



Gujarat Council of Vocational Training Gandhinagar



1. Name of Course:

MLT (Technologist)

N.C.O. No. for Skills Covered:
(Please refer National Classification of
Occupations -2004 available
on www.dget.nic.in)

2. Engineering OR Non-engineering: **Non-Engineering**

3. No. of students per batch: 10

4. Duration in Hours. : 880

5. Duration in Month: 12 @ 27.5 hours/Week.

Duration of course: **One Year** (Eight Month Theory, Practical & Four month Internship).

6. Examination Scheme:

No.	Name of Subject	Teaching Hours during full course.	Maximum Marks. (Excluding Sessional)	Minimum Marks required for Passing (Excluding Sessional).	Sessional Marks if any.
Subject-1	Theory	240	100	40	
Subject-2	Practical	640	300	180	

7. Entry qualification for Trainee:

Minimum entry qualification (Essential):	BSc pass with Microbiology, Chemistry, Biochemistry, Zoology, Botany, Biotechnology
Desirable:	

8. Minimum qualification for Trainer:

Minimum qualification (Essential):	Bsc with three experience or MSc & MLT.
Desirable:	





9. Syllabus Committee Member:

Sr. No.	Name	Organization	Designation	Technical Qualification	Experience in Years	Signature
1	Shree S A Pandav	DET	Regional Deputy Director	BE (Civil)	33	
2	Dr.S.K Sharma	Vankad Lab	Pathologist	M.D. Pathology	40	
3	Dr. Vijal Kaka	Kaka Laboratory	Director	MD Pathologist	22	
4	Shreemati N.K. Shah	Gorwa ITI	Principal	BE (IT)	25	
5	Shree Vijaysinh Umat	Indian Institute	Director	Msc (Micro), MLT	25	
6	Shree Anil Shah	Zaveri Lab	Technical Expert	Msc (Micro), MLT	35	
7	Shree R.P Shah	DET	Technical Officer	BE Electrical	25	
8	Shree V.N. Chaudhari	DET	Senior Surveyor	DCT	24	

10. Terminal Skills of trainee: (Should be well defined and having reference to NCO):

The trainee, after successful completion of training, will have following skills...

1. Understand instructions of supervisors (Doctors) Properly.
2. Prepare specimen collection material than collection of specimen.
3. Preservation & transportation of specimen carefully.
4. Maintain proper record of collection.
5. Analyze the specimen with good skill with working accuracy and speed, work with appropriate safety precaution.
6. Understand all aspects of quality control appropriately.
7. Maintain proper record of reports.
8. Understand requirements of accreditation systems properly.
9. Maintain Bio safety & Waste management.

(please attach separate sheet, if more space is required)





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11. Approximate cost of Tools
/ Equipments / Machinery for
Starting one batch of the course:

Rupees
500000/-

Reference Year
2016-2017

12. Area required for practical / Workshop for one batch.

400 Sq. Ft

13. Minimum Power connection required

5 K.W.

14.1 No of items in Standard list of Machinery:

14

14.1.1. Page NO from 4 to 5.

14.2 No of items in Standard list of Shop outfit:

21

14.2.1. Page NO from 4 to 5.

14.3 No of items in Standard list of Trainee Toll-Kit:

4

14.1.1. Page NO from 4 to 5

***** FOR OFFICIAL USE *****

Approved by GCVT in Governing Body meeting on

: 26-05-2017

Syllabus implemented w.e.f. admission session

: Next session

Revision History :

1. Revision No..... Revision Date.
2. Revision No..... Revision Date.
3. Revision No..... Revision Date.





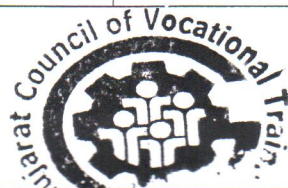
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Standard List of Machinery - Equipment / Shop-outfit / or Trainee Toolkit कोशलम बलम

