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BAHI-031

00402

B.Sc. IN MEDICAL IMAGING TECHNOLOGY

Term-End Examination

December, 2013

BAHI-031 : BASICS OF RADIOLOGICAL PHYSICS

Time : 3 hours *Maximum Marks : 70*

PART - A

Answer *any five* questions : **8x5=40**

1. (a) Describe in detail how continuous and characteristic X-rays are produced.

   (b) Mention different factors which influence the continuous and characteristic spectrum of X-rays.

2. Why rectification is required in X-ray circuit ? Explain how the full-wave rectifier circuit works.

3. Describe how X-rays get attenuated when they pass through the medium.

4. What is meant by radioactivity ? Describe in brief about Alpha, Beta and Gamma disintegration processes.

5. Define Radiation exposure and its units. How radiation exposure can be measured using ionization chamber ?

6. Describe in detail about the principle, construction and working of a high tension transformer.

7. What is meant by maximum permissible dose ? And mention its limit for radiation workers and public. Describe the precautions the radiation worker has to take while handling radioactive sources.

8. What is meant by attenuation, absorption and scattering of radiation ? Derive an expression to obtain Half Value Layer (HVL) from the law of exponential attenuation.

PART - B

9. Write short notes on ***any five*** of the following : **6x5=30**
   (a) Modes of heat transfer
   (b) Use of filters in radiography
   (c) Cooling in X-ray tube
   (d) TLD badge
   (e) Absorption co-efficients
   (f) Thermionic emission
   (g) Effective dose
   (h) Ultrasound transducer