



Sri Lakshmi Narayana Institute of Medical Sciences

Date: 02.11.2017

From

Dr. Jansi Rani
Professor and Head,
Department of Biochemistry,
Sri Lakshmi Narayana Institute of Medical Sciences
Bharath Institute of Higher Education and Research,
Chennai.

To

The Dean,
Sri Lakshmi Narayana Institute of Medical College
Bharath Institute of Higher Education and Research,
Chennai.

Sub: Permission to conduct value-added course: Sample collection, preservation and its testing

Dear Sir,

With reference to the subject mentioned above, the department proposes to conduct a value-added course titled: **Sample collection, preservation and its testing** in Nov to Dec 2017. We solicit your kind permission for the same.

Kind Regards

Dr. Jansi Rani

FOR THE USE OF DEANS OFFICE

Names of Committee members for evaluating the course:

The Dean: *Dr. Jayalalitha*

The HOD: *Dr. Jansi Rani*

The Expert: *Dr. Sathya Kumari*

The committee has discussed about the course and is approved.

Dean

(Sign & Seal)

Sathya Kumari
Subject Expert

(Sign & Seal)

Jansi Rani
HOD

(Sign & Seal)

RECEIVED
02/11/2017
Sri Lakshmi Narayana Institute of Medical Sciences
Bharath Institute of Higher Education and Research
Chennai - 600 076



OFFICE OF THE DEAN

Sri Lakshmi Narayana Institute of Medical Sciences

OSUDU, AGARAM VILLAGE, VILLIANUR COMMUNE, KUDAPAKKAM POST,
PUDUCHERRY - 605 502.

[Recognised by Medical Council of India, Ministry of Health letter No. U12012/249/2005-ME | P-II | dt. 11/07/2011]
[Affiliated to Bharath University, Chennai - TN]

Circular

03.11.2017

Sub: Organising Value-added Course: Sample collection, preservation and its testing
reg

With reference to the above mentioned subject, it is to bring to your notice that Sri Lakshmi Narayana Institute of Medical Sciences, **Bharath Institute of Higher Education and Research** is organizing **“Sample collection, preservation and its testing”**. The course content form is enclosed below.

The application must reach the institution along with all the necessary documents as mentioned. The hard copy of the application should be sent to the institution on or before Nov to Dec 2017. Applications received after the mentioned date shall not be entertained under any circumstances.

Dean

Encl: Copy of Course content

VALUE ADDED COURSE

1. Name of the programme & Code

Sample collection, preservation and its testing

2. Duration & Period

30 hrs & Nov to Dec 2017

3. Information Brochure and Course Content of Value Added Courses

Enclosed as Annexure- I

4. List of students enrolled

Enclosed as Annexure- II

5. Assessment procedures:

Assessment - Enclosed as Annexure- III

6. Certificate model

Enclosed as Annexure- IV

7. No. of times offered during the same year:

1, Nov to Dec 2017

8. Year of discontinuation: 2018

9. Summary report of each program year-wise

Value Added Course- November to December 2017					
Sl. No	Course Code	Course Name	Resource Persons	Target Students	Strength & Year
1	BIO-06	Sample collection, preservation and its testing	Dr. JansiRani Dr.Santhosakumari	MBBS	20 students (Nov to Dec 2017)

10. Course Feed Back

Enclosed as Annexure- V

RESOURCE PERSON

1. Dr.JansiRani
2. Dr.Santhosakumari

COORDINATOR

Dr.JansiRani

Course Proposal

Course Title: **Sample collection, preservation and its testing**

Course Objective:

1. Overview of sample collection
2. How the samples are to be preserved
3. Methods to overcome the errors for better patient care

To sensitise the medical students about the importance and manual mishandling and ignorance of sample collection at a patient's bedside for a laboratory testing and its influence on reduction of sample rejection.

Course Outcome: Gained knowledge on proper sample collection and preservation for the future doctors has possibility of reduced sample rejection in near future.

