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2nd Sem, Level 4 / DVOC (Medical Imaging Tech.)
Subject : Physics and Technology in Imaging

Time : 2 Hrs.

M.M. : 50

SECTION-A

Note: Very short questions. Attempt all ten questions.
(10x1=10)

- Q.1 Give example of florescent materials used in fluorscopy screens.
- Q.2 Compare added versus inherent filtration.
- Q.3 In fluoroscopy, tell the type of radiation is typically used to create real-time images of the internal structures of the body?
- Q.4 How many Sv are equal to 1 Gy?
- Q.5 Tell the unit for measurement of electrical resistance?
- Q.6 How does a laser beam differ from regular light?
- Q.7 Give examples of derived units used in imaging technology.

- Q.8 Tell the primary function of a Geiger-Muller counter?
- Q.9 Interpret the term Diagnostic Radiology.
- Q.10 In Digital radiography, how is an image formed on the detector?

SECTION-B

Note: Short answer type questions. Attempt any six questions out of eight questions. (6x5=30)

- Q.11 Differentiate between photon flux and energy flux density.
- Q.12 List the factors affecting X-rays emission spectra.
- Q.13 Discuss the relation between absorbed dose and equivalent dose.
- Q.14 Outline the principle of thermo-luminescent dosimeter. How it differs from pocket dosimeter.
- Q.15 Interpret the terms
- a) Heel effect b) Scintillation detectors
- Q.16 Describe the role of a collimator in controlling the beam of radiation in radiography.

- Q.17 How do modern digital detectors improve image quality and efficiency in radiography and fluoroscopy.
- Q.18 List the advantages and disadvantages of using fluoroscopy in diagnostic and interventional procedures.

SECTION-C

Note: Long answer type questions. Attempt any one questions out of two questions. (1x10=10)

- Q.19 Analyze the constitution of fixing solutions. List the factors affecting fixer. Discuss the replenishment rates in manual and automatic processing.
- Q.20 Explain the principles of fluoroscopy in medical imaging. Describe the essential components of a fluoroscopy system, including the X-ray tube, image intensifier, and fluoroscopic monitor.