MAHARASHTRA STATE BOARD OF VOCATIONAL EDUCATION EXAMINATION,MUMBAI – 51

<table>
<tr><td>1</td><td>Name of Course</td><td>C.C.In Radiology Technician
(W. E. F. 2015-16)</td></tr>
<tr><td>2</td><td>Course Code</td><td>201229</td></tr>
<tr><td>3</td><td>Max.No.of Students Per Batch</td><td>25 Students</td></tr>
<tr><td>4</td><td>Duration</td><td>One year</td></tr>
<tr><td>5</td><td>Type</td><td>Full Time</td></tr>
<tr><td>6</td><td>No.Of Days / Week</td><td>6 Days</td></tr>
<tr><td>7</td><td>No.Of Hours /Days</td><td>7 Hrs</td></tr>
<tr><td>8</td><td>Space Required</td><td>Workshop = 200 Sq.Ft.
Class Room = 200 Sq.Ft.
Total = 400 Sq.Ft.
1) MOU with hospital having relevant facility is required.
2) Distance between Hospital and Institute Should not be more than 10 Km.</td></tr>
<tr><td>9</td><td>Minimum Entry Qualification</td><td>S.S.C.</td></tr>
<tr><td>10</td><td>Objective Of Course</td><td>To provide skilled man power in scanning , x ray, e.c.g. department sector and for hospitals</td></tr>
<tr><td>11</td><td>Employment Opportunity</td><td>Jobs can be available as C.T. Scan , X- ray, ECG Assistant in hospital</td></tr>
<tr><td>12</td><td>Teacher’s Qualification</td><td>Degree / PG degree – Relative Branch</td></tr>
<tr><td>13</td><td>Training System</td><td>Training System Per Week
<table>
<tr><td>Theory</td><td>Practical</td><td>Total</td></tr>
<tr><td>12Hours</td><td>30Hours</td><td>42Hours</td></tr>
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<tr><td>14</td><td>Exam. System</td><td>
<table>
<tr><th>Sr. No.</th><th>Paper Code</th><th>Name of Subject</th><th>TH/PR</th><th>Hours</th><th>Max. Marks</th><th>Min. Marks</th></tr>
<tr><td>1</td><td>20122911</td><td>General Anatomy & Anatomy Of Heart</td><td>TH I</td><td>3 hrs</td><td>100</td><td>35</td></tr>
<tr><td>2</td><td>20122912</td><td>C T Scan, X-Ray, ECG Technique</td><td>TH II</td><td>3 hrs</td><td>100</td><td>35</td></tr>
<tr><td>3</td><td>20122921</td><td>General Anatomy & Anatomy Of Heart</td><td>PR-I</td><td>6 hrs</td><td>200</td><td>100</td></tr>
<tr><td>4</td><td>20122922</td><td>C T Scan, X-Ray, ECG Technique</td><td>PR-II</td><td>6 hrs</td><td>200</td><td>100</td></tr>
<tr><td></td><td></td><td>Total</td><td></td><td></td><td>600</td><td>270</td></tr>
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Theory - I - General Anatomy & Anatomy of Heart

Introduction
Human Body introduction Human skeleton
Upper and lower Limb
Skull, vertebral column and Thorax System
Digestive Reproductive Urinary Respiratory Circulatory
Central nervous system Darkroom
Criteria, purpose of darkroom Exposure of film, entrance to darkroom
Safety of darkroom, light, x-ray film with structure, care of x- ray film Film holders intensifying screen
Film processing, developing, fixing, rising, washing, drying, store keeping record Keeping
Preparation of solution, developer Fixer

Fundamentals of X- Ray technique
EM Radiation
X-ray tube, properties of x-ray in diagnostic radiology
And other fundamental properties of x-ray
Accessories- x-ray film, cassettes with intensifier screens.
Stationary and moving grids
Body section radiographic equipments
Fluoroscopic screen and fluoroscope, image intensifier
Other ancillary x-ray equipment
Shutter mechanism, Filtration
Use of radiation protection devices
Image formation and interpretation
Image sharpness, distortion, image magnification
Film identification- general terms and concepts in diagnostics
Radiology

1. Anatomy in brief
2. Bio- Chemistry
3. Anatomy of heart
4. Physiology of conduction of tissue of heart

PRACTICLE - I - GENERAL ANATOMY & ANATOMY OF HEART

Conducting practical's to take various x rays involving following parts.