Course Audience: MBBS students of 2017 Batch

Course Coordinator: Dr.Jansirani

Course Faculties with Qualification and Designation:

1.Dr.Jansirani, Professor & HOD

2.Dr.Santhosakumari, Assistant Professor

Course Curriculum/Topics with schedule (Min of 30 hours)

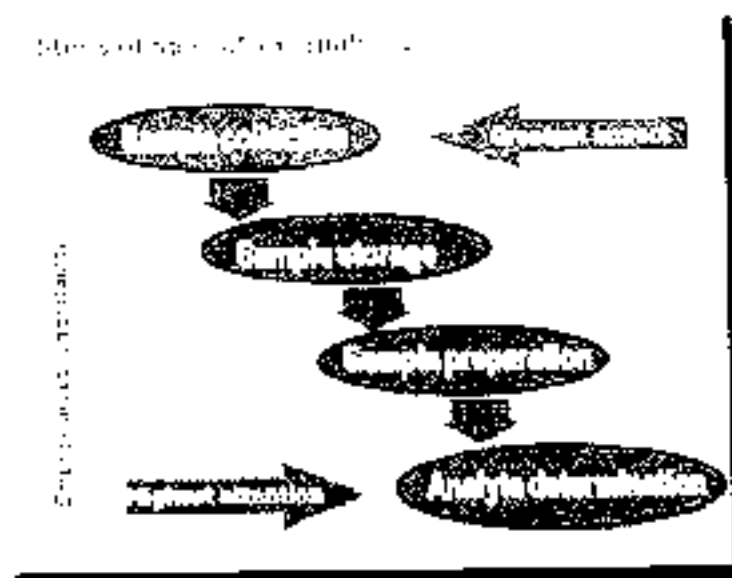
SINo	Date	Topic	Time	Hours
1	10.11.2017	Introduction, Background, Objectives	4- 5 PM	1
2	11.11.2017	Sources of biological sample	4- 5 PM	1
3	12.11.2017	Modes of blood sample collection	4- 6 PM	2
4	13.11.2017	Types of blood sample	4- 5 PM	1
5	14.11.2017	Blood collection tubes with its colour coding and order of draw	4- 5 PM	1
6	15.11.2017	Additives used in sample tubes with its action and purpose	4- 6 PM	2
7	16.11.2017	Tests run on different types of blood sample	4- 6 PM	2
8	17.11.2017	Urine sample collection and preservation	4- 6 PM	2
9	18.11.2017	Tissue(Hair & Nail) sample collection and preservation	4- 6 PM	2
10	19.11.2017	Tissue(buccal cells,exhaled air,adipose tissue) sample collection and preservation	4- 6 PM	2
11	23.11.2017	DNA extraction from blood cells, processing and its storage	1-6 PM	6
12	24.11.2017	Saliva sample collection and storage	4- 6 PM	2

13	25.11.2017	Uterus and semen sample collection and storage	4- 5PM	1
14	26.11.2017	Precautionary measures to be taken during delay in sample processing	4- 6 PM	2
15	27.11.2017	Precautionary measures to be taken during shipping of sample collected	4- 6 PM	2
16	28.11.2017	Practical session on sample collection, processing and storage - blood	7 - 10 AM	4
17	29.11.2017	Practical session on sample collection, processing and storage - blood	7 - 10 AM	4
18	30.11.2017	Practical session on sample collection, processing and storage - urine	7- 9AM	2
19	1.12.2017	Practical session on sample collection, processing and storage - urine	7-9AM	2
		Total		41

REFERENCE BOOKS:

1. Laboratory practical for practical biochemistry – 2nd edition – Shivaraja Shankara YM
2. Practical Haematology by Dacie, Lewis
3. Textbook Of Microbiology- Ananthanarayan And Paniker's (8th Edition)
4. Textbook Of Medical Biochemistry – 8th edition - Chatterjee
5. Internet

SAMPLE COLLECTION PRESERVATION AND IT'S TESTING



PARTICIPANT HAND BOOK

Particulars	Description
Course Title	Sample collection, preservation and its testing
Course Code	BIO - 06
Topics and content of the course in the Hand book	<ol style="list-style-type: none"> 1. Introduction 2. Objective 3. Aim 4. Example of biological sample 5. Blood sample collection 6. DNA extraction 7. Urine collection 8. Tissue collections 9. Adipose tissue 10. Exhaled air 11. Hair nail clippings 12. Buccal cells 13. Saliva 14. Faeces 15. Semen reference 16. Summary & conclusion
Advantages of learning and evaluation	<ul style="list-style-type: none"> • Proper Implementation of sample collection, preservation and its estimation ▪ Guidance by paramedical personnel • Better sample withdrawal at patient bedside • Reduces sample rejection rate, sample mishandling and sample loss
Further learning Opportunities	<ol style="list-style-type: none"> 1. Competency based assessment can be done. 2. Boost the self confidence of the students. 3. As they are the lifelong learner, the foundation will be laid strong.