For Trade of MLT (Technologist)

Sr. No.	Description of Item with detailed specifications	Item type i.e. Machinery / Equipment OR Shop Outfit OR Trainee Toolkit	Quantity Required per one Batch of Students	Quantity Required per one Batch of Students for Instructor	Total Quantity Required (Total of previous two columns)
1.	Centrifuge 6X6 head	Machinery	1	1	1
2.	Water Bath	Machinery	1	1	1
3.	Incubator	Machinery	1	1	1
4.	Hot air Oven	Machinery	1	1	1
5.	Freeze	Machinery	1	1	1
6.	Weighing Balance	Machinery	1	1	1
7.	Autopipette- 10- 100 μ l	Machinery	1	1	1
8.	Colorimeter	Machinery	1	1	1
9.	Microscope	Machinery	8	1	8
10.	Computer	Machinery	1	1	1
11.	Camera attach microscope with TV	Machinery	1	1	1
12.	Needle Burner	Machinery	1	1	1
13.	Staining rack	Shop Outfit	10		10
14.	Conical flask	Shop Outfit	10		10
15.	ESR stand	Shop Outfit	6		6
16.	ESR pipette	Shop Outfit	10		10
17.	Beaker	Shop Outfit	12		12
18.	Urine flask	Shop Outfit	10		10
19.	Funnel	Shop Outfit	10		10
20.	Syringe with needles	Shop Outfit	1		1
21.	Methanol	Shop Outfit	1		1





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Sr. No.	Description of Item with detailed specifications	Item type i.e. Machinery / Equipment OR Shop Outfit OR Trainee Toolkit	Quantity Required per one Batch of Students	Quantity Required per one Batch of Students for Instructor	Total Quantity Required (Total of previous two columns)
22.	Haemoglobinometer	Shop Outfit	6		6
23.	Rohem counting chamber	Shop Outfit	4		4
24.	Test tubes of diff.size as required	Shop Outfit	As required		As required
25.	Pipettes	Shop Outfit	As required		As required
26.	Vials for sample collection	Shop Outfit	300		300
27.	Slide box	Shop Outfit	1		1
28.	Coverslip box	Shop Outfit	1		1
29.	Tissue roll	Shop Outfit	1		1
30.	Cotton roll	Shop Outfit	1		1
31.	5 key counter	Shop Outfit	6		6
32.	single tally counter	Shop Outfit	6		6
33.	Gloves box	Shop Outfit	1		1
34.	Lab coat (stu. Has to purchase)	Trainee Toolkit	1		20
35.	Tourniquet	Trainee Toolkit	1		20
36.	Journal (stu. Has to purchase)	Trainee Toolkit	1		20
37.	Marker	Trainee Toolkit	1		20
36	Cell counter (min three part)	Machinery	1	1	1
37	Analyzer or semi analyzer for biochemistry	Machinery	1	1	1





General Information

Name of the Trade:	MLT (Technologist)
Duration Of Training:	12 Months.
Entry Qualification:	BSc pass with Microbiology, Chemistry, Biochemistry, Zoology, Botany, Biotechnology
Unit Size:	20+6 Students
Space Required:	400. Sq. Ft.
Approximate cost of Tools/Machinery	500000/-
Power Supply Required:	5 K.W
Faculty Requirement:	1
Faculty Qualification:	Bsc with three year experience or MSc & MLT.
Commencement of Course	1 st August of every year.





