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# FUNDAMENTAL OF SCIENCE LABORATORY – IVS 8

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## Semester - 1

### **FUNDAMENTAL OF SCIENCE LABORATORY – IVS 8A:**

(Credits: Theory-01 + Practical 02)

Marks: 50 (ESE: 3 Hrs) = 50

Pass Marks: Th (ESE) = 20

#### *Instruction to Question Setter for*

#### *End Semester Examination (ESE 50 marks):*

There will be **objective type test** consisting of fifty questions of 1 mark each. Examinees are required to mark their answer on **OMR Sheet** provided by the University.

#### **Course Content:**

#### **Unit-I Elementary knowledge of Chemistry**

#### **Unit-II Safe Handling of Chemicals and Gases**

1. Chemical Spills
2. Guidelines for Mercury Waste Management & Disposal
3. Guidelines for Handling of Ethidium Bromide
4. Guidelines for Bis-acrylamide
5. Guidelines for Phenol/ Chloroform
6. Compressed Gas Safety
7. Safe Handling of Cryogenic liquids
8. Handling of Dry Ice
9. Guidelines for Imaging Stations

#### **Unit-III Specialty Laboratories**

1. Working with Radioactive Materials
2. Laser Lab

#### **Unit-IV Emergency Response**

1. Fires
  2. Accident Reporting
  3. Emergency Contact numbers
  4. Committees
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**FUNDAMENTAL OF SCIENCE LABORATORY - IVS 8A LAB:****Marks: Pr (ESE: 3Hrs) =50****Pass Marks: Pr (ESE) = 20*****Instruction to Question Setter for*****End Semester Examination (ESE):**

*There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:*

*Experiment/Activities = 40 marks*

*Practical record notebook = 05 marks*

*Viva-voce = 05 marks*

**PRACTICALS:****60 Lectures****Laboratory instruments Chemistry**

Safe Handling, Cleaning and storage of common apparatus.

1. Test tube, Beakers, Erlenmeyer flask, Volumetric flask, graduated cylinder, Pipette, Graduated pipette, Disposable pipette, Burette, Burette clamp. Funnel, Buchner Funnel, Buchner funnel vacuum filtration setup,
  2. Clamp, Test tube holder, Bunsen burner, Petri dish, Glass rod, Graduated Dropper Tongs, Utility clamp, Spot test plate, Tripod for Bunsen burner, Wash bottle, Spatula, Round-bottom flasks, Glass Condenser, Filter paper Separatory funnel, Filtering flask, etc
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**Semester - 2****FUNDAMENTAL OF SCIENCE LABORATORY – IVS 8B:**

(Credits: Theory-01 + Practical 02)

**Theory: 15 Lectures****Marks: 50 (ESE: 3 Hrs) = 50****Pass Marks: Th (ESE) = 20*****Instruction to Question Setter for******End Semester Examination (ESE 50 marks):***

There will be **objective type test** consisting of fifty questions of 1 mark each. Examinees are required to mark their answer on **OMR Sheet** provided by the University.

**Course Content:****Unit-I Basic Laboratory Skills**

Scientific notation and Physical constants

Error, zero error, positive error, negative error, percent error, propagation of error during mathematical operations (sum, difference, product, division), standard deviation.

Plotting of graphs, axis of graph, scale of axis, origin shifting, dependent variable, independent variable, linear graph, non-linear graph, slope of graph and derivative with examples, area under the graph and integration with examples, multiple plots. Examples of various graphs.

Main scale, vernier coincidence, least count, least count of slide calipers, screw gauge, spherometer, travelling microscope, optical bench and other instruments.

Logarithm, logarithm types-common logarithm and natural logarithm, logarithm rules and properties, logarithmic formulas, logarithmic examples and applications, Antilogarithm.

**Unit-II Physics Laboratory Basic Instruments**

Slide caliper, screw gauge, spherometer, travelling microscope, telescope, prism, glass slab, plane and spherical mirrors, concave and convex lens, meter bridge, simple pendulum; resistor, capacitor, inductor and their combinations; cells and their series and parallel combinations; galvanometer, ammeter and voltmeter; diodes, transistors

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**FUNDAMENTAL OF SCIENCE LABORATORY PRACTICAL- IVS 8B LAB:****Marks: Pr (ESE: 3Hrs) =50****Pass Marks: Pr (ESE) = 20*****Instruction to Question Setter for******End Semester Examination (ESE):***

*There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:*

*Experiment/Activities = 40 marks*

*Practical record notebook = 05 marks*

*Viva-voce = 05 marks*

**PRACTICALS:****60 Lectures****Laboratory instruments Physics**

1. Slide caliper, Screw gauge, Spherometer, Travelling microscope
  2. Resistor, Rheostat, Multimeter, Capacitors, Inductors, Galvanometer, Ammeter, Voltmeter, Potentiometer, Battery Eliminator, Dry Cell
  3. Meter Bridge with Pencil Jockey, Ohm's Law Apparatus, Potentiometer
  4. Bar magnet, Magnetic Compass
  5. Mirror, Lens, Glass Slab, Prism
  6. Simple Pendulum, Tuning Fork, Vibration Generator, Wave Motion Apparatus.
  7. Junction diodes, Transistors
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