Annexure I

	<ol style="list-style-type: none"> 4. As a responsible person committed to the society they know their roll and contribute to the society. 5. Can be included in the university examination for testing KH, SH, P and ethical issues. 6. Self satisfaction for the student as their performance is evaluated in a transparent method. 7. Should be made a must know competency in CRRJ period.
Key Competencies	<ul style="list-style-type: none"> • Evaluation by practical performance right from the second year can be beneficial both to the patients and the student.
Target Student	1 MBBS
Duration	41 hrs ,Nov - Dec 2017
Theory Session	31 hrs
Practical Session	10 hrs
Assessment Procedure	Assessment Evaluation by MCQ

SAMPLE COLLECTION, PRESERVATION AND ITS TESTING

CONTENTS

INTRODUCTION

OBJECTIVE

AIM

EXAMPLE OF BIOLOGICAL SAMPLE

BLOOD SAMPLE COLLECTION

DNA EXTRACTION

URINE COLLECTION

TISSUE COLLECTIONS

ADIPOSE TISSUE

EXHALED AIR

HAIR NAIL CLIPPINGS

BUCCAL CELLS

SALIVA

FEACES

SEMEN REFERENCE

INTRODUCTION

☞ Quality laboratory results begin with correct and complete sample collection.

BIHER

SLIMS

☒ Examples include : blood, sputum, urine, feces, Saliva, Solid tissues and other body

BROAD OBJECTIVE

☒ To be able to correctly collect specimen, put the specimen in the right container and transport specimen to the laboratory correctly and at the right time .

AIM OF SAMPLE COLLECTION

☒ Accuracy -To ensure that analytical results obtained are representative of actual analyte conc. in patient and, thus of his/her physiological/pathological state.

☒ Safety

☒ Minimize patient discomfort and complications

☒ Avoid recollection

EXAMPLE OF BIOLOGICAL SAMPLE

☒ Blood- venous/ arterial/ capillary- whole blood, serum, plasma

☒ Urine

☒ Faeces

☒ Saliva

☒ Solid tissues

☒ Amniotic fluid

☒ Cerebrospinal fluid

BIHER

SLIMS

- ☑ Synovial fluid
- ☑ Peritoneal fluid
- ☑ Pleural fluid
- ☑ Pericardial fluid

BLOOD SAMPLE COLLECTION

☑ When a large amount of blood sample needed, an evacuated tube system with interchangeable glass tubes can be used to avoid multiple venepunctures.

☑ Evacuated tubes are commercially prepared with or without additives and with sufficient vacuum to - Sterile needles, Sterile Syringes/Plain Vacutainer, Blood Tubes, Alcohol Pads and Tourniquet.

TYPE OF BLOOD COLLECTION

☑ Capillary blood: It is most frequently obtained from a finger or thumb.

☑ Venous blood: It is most often collected. A vein on the front of elbow or forearm is universally

☑ Arterial blood: It is most commonly obtained by inserting a needle into the radial, brachial or femoral artery. Arterial blood is less frequently examined. It can be taken for blood gas determinations.

☑ Note: Capillary blood is similar in composition to arterial blood.

ANTICOAGULANTS

Annexure :

☒ If plasma/whole blood is required, blood has to be collected into a vial containing anticoagulant. It prevents the coagulation of blood.
Anticoagulant...

Heparin:

☒ Most satisfactory anticoagulant inhibits the formation of thrombin from prothrombin.

☒ It does not produce a change in red cell volume or interfere with subsequent determination.

☒ Quantity is 2 mg/10 mL of blood

Ethylenediaminetetraacetic acid (EDTA):

☒ EDTA has chelating action on calcium ion and prevents coagulation.

☒ Quantity is 20 mg/10 mL blood

☒ It is well suited to DNA-based assays.

☒ But has problems for cytogenetic assays

Oxalates (potassium oxalate):

☒ It act by precipitating calcium ion.

☒ Potassium oxalate has been the most commonly used oxalate since it is most soluble.