MLT (Technologist)-Syllabus

Theory-1^{1/2} hrs

Practical-4 hrs

Week No.	Theory	Practical
1	Intro. To Medical Tech.	Intro. To Q.C
Day 1	Introduction – Pathology	
Day 2	Responsibilities of Lab. technician	
Day 3	Lab Safety & Practical Precaution	
Day 4	Lab. Structure & Reception Collection	
Day 5	& Procedure Computer & signing authority room	
2	Method Of Blood Collection	Blood Collection
Day 1	Capillary Puncture	
Day 2	Types of syringe, needle	
Day 3	Vein Puncture	
Day 4	Intro To Artery Puncture	
Day 5	Artery puncture	
3	Study Of Anti-Coagulation	Blood Collection
Day 1	Coagulation mechanism	
Day 2	EDTA, Double Oxalate Bulb	
Day 3	Heparin, Tri sodium citrate	
Day 4	Acid Citrate Dextrose	
Day 5	Fluoride & Plain Bulb	
4	Intro. To Hematology & Types of HB	HB Estimation
Day 1	Blood Composition Hemoglobin Intro	
Day 2	Types of Hemoglobin(Normal Hb)	
Day 3	Abnormal Hb/Hb Estimation By Shali's Kit	
Day 4	Estimation of Hb By CMG Method	
Day 5	Other Methods for Hb Estimation(PCV, Oxyhemoglobin, Specific Gravity)	





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5	Erythropoiesis/Leucopoiesis Day 1 Erythropoiesis intro/ Sub. Necessary for it Day 2 Leucopoiesis Day 3 RBCs Total Count Day 4 WBCs Total Count Day 5 DC	RBCs Count/WBCs/D.C कौशलम् बलम्
6	Indices/ESR/G6PD Day 1 PCV(Pack ed Cell Volume) Day 2 Indices Day 3 ESR Day 4 Estimation Of ESR Day 5 G6PD	PCV/ESR/G6PD
7	Hematological Diseases/Anemias Day 1 Anaemia/Types of anaemias Day 2 Iron deficiency Anemia Day 3 Aplastic Anaemia Day 4 Megaloblastic Anaemia Day 5 Sickel cell anaemia/Thalassemia	SLE/Sickle Cell/RBC/Hb Estimation
8	Leukemia's/FAB Classification Day 1 Introduction Day 2 Superficial Information Day 3 Video presentation Day 4 Different types & explanation only Day 5 Revision	WBC/DC
9	Platelet & Coagulation System Day 1 Introduction & Function of Platelets Day 2 Determination of Platelets Day 3 Determination of Bleeding time Day 4 Determination of Clotting time Day 5 Determination of Prothrombin time	BT/CT/PT
10	Carbohydrate Metabolism/Protein Metabolism Day 1 Intro to Carbohydrate Day 2 Properties/Metabolism Of Carbohydrate Day 3 Determination of Glucose Day 4 Protein Importance/Classification Day 5 Determination of Protein	Glucose/Tot. Pro/Albumin Estimation





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11 Day 1 Day 2 Day 3 Day 4 Day 5	Chemistry of Cholesterol/Fat/Trigly./HDL/Lipoprotein Introduction/importance of Lipid Classification Cholesterol/Trigly. Determination of Tg Determination of Cholesterol	Chol./HDL/Trigly./Estimation बलम
12 Day 1 Day 2 Day 3 Day 4 Day 5	Chemistry of Urea/Uric acid/Creatinine Kidney Structure Nephron Structure & Urine formation Urea intro & Determination Uric Acid Intro & Determination Creatinine Intro & Determination	Urea/Uric acid/Creatinine Estimation
13 Day 1 Day 2 Day 3 Day 4 Day 5	Chemistry Of Liver Function test Liver Structure & Function Bilirubin metabolism Determination of S.Bilirubin types Of Jundice/SGPT SGOT/ALP/Thymol Turbidity	Billirubin/SGPT/Alk.Phosphate Estimation
14 Day 1 Day 2 Day 3 Day 4 Day 5	Heart Enzymes/Electrolytes Heart Structure Disease of Heart CPK,SGOT/LDH Enzyme Determination Of Enzyme Electrolytes Na,K,Ca,Cl,P	SGOT/LDH/CPK/Isoenzymes
15 Day 1 Day 2 Day 3 Day 4 Day 5	Electrography Introduction Superficial Information Video presentation Different types & explanation only Revision	Amylase/Acid Phosphate Estimation
16 Day 1 Day 2 Day 3 Day 4 Day 5	Automation/Study Of hormones Introduction Superficial Information Video presentation Different types & explanation only Revision	Calcium/Phosphorus





