preferred. -Send Sample immediately after collection. -Under volume/Over volume/Clotted/Hemolysed samples are not acceptable.	E
				Machine 2 (STA Compact Max³) 24 – 36 sec.		
3	D - Dimer	Plasma- Sodium Citrated	Whole blood collected in sodium citrated LIGHT BLUE TOP[®] vacutainer upto the mark indicated on the vacutainer label.	Machine 1 (ACL Elite Pro) 0 – 255 ng/mL	-Overnight fasting preferred. -Send Sample immediately after collection. -Under volume/Over volume/Clotted/Hemolysed samples are not acceptable.	E
				Machine 2 (STA Compact Max³) 0 – 500 ng/mL.		
4	FIBRINOGEN	Plasma- Sodium Citrated	Whole blood collected in sodium citrated LIGHT BLUE TOP[®] vacutainer upto the mark indicated on the vacutainer label.	Machine 1 (ACL Elite Pro) 235 – 498 mg/dL	-Overnight fasting preferred. -Send Sample immediately after collection. -Under volume/Over volume/Clotted/Hemolysed samples are not acceptable.	E
				Machine 2 (STA Compact Max³) 200 - 400 mg/dL		
5	Protein C	Plasma- Sodium Citrated	Whole blood collected in sodium citrated LIGHT BLUE TOP[®] vacutainer upto the mark indicated on the vacutainer label.	Machine 1 (ACL Elite Pro) Free: 70 - 140%	-Overnight fasting preferred. -Send Sample immediately after collection. -Under volume/Over volume/Clotted/Hemolysed samples are not acceptable.	R
6	Protein S	Plasma- Sodium Citrated	Whole blood collected in sodium citrated LIGHT BLUE TOP[®] vacutainer upto the mark indicated on the vacutainer label.	Machine 1 (ACL Elite Pro) Male : 72.2 - 123.3 Female: 57.6 - 112.5%	-Overnight fasting preferred. -Send Sample immediately after collection. -Under volume/Over volume/Clotted/Hemolysed samples are not acceptable.	R
7	FDP	Plasma- Sodium Citrated	Whole blood collected in sodium citrated LIGHT BLUE TOP vacutainer upto the mark indicated on the vacutainer label.	(STA Compact Max³) 0 - 5 µg/mL	-Overnight fasting preferred. -Send Sample immediately after collection. -Under volume/Over volume/Clotted/Hemolysed samples are not acceptable.	R

READY RECKONER LNH-DEPARTMENT OF BIOCHEMISTRY

S.No.	TEST NAME	SPECIMENS	MINIMUM VOLUME OF BLOOD/SPECIMEN REQUIRED.	NORMAL REFERENCE RANGE	SPECIAL INSTRUCTIONS	Processing @R/E
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ARTERIAL BLOOD GASES (ABG), ANALYSIS

1	ARTERIAL BLOOD GASES (ABG)	Heparinized blood (Sodium or Lithium)	0.5 – 1 ml Heparinized whole blood collected in ABG syringe.	<i>Parameter</i>	<i>Normal reference range.</i>	<p>-Send Sample immediately after collection.</p> <p>-Seal the syringe with teat before sending.(to avoid contamination with room air.)</p> <p>-If delay is expected, place the syringe in ice slurry or kept in cool pack.</p> <p>-Note: Contamination of the sample with room air will result in abnormally low carbon dioxide and possibly elevated oxygen levels and a concurrent elevation in pH. Delaying analysis (without chilling the sample) may result in inaccurately low oxygen and high carbon dioxide levels as a result of ongoing cellular respiration.</p>	E
				pH	7.350 - 7.450		
				pO ₂	83-108 mm/Hg		
				pCO ₂	32-48 mm/Hg		
				HCO ₃ ⁻	22-26 mEq/L		
				Na ⁺	135 -145 mmol/L		
				K ⁺	3.5-5.1 mmol/L		
				Chloride	98-107 mmol/L		
				Lactate	0.5-1.5 mmol/L		
				Glucose	70-105 mg/dL (F)		
				Hct	36-53		
				COOX : CO-Oximetry			
				tHb	12 – 17.8 g/dL		
				SO ₂	94-99%		
				O ₂ Hb	94-99%		
				COHb	Non Smoker:0.5-1.5%		
				HHb	1-5%		
Bili	Upto 15 mg/dL						
Bili -Total Bilirubin (Neonatal, Serum or Plasma) O ₂ Hb:Oxyhemoglobin COHb;Carboxyhemoglobin HHb;Desoxyhemoglobin tHb: Total Hemoglobin.							

READY RECKONER LNH-DEPARTMENT OF BIOCHEMISTRY

S.No.	TEST NAME	SPECIMENS	MINIMUM VOLUME OF BLOOD/SPECIMEN REQUIRED.	NORMAL REFERENCE RANGE	SPECIAL INSTRUCTIONS	Processing @R/E
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THE TEST PROFILES.