☒ Quantity is 30 mg/10 mL

Sodiumcitrate:

☑ This does not precipitate the calcium, but converts it into a non-ionized form.

☑ Quantity used is 30 mg/ 10 mL blood.

☒ Note: Citrated plasma is not satisfactory in estimation of calcium.

Sodium fluoride:

☑ Usually used as a preservative in blood glucose estimation.

☑ It inhibits red cell metabolism (i.e. glycolysis) as well has antibacterial action.

☑ Sodium fluoride also acts as an anticoagulant, but larger amounts are required (10 mg/1 ml. blood).

☑ Fluoride + oxalate mixture (3:1) is used, while collecting blood for glucose estimation.

Blood Collection: Color-code Tubes

☒ Red-top tubes contain no additives. These tubes are used for tests performed on serum samples and DNA.

☑ When you use the red-top tubes, the sample can be placed for 1-2 hours so that the serum and blood clots will be separated. Blood clots can be

☑ Lavender-top tubes contain EDTA, commonly used clinically for complete blood cell counts. This is the way to obtain :

☑ lymphocytes for DNA extraction

☑ plasma for nutritional analysis

- ☐ red blood cells for other assays.
- ☐ Green-top tubes contain heparin.
- ☐ Blue-top tubes contain sodium citrate and citric acid.
- ☐ Black-top tubes contain sodium oxalate.
- ☐ Yellow-top tubes contain acid-citrate-dextrose (ACD) solution.
- ☐ Grey-top tubes contain a glycolytic inhibitor.

Blood Components

From 10 ml of blood:

- ☐ Plasma or serum 6-7 ml
- ☐ Lymphocytes and mononuclear cells 10-20 x 10⁶ Cells/ml
- ☐ Erythrocyte (red blood cells) and other cells – 5 x 10⁶ cells/ml;
- ☐ 10-15 mg HB

Plasma vs. serum

Plasma is the liquid part of blood. It has both clotting factors and fibrinogen.

Plasma = 55%

Plasma = 55%

Serum is the liquid part of blood. It has clotting factors and fibrinogen.

Serum = 45%

Serum = 45%

Factors = platelets + clotting factors

1



☐ Both can be used to measure microanalytes, diet components, vitamins, xenobiotic (synthetic chemical) exposures and so on.

☒ Serum is better for antibody measurements, nutrients, etc.

Changes in Blood on Keeping

☒ Loss of carbon dioxide.

☒ Conversion of glucose to lactate (glycolysis).

☒ Increase in plasma inorganic phosphate level due to formation of ester phosphate present in the cells.

☒ Formation of ammonia from nitrogenous substances.

☒ Conversion of pyruvate into lactate.

Types of Blood to be Used

Wholeblood:

☒ Used for—ammonia, hemo-globin, lactate and pH measurement.

Plasma:

☒ Obtained after mixing the blood with anticoagulants, precipitating and separating the cells RBC and WBC.

☒ The plasma is used for the estimation of ascorbic acid, bicarbonate, glucose, chloride

Serum:

☒ The liquid portion, which is left over after blood is allowed to coagulate without adding anticoagulant is called serum.

☒ The serum lacks in coagulation factors including prothrombin and fibrinogen.

☒ Serum is used for estimation of many parameters like total protein, albumin, bilirubin, cholesterol,

DNA Extraction

DNA can be extracted from

- ☒ RBC
- ☒ Leukocytes
- ☒ Serum
- ☒ Plasma
- ☒ Blood clot

Processing

☒ Serum fatty acids should be measured within 2 weeks at 4 degree C, within a few months at -20 degree C, and within a year at -80 degree C

Storage

- It is critical to maintain careful records of the identity and location of all materials, with particular attention to storage history, occurrence of temperature fluctuation and monitoring of stored control specimen in order to check the effects of storage duration.
- Samples stored on the top of the freezer may be exposed to more extreme temperature fluctuation than those stored at the bottom.

Timing

☐ For studies of hormones, which have hourly, daily and monthly cycles, timing of sample collection is critical.

☐ It is critical to obtain information at the time of specimen collection, e.g., time and date of draw, volumes and type of specimen, medical illness, medication use, menstrual period, cigarette and alcohol consumption

Urine Collection

☐ Urine is an ultrafiltrate of the plasma. It can be used to evaluate and monitor body metabolic disease process, exposure to xenobiotic agents, mutagenicity, exfoliated cells, DNA adducts, etc.