Upper limb
Lower limb
Hip and pelvis
Vertebral column
Chest
Abdomen
Skull
Dental

Anatomy of Heart

Anatomy in brief
Bio- Chemistry
Anatomy of heart
Physiology of conduction of tissue of heart

Theory - II - C T Scan, X-Ray, ECG Technique

C T Scan

Anatomical landmarks
Contents of Thorax, Abdomen, Pelvic
Introduction to skull
CT contrast medium
Patient preparation
Emergency Drugs

Gray scale imaging CT Terminology
Computerized Topography equipment Computer hardware and software Available CT Scanners
Scanning of Head- orbit, Temporal Bone, Neck, PNS, Thorax, Abdomen, Pelvic

E.C.G. DEPARTMENT

Electrical potentials and genesis of ECG waves
ECG recording
Indications of ECG recording
Information from ECG
Normal ECG waves
Description of conduction abnormalities
description of ischemic Claques
description of infraction
description of Arrhythmia
description of chamber enlargement
ECG leads

X-RAY DEPARTMENT

Radio physics	Discovery of x rays Properties of x rays X ray production and x ray tube Grids Intensifying screens.
X ray film	Structure of x ray films Types of x ray films Storage & care of x ray films.
Cassettes	Design, types, care of cassets. Mounting of screens
Dark room	General information about dark room and accessories.
Processing chemicals	1) Developer 2) Fixer 3) Replenished 4) Practical factors
Film processing methods –	1) Manual 2) Automatic 3) Film dryers
Miscellaneous	Identification, record keeping, report dispatching

Duties of x ray technici

1)To prepare developer and fixer solutions
1. Care and maintenance of cassettes
2. Care and maintenance of intensifying screens.

Loading, unloading and processing of x ray films.

Practical - II - C T Scan, X-Ray, ECG Technique

C.T.Scan Technique

C T Scan
Anatomical landmarks
Contents of Thorax, Abdomen, Pelvic
Introduction to skull
CT contrast medium
Patient preparation
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X-ray Technique

Darkroom
Criteria, purpose of darkroom Exposure of film, entrance to darkroom
Safety of darkroom, light, x-ray film with structure, care of x- ray film Film holders intensifying screen
Film processing, developing, fixing, rising, washing, drying, store keeping record Keeping
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Fundamentals of X- Ray technique
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Film identification- general terms and concepts in diagnostics
Radiology

E C G Technique

1 Description of machine types
2 Description of paper
3 Description of jelly
4 Technique of ECG recording
5 Energy source and electrical disturbances
6 ECG on pacemaker patient
7 Determination of heart beats
8 ECG abnormalities
9 Demonstration of recording of paper loading
10 Demonstration of patient preparation for ECG
11 Demonstration of cable connection
12 Demonstration of earhing of ECG equipment
13 Demonstration of pacemaker patient ECG recording
14 Demonstration of application of loads other than 12 leads
Interpretation of normal and abnormal ECG

Infrastructure To Be Required In Institute		
Sr.No.	**Items**	**Require Quantity**
1	Computer	02
2	One Class Room	Capacity 25 Student
3	OHP & Slide Pojector Or LCD Projector	01
4	Printer	01
5	Bons Set	01
6	BP Apparatus	01
7	E.C.G. Machine	05
8	Stethoscope	25
9	Thermometer	05
10	All Types Of Anatomy & Physiology Charts	As per requirement
11	Hospital Related Equipment For Daily Practice	As per requirement
12	Changing Room	As per requirement

Infrastructure And Equipments Required to be available In Hospital

Sr.No.	Items
1	X – RAY
2	Dental X-ray
3	Dental X-ray film processor
4	Mobile X -ray unit
5	Mobile X -ray unit with Image intensifier
6	X-ray safe light
7	Ultra sound unit(general)
8	X-ray viewer(single screen)
9	X-ray viewer(double screen)
10	Cassette pass- box
11	Film marker
12	General X-ray Unit
13	Automatic Film Processor
14	Manual Film Processor
15	Film Drier
16	Film hopper
17	X-ray Cassettes(see annex),
18	OPG Unit
19	Screening unit
20	Mammography unit
21	Darkroom accessories(sets
22	CT Scan Machine
23	ECG

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