

Syllabus for the subject

of

WORKSHOP CALCULATION & SCIENCE

(For 3rd & 4th semester)

Under

CRAFTSMEN TRAINING SCHEME (CTS)

(For Radiology Technician)

Re-Designed

in

- 2015 –

By

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Ministry of Skill Development & Entrepreneurship

Directorate General of Training

CENTRAL STAFF TRAINING AND RESEARCH INSTITUTE

Block - EN - 81 SECTOR - V, SALT LAKE CITY, KOLKATA - 700 091

3rd Semester
Workshop Calculation and Science
For the Trade of Radiology Technician (Radio Diagnosis & Radiotherapy)

Sl. No.	Workshop Calculation & Science	Hrs.
1	<p><u>Physics:</u> General properties of Matter, Surface tension, Viscosity, Bernoulli's Theorem Heat (thermometry and calorimetric), Acoustics, Geometrical and physical optics (Interference, Diffraction, Polarization)</p>	42
2	<p><u>Electromagnetism:</u> Units used in Electrostatics. Magnetism and current electricity elementary principles of magnetism as an electrical effect, magnetization of materials by electric current, the right hand rule, solenoids, electromagnets. Force on conductor in magnetic field, the motor principle, the left hand rule.</p>	
3	<p><u>Physics of Radiation:</u> Definition of radiation and its types. Electromagnetic (EM) radiation. Radiation as a wave motion. Wave length, frequency, amplitude, velocity and their relation. Concept of Quanta. Energy of radiation. Electromagnetic spectrum, common properties of radiation. Radiation from radioactive elements. Alpha and beta particles. Gamma radiation and their properties. Radioactive series. Properties of Radium and its daughter products.</p>	
4	<p><u>Fission, Fusion, Artificial radioactivity:</u> X-Ray – Principles of production of X-rays, Intensity, continuous and characteristic spectrum. Basic Circuit of X-ray tube. Construction of modern X-ray tubes, Filament, Anode, Cathode, Methods of cooling anode, Inherent filtration and their effect on quality of spectrum, Rectification.</p>	

4th Semester
Workshop Calculation and Science
For the Trade of Radiology Technician (Radio Diagnosis & Radiotherapy)

Sl. No.	Workshop Calculation & Science	Hrs.
1	<p><u>Bio chemistry:</u> Chemistry of water, Mineral, Vitamins, Protein, Carbohydrate, Lipids, Nucleic acids, Enzymes, Blood, Extra cellular fluids. Metabolism of Carbohydrate, Proteins, Lipids, Amino acids, Hemins, Purimes, Pyrimidies and Nucleic Acids. Nature, properties, Kinetics and mechanism of action of energy and co-enzymes, Biological oxidation and bio-energetic. Basic ideas of Chemical Reactions.</p>	42
2	<p><u>Physical Chemistry:</u> Solutions, osmotic pressure, lowering of vapour pressure. Electrochemistry, Ionic equilibrium, Acids & Base pit and judicators. Surface chemistry, colloid chemistry, Structure of Matter, Radioactivity.</p>	
3	<p><u>Electronics:</u> Semiconductors – Diode, Rectifier, Transistors, Analog and Digital circuits amplifier. <u>Environments Management:</u> Basic concept.</p>	
4	<p>Simple problems on profit and loss. Simple and compound interest.</p>	