☐ Urine collection is non invasive and readily obtainable. However, it is more inconvenient than blood collection.

☐ The type of urine selected and the collection procedure used to depend on the tests to be performed.

☐ First morning ☐ Random ☐ Fractional ☐ Timed

☐ Morning Urine.

To collect a first morning specimen, the subject voids before going to sleep and immediately upon rising, collects a urine specimen.

☐ The specimen must be preserved if not delivered within 2 hours of collection

☐ Random Urine can be collected at any time.

These specimens are usually satisfactory for routine screening and for cytology studies.

☐ If a large amount of urine is needed, subject will be asked to drink a lot of water 2 hour before collection

Fractional Collection

☐ The first morning urine (containing solutes and metabolites from evening meal) is discarded, but the second urine excreted (fasting urine specimen) is collected.

☐ Use to compare the concentration of an analyte in urine with its concentration in the blood.

Timed collection usually done over 12-24 hour period, this method allow day-to-day comparison.

☐ Clean and dry plastic or glass containers (50-3000 ml capacity)

☐ A preservative may be needed depending on the proposed assay ☐ Total volume must be recorded

☐ The specimen well mixed to ensure homogeneity ☐ Aliquots (small samples) for different specific assays

Tissue Collections

☐ Confirming clinical diagnosis by histological analysis

☐ Examining tumor characteristics at chromosome and molecular level

☐ It requires to collect more materials than it is necessary for pathological evaluation

☑ When possible, the tissue sample should contain both tumor and normal tissues to permit to study different characteristics of

Tissue Storage

☑ Formalin-fixed paraffin-embedded tissue specimens

☑ Frozen tissues (-70 degree C). The tissue is embedded in frozen section support media

Adipose Tissue

☑ Quite feasible and involve low risk.

☑ The tissue offers a relatively stable deposit of triglyceride and fat-soluble substances such as fat-soluble vitamins (vitamins A and D)

☑ It represents the greatest reservoir of carotenoids and reflect long-term dietary intake of essential fatty acids.

Exhaled Air

☑ To evaluate exposure to different substances, particularly solvents such as benzene and styrene.

☑ To be used as a source of exposure and susceptibility markers (caffeine breath test)

☑ Breath urea (presence of urease positive organisms such as H. pylori)

Hair

☑ Easy available biological tissue whose typical morphology may reflect disease conditions within the body

☑ Provides permanent record of trace elements associated with normal and abnormal metabolism

☑ A source for occupational and environmental

☑ Good marker for environment tobacco smoke (ETS) exposure in children.

☑ The hair nicotine levels were shown to be well correlated with cotinine creatinine ratios in urine from the same individual.

☑ Hair analysis provides long-term information from months to years, concerning both the severity and pattern of drug use.

☑ Hair roots can be optimal source of DNA for PCR analysis and permit easy collection, transportation and low overall costs.

Nail Clippings

☑ Toenail or fingernail clippings are obtained in a very easy and comfortable way.

☑ They do not require processing, storage and shipping condition and thus suitable for large epidemiological studies

☑ Trace elements

☑ Selenium levels

☑ Arsenic levels

☑ Less likely to be contaminated by environmental factors

☑ Involves more complicated processing

Buccal cells

BIHER

SLIMS

- ☑ No invasive
- ☑ Good for PCR-analysis
- ☑ Can measure both germline and somatic mutations

Saliva

- ☑ It is an efficient, painless and relatively inexpensive source of biological materials for certain assays
- ☑ It provides a useful tool for measuring endogenous and xenobiotic compounds
- ☑ Saliva is a viscous, colorless fluid with pH ranging from 6.5 to 7.2
- ☑ The saliva contains both organic and inorganic constituents.
- ☑ Mucin and amylase are the main organic constituents
- ☑ Proteins, urea and lactic acid are the minor organic constituents.
- ☑ The inorganic constituents include sodium ion (Na^+), potassium ion (K^+), calcium ion (Ca^{2+}), chloride ion (Cl^-), bicarbonate ion (HCO_3^-) and monohydrogen phosphate ion (HPO_4^{2-}).
- ☑ Average output of saliva per day, varies in the range of 1 to 2 liters.

