

RIMS Campus, Bariatu, RANCHI 834009

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Type a text of document save the document. Align the text with different formats. Align the text with different formats using Microsoft Word. Inserting a table ensuring Proper alignment of the table using MS word.

Module 2: Microsoft Power Point

Preparing a slide show with transition, animation and sound effect using MS – Power point. Customizing the slide show by inserting pictures and tables in the slides using MS – Power Point.

Module 3: Introduction to the Internet

Create an e – mail account. Use the internet to search for a subject of interest.

Theory Paper II (100 Marks)

Part A (50 marks)

Diploma in X-Ray/Radio Imaging Technician

- 1. Physics of Imaging
- 2. General radiation Physics
- 3. X -- Ray
 - (i)Basics of radiograpy
 - (ii) Properties of X-Ray
 - (iii) Production of X-Ray
 - (iv) Fundamentals of X-Ray mechine
 - (a) Construction of X-Ray tube and its main component
 - (b) Filament design, Anodes design
 - (c) Method of heat dissipation
 - (d) Heat unit, Tube rating chart
 - (e) Three phase X-Ray generators
 - (f) Common causes of x-ray generators
 - (g) Heat effects
 - (h) Line focus
 - (i) Modern X-Ray tube and X-Ray tube circuit

(v)Lay out of X-Ray installation

- (vi) X-Ray flim
 - (a) Composition of x-ray film
 - (b) Types of x-ray film
- (vii) X-Ray Spectrum factors effecting x-ray spectrum
- (viii) Half value layer filtration
- (ix) Inverse Square law
- 4. Dark Room technique
 - (i)Structure of Dark room
 - (ii) List of dark room accessories



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- (iii) Loading and unloading of x-ray film
- (iv) Safe light: illumination and testing of safe light
- 5. Radiographic factors
 - (i)Grid
 - (ii) Grid parameters
 - (iii) Grid faults
- 6. Processing of radiographic films
 - (i)Principles of Processing
 - (ii) Manual Processing system
 - (iii) Washing and drying
 - (iv) Film processing solution, its property and maintence
 - (v) Factors affecting quality in x-ray film processing
 - (vi) Radiographic image
 - (vii) Film density
 - (viii) Film Contrast
 - (ix) Image sharpness and distortion
 - (x) Faults in radiography and its technique
 - (xi) Artifacts
- 7. Exposure factors
 - (i)KVP
 - (ii) mAS
 - (iii) Distance of objective from x-ray tube
 - (iv) Variations in exposure limit
- 8. Pass box
- 9. Dark room digital radiography unit
 - (i)cassettes
 - (ii) Intensifying screen Fluorescent Screen
- 10. Modified x-ray equipments its maintenance and special radiography technique
 - (i)Portable and bedside radiography
 - (ii) Tomography
 - (iii) mammography
 - (iv) mess miniature radiography
 - (v) Dental radiography
 - (vi) Orthopento radiography dental unit (OPG)
 - (vii) X-Ray image intensifier/radiographic unit
 - (viii) C-Arm image intensifier/radiography unit
 - (ix) Digital radiographic unit
 - (x) Cine fluoroscopic radiography unit



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(xi) Rapid film changer for serial radiography

11. Regional radiography

- (A)General
- (i)Head and Neck
- (ii) Spine
- (iii) Chest
- (iv) Abdomen
- (v) Penis
- (vi) upper limb
- (vii) Lower limb

12. Special diagnostic Proceed

- (i)IVP
- (ii) Cystography
- (iii) Sialography
- (iv) Barium Swallow
- (v) Bronchography
- (vi) Angiography of limbs, carodio vessels

Special

- (i)Macro radiography
- (ii) Mammo radiography
- (iii) Dental radiography
- (iv) Orthopentomogram
- (v) High kv technique
- (vi) Subtraction technique

Part B (50 Marks)

- 1. Computer Tomography (CT)
 - (i)Basic Principle of CT imaging
 - (ii) Linear Attenutaion Co efficient
 - (iii) CT number / CT Scanner of various generations CT detectors
 - (iv) Collimators
 - (v) Reconstruction techniques
 - (vi) Spiral scan pitch ratio
 - (vi) CT artifacts
 - (vii) Layout of CT installation
- 2. Magnetic resonance
 - (i)Basic principle of MRI
 - (ii) MRI parameters, spin density



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- (iii) T1 Relaxation time & T2 Relaxation time
- (iv) Spin Echo techniques, T1w, T2w, SDw imaging
- (v) Inversion recovery
- (vi) Slice selection, phase and Frequency encoding
- (vii) Components of MRI system
- (viii) MRI artifacts
- (ix) MRI safety
- 3. Ultra sonography (USG)
 - (i)Basic principle of USG imaging
 - (ii) Interation between ultrasound and matter
 - (iii) Transducers, Freznel and Fraunhofer Zone
 - (iv) Q factor, resolution and resonant frequency
 - (v) Mode of ultrasonic display (A, TM, B mode)
 - (vi) Artifacts in USG imaging
 - (vii) Doppler effect
 - (vii) Duppler shift equation and their application
- 4. Radiation Hazards and Preventive measures
 - (i)During Radiography
 - (ii) During fluoroscopy
 - (iii) Effect of radiation on human body
 - (iv) International recommendation of permissible exposure dose limits for radiation woner & Patients
 - (v) Measurement of radiation doses
 - (vi) Doses in diagnostic radiology
 - (vii) Different radiation monitoring instruments in radiology and radiology department
 - (viii) Protective gedgets in radiology department
 - (ix) Safety duty of radiologist, radiographey and patients
 - (x) ALARA principle of radiation protection
- 5. General care
 - (i)Emergency in radiology department
 - (ii) Resuscitation of patients
 - (iii) Anesthesia in radiology department
 - (iv) Life saving drugs and accessories in radiology department

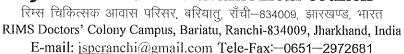
PRATICAL: (100 MARKS)

VIVA: (100 MARKS)



झारखण्ड राज्य पारामेडिकल परिषद

Iharkhand State Paramedical Council





(Constituted by the Department of Health, Medical Education & family Welfare, Government of Jharkhand vide Notification no-7(A)/Paramed.-11-09/09-356(7A)Ranchi, Dated 17.9.2010)

सभी डिप्लोमा पाठ्यक्रमों का Paper-I, Common रहेगा, जबकी विषयवार Paper-II का सिलेबस अलग—अलग रहेगा।