S.NO.	TESTS AVAILABLE	TEST PROFILES	VOLUME OF BLOOD REQUIRED	
1	BILIRUBIN - Total	HEPATIC PROFILE –LFT	2 - 3 ml blood collected in RED/GOLD TOP² vacutainer.	E
2	BILIRUBIN –Direct			
3	ALANINE AMINO TRANSFERASE (ALT/SGPT)			
4	ASPARTATE AMINOTRANSFERASE (AST/SGOT)			
5	ALKALINE PHOSPHATASE (ALPO-			
6	TOTAL –PROTEIN			
7	ALBUMIN - Serum			
8	Gamma Glutamyltransferase (GGT)			
9	UREA - Serum	RENAL PROFILE -KFT	2 - 3 ml blood collected in RED/GOLD TOP² vacutainer.	E
10	CREATININE - Serum			
11	SODIUM- Serum			
12	POTASSIUM -Serum			
13	CHLORIDE	LIPID PROFILE	2 - 3 ml blood collected in RED/GOLD TOP² vacutainer.	R
14	CHOLESTEROL - Total			
15	TRIGLYCERIDES			
16	Direct HDL – Cholesterol			
17	Direct LDL – Cholesterol	ANEMIA PROFILE	2 - 3 ml blood collected in RED/GOLD TOP² vacutainer.	R
18	FERRITIN			
19	FOLATE			
20	Vitamin B12	THYROID PROFILE	2 - 3 ml blood collected in RED/GOLD TOP² vacutainer.	R
21	FT3 - Free Triiodothyronine			
22	FT4-Free Thyroxine			
23	Thyroid Stimulating hormone(TSH)			
24	ESTRADIOL (E2)	FERTILITY PROFILE	2 - 3 ml blood collected in RED/GOLD TOP² vacutainer.	R
25	FSH - Follicle Stimulating Hormone			
26	Luteinizing hormone(LH)			
27	PROGESTERONE			
28	PROLACTIN			
29	TESTOSTERONE			
30	Human Chorionic Gonadotropin (β-hCG)			

READY RECKONER LNH-DEPARTMENT OF BIOCHEMISTRY						
S.No.	TEST NAME	SPECIMENS	MINIMUM VOLUME OF BLOOD/SPECIMEN REQUIRED.	NORMAL REFERENCE RANGE	SPECIAL INSTRUCTIONS	Processing @R/E

See Instructions-

GREY TOP^① - Mix Sample with Additives/Anticoagulant by gently inverting the tube/vacutainer 6-8 times.

RED/GOLD TOP^②-Mix Sample with CLOT ACTIVATOR by gently inverting the tube/ vacutainer 6-8 times.

LAVENDER TOP^③- Mix Sample with Additives/Anticoagulant by gently inverting the tube/vacutainer 6-8 times.

LIGHT BLUETOP^④ - Mix Sample with Additives/Anticoagulant by gently inverting the tube/vacutainer 6-8 times.








*The Intervals and number of samples vary according to the purpose of the test.

** ADA- the test will be introduced/started soon.

@ R-“STANDS” FOR ROUTINE, the samples will be processed in routine and received between 8 to 12 noon. (Monday to Saturday, except Sunday and Gazetted holidays).

@E –“STANDS” FOR EMERGENCY, the samples will be processed in emergency 24X7, send sample any time any day.

→ Serum Protein Electrophoresis, Bence jones Protein, Stone Analysis, Prophyria Screening, Leukemia Screening including BCR-ABL, JAK-2 mutations are available in MAMC room No. 205 during routine hours.

COLOR OF STOPPER/TOP	ADDITIVE/ANTICOAGULANT	INVERSIONS	DETERMINATION
GREY TOP 	-Sodium fluoride -Potassium oxalate/sodium fluoride	6-8	For Glucose determinations.
GOLD TOP - SST 	Gel Separator (with Clot activator)	6-8	For serum determination in Chemistry
RED TOP 	No Additive (Only Clot Activator)	6-8	For serum determination in Chemistry
LAVENDER TOP 	Spray-dried K ₂ EDTA	6-8	For whole blood hematology determination and blood banking application.
LIGHT GREEN TOP 	Lithium heparin with gel for plasma separation.	6-8	For Plasma determination in Chemistry
LIGHT BLUE TOP 	Sodium citrate	3-4	For Coagulation determinations.
GREEN TOP 	Lithium heparin	6-8	For Plasma determination in Chemistry

Prepared and Compiled by **VIRESH KUMAR MAURYA** (JUNIOR MEDICAL LABORATORY TECHNOLOGIST) under the guidance of **Dr. BINITA GOSWAMI**. (PROF. & MOI/C LAB-DEPT. OF BIOCHEMISTRY.)