Collection of Saliva

- ☑ Wash and rinse the mouth to get rid off any remaining food particles.
- ☑ Take 10 mL of warm water into the mouth and gargle for at least 2 minutes.

☒ Collect the saliva in a clean beaker and with this, perform the following tests.

Measurements

☒ Corticosteroids

☒ Antibodies to HIV-1 ☒ Cotinine (an alkaloid found in tobacco) level

☒ Easiest way to collect largest amount of DNA

Feaces

☒ Certain cells of interest

☒ Infectious markers

☒ Oncogenes

Semen

☒ Evaluate the effects of exposures on endocrine and reproductive factors.

☒ Sexual abstinence for at least 2 days but not exceeding 7 days.

☒ Should reach the lab within one hour.

Temperature

☒ Specimen collection requires storage system that capable of maintaining the optimal temperature for the diverse type of specimens:

☒ -20 degree C, certain items stable, i.e., urine

☒ -70 degree C, DNA, Serum, Hormone, vitamins

☒ -120 degree C, hormones, carotenoids, other nutrients

Storage

☒ Freezers may fail, leading to the necessity for 24 hour monitoring for the facility through a computerized alarm system to alert personnel and activate backup equipment.

☒ Monitoring fire, power loss, leakage, etc.

Shipping

☒ Sample shipping requirements depends on the time, distance, climate, season, method of transport, applicable regulations, type of specimen and markers to be assayed.

☒ Polyurethane boxes containing dry ice or liquid nitrogen container are used to ship and transport samples that require low temperature.

☒ The quantity of dry ice should be carefully calculated, based on estimated time of trip.

Reference ☒ Laboratory practical for practical biochemistry – 2nd edition – Shivaraja Shankara YM

☒ Practical Haematology by Dacie, Lewis

☒ Textbook Of Microbiology- Ananthanarayan And Paniker's (8th Edition)

☒ Textbook Of Medical Biochemistry – 8th edition - Chatterjee

☒ Internet

ANNEXURE II

STUDENT LIST

S.No	Reg No	Name	Signature
1	U17MB357	RINI DAS	<i>Rini Das</i>
2	U17MR358	RISHABH SUMAN	<i>Rishabh Suman</i>
3	U17MB359	RISHIKA	<i>Rishika</i>
4	U17MR360	RISHIRAJ KAR	<i>Rishiraj Kar</i>
5	U17MB346	PRASANNA D	<i>Prasanna D</i>
6	U17MB347	PRAVEN V	<i>Praven V</i>
7	U17MR348	PRITAM SAILOO	<i>Pritam Sailoo</i>
8	U17MB349	PRIYA SAXENA	<i>Priya Saxena</i>
9	U17MR350	PRİYADARSHINI MAITHY	<i>Priyadarshini Maithy</i>
10	U17MB371	SHACHI SHASTRI	<i>Shachi Shastri</i>
11	U17MB372	SHATAVISHA MUKHERJEE	<i>Shatavisha Mukherjee</i>
12	U17MB373	SHEDAM ONKAR MAHADEV	<i>Shedam Onkar Mahadev</i>
13	U17MU361	BIYA M.A	<i>Biya M.A</i>
14	U17MB362	ROFIQUL ISLAM	<i>Rofiqul Islam</i>
15	U17MB363	ROHAN DAS	<i>Rohan Das</i>
16	U17MB331	MISALE VENUGOPAL RAO	<i>M. V. Rao</i>
17	U17MB332	NAMITA THARANI	<i>Namita Tharani</i>
18	U17MB333	NAYANA NANDANAN M	<i>Nayana M</i>
19	U17MR334	NEHA KUMARI	<i>Neha Kumari</i>
20	U17MB340	VISHANT BHUSAN	<i>Vishant Bhusan</i>

ANNEXURE III

1. **Blood for an RBC count must be prepared from:**
 - a. EDTA blood
 - b. citrated blood
 - c. heparinized blood
 - d. oxalated blood
 - e. clotted blood

2. **Which reagent is not routinely used to preserve tissue in a life-like manner:**
 - a. formic acid
 - b. zenkersfluid
 - c. 40% formaldehyde dissolved in water
 - d. bouin's fluid
 - e. 10% formalin

3. **The liquid portion of blood remaining after a clot has formed is called:**
 - a. the buffy coat
 - b. serum
 - c. plasma
 - d. lymph
 - e. tissue fluid