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17	Physiology/Formation of urine/cellular Element Day 1 Intro/Structure of Kidney Nephron Day 2 Structure of Nephron Day 3 Urine Formation Day 4 Chemical Examination Day 5 Microscopic examination	Urine analysis/Urine microscopic
18	Parasitology /Blood Parasitology Day 1 Life Cycle Of Parasite (Malarial) Day 2 Other Parasite / determination of Parasite Day 3 introduction of stool analysis Day 4 microscopic (ova, cyst) Day 5 Revision	Stool/Blood Analysis
19	Blood Banking/Cross Matching Day 1 Type of Donor Day 2 Criteria Selection Day 3 Blood collection Procedure Day 4 Labeling Safety Day 5 Blood Group/Cross match	Diff ABO Blood Group
20	Hemolytic Disease Of New Born Day 1 Introduction Day 2 Superficial Information Day 3 Video presentation Day 4 Rh. Factor of Blood Grouping Day 5 Coombs' Test	Coomb's Test/Rho GAM
21	Importance Of Each Components Day 1 Whole Blood Day 2 Only RBC,WBC,Platelet Day 3 Factor Affecting in blood coagulation Day 3 Frozen Plasma Day 4 Fresh Frozen Plasma Day 5 Revision	Aphaeresis





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22 Day 1 Day 2 Day 3 Day 4 Day 5	Serology Intro, Defense Mechanism Widal VDRL RA,ASO,CRP Pregnancy	VDRL/Widal/RA Latex/Pregnancy Test
23 Day 1 Day 2 Day 3 Day 4 Day 5	Immunology Immunity Vaccination HbsAg/Antistreptolysin Mono HCBG	HbsAg/Anti Streptolysin/Mono/HCBG
24 Day 1 Day 2 Day 3 Day 4 Day 5	Introduction to ELISA/TORCH/HIV Intro. ELISA direct ELISA indirect ELISA TORCH test HIV Intro	HIV/Estimation of IgG, IgA etc
25 Day 1 Day 2 Day 3 Day 4 Day 5	Histopathology/Cytology Selection of tissue & fixation Clearing & dehydration, Embedding Process of section cutting microtome Conditioning of specimen for staining Staining routine (H-E staining)	Special Staining
26 Day 1 Day 2 Day 3 Day 4 Day 5	Lab Management Patient care Waste management Safety Management doctor follow up lab software	Revision Practicals
27 Day 1 Day 2 Day 3 Day 4 Day 5	Bacteriology/Microbiology Collection of sample, sterilization/heat Preparation of media N.agar,Mac conkey Classification of bacteria Video presentation Revision	Gram Staining/diff Culture & its Processing
28 Day 1 Day 2 Day 3 Day 4 Day 5	Bacteriology/Microbiology Introduction Superficial Information Video presentation Different types of bacteria Revision	Sensitivity test/ Biochemical test





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29	Body Fluids Day 1 CSF/Semen Day 2 Sputum Day 3 Urine/stool Day 4 Cavity Fluid Intro/Peural/Pericardial Day 5 Peritoneal/Synovial	Examination of Body Fluids हालम बलम
30	Cell Counter Day 1 Introduction Day 2 Superficial Information Day 3 Video presentation Day 4 Different types & explanation only Day 5 Revision	Revision Practical
31	Semi Analyzer Day 1 Introduction Day 2 Superficial Information Day 3 Video presentation Day 4 Different types & explanation only Day 5 Revision	Test Of Practical
32	Pre test Day 1 Theory Day 2 Day 3 Practical Day 4 Day 5	Calorimetric/Spectrophotometer
33 to 51	On the Job Training	
52	Examination	

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