4. **Which test cannot be performed on a serum sample?**
 - a. Iron
 - b. Vitamin B12
 - c. Total lipids
 - d. Clotting factors

5. **A routine specimen should be collected:**
 - A. At 7 a.m.
 - B. First thing when the client awakens
 - C. Before a meal
 - D. Anytime

ANNEXURE III

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Sri Lakshmi Narayana Institute of Medical Sciences



CERTIFICATE OF MERIT

This is to certify that **RIVA M.A** has actively participated in the Value Added

Course on **Sample collection, preservation and its testing** held during Nov 2017 – Dec

2017 Organized by Sri Lakshmi Narayana Institute of Medical Sciences, Pondicherry- 605

502, India.

Dr. Santhosakumari

RESOURCE PERSON

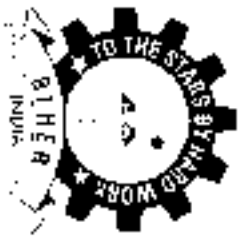
Dr. Jansirani

COORDINATOR

DEPARTMENT OF MICROBIOLOGY

33, Uththara Kanyasulkottam Road, Pondicherry - 605 006

OFFICE OF THE
DEPARTMENT OF MICROBIOLOGY
SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES
PONDICHERY - 605 006



Sri Lakshmi Narayana Institute of Medical Sciences



CERTIFICATE OF MERIT

This is to certify that **PRIVADARSHINI MAITHY** has actively participated in the Value Added Course on **Sample collection, preservation and its testing** held during Nov 2017 – Dec 2017 Organized by Sri Lakshmi Narayana Institute of Medical Sciences, Pondicherry- 605 502, India.

Dr. Santhosakumari

RESOURCE PERSON

Dr. Jansirani

COORDINATOR

DEPARTMENT OF BIOCHEMISTRY
Sri Lakshmi Narayana Institute of Medical Sciences
PONDICHERY 605 502.

Course feedback form

Course title: Sample collection, preservation and its testing Date: 1/10/2022

Course code: BIO - 06

Department: Biochemistry

S.no	Design of the course	1	2	3	4	5
1	The objective of the course clear to you					
2	The course contents met with your expectations					
3	The lecture sequence were well planned					
4	The lectures were clear and easy to understand					
5	The audiovisual teaching aids were effectively used					
6	The instructor's encouraged interaction and was it helpful					
7	The contents were illustrated with examples					
8	Overall Rating of the course					

Rating: 5 - Outstanding; 4 - Excellent; 3 - Good; 2 - Satisfactory; 1 - Not-Satisfactory

Suggestions if any:

Excellent

Priyanka...
Signature

Course feedback form

Course title: *Sample collection, Preservation and its testing* Date: *1.12.2017*

Course code: BIO - 06

Department: Biochemistry

S.no	Design of the course	1	2	3	4	5
1	The objective of the course clear to you					/
2	The course contents met with your expectations					/
3	The lecture sequence were well planned					/
4	The lectures were clear and easy to understand					/
5	The audiovisual teaching aids were effectively used					/
6	The instructor's encouraged interaction and was it helpful					/
7	The contents were illustrated with examples					/
8	Overall Rating of the course					/

* Rating: 5 - Outstanding; 4 - Excellent; 3 - Good; 2 - Satisfactory; 1 - Not-Satisfactory

Suggestions if any:

<i>good</i>

Shruti
Signature

Date: 10.12.2017

From

Dr.Jansirani
Professor and Head,
Department of Biochemistry,
Sri Lakshmi Narayana Institute of Medical Sciences
Bharath Institute of Higher Education and Research,
Chennai.

Through Proper Channel

To

The Dean,
Sri Lakshmi Narayana Institute of Medical Sciences
Bharath Institute of Higher Education and Research,
Chennai.

Sub: Completion of value-added course: Sample collection, preservation and its testing

Dear Sir,

With reference to the subject mentioned above, the department has conducted the value added course titled Sample collection, preservation and its testing from Nov to Dec 2017 for 20 students. We solicit your kind action to send certificates for the participants that is attached with this letter. Also, I am attaching the photographs captured during the conduct of the course.

Kind Regards,

Dr.Jansirani

Encl: Certificates

Photographs

