

**VINAYAKA MISSION'S RESEARCH FOUNDATION, SALEM**  
**B.Sc(ALLIED HEALTH SCIENCES) DEGREE EXAMINATIONS - March 2019**  
**First Year**  
**PHYSICS OF RADIOLOGY, RADIATION PHYSICS & MEDICAL PHYSICS**

Three Hours

Maximum: 75 marks

**SECTION - A**

**I. Choose the Best Answer :****(10 x 1 = 10)**

1. What is the maximum monthly radiation exposure dose allowed for the pregnant radiation worker?  
a. 0.5 mSv                      b. 1mSv  
c. 5 mSv                        d. 50 mSv
2. Which type of ionizing radiation will have the LEAST biological effect?  
a. alpha particles              b. fast neutrons  
c. 25 MeV x-rays                d. Diagnostic x-rays
3. The radiation protection philosophy that promotes the use of the least amount of radiation possible for medical imaging is termed:  
a. NCRP                          b. NRC  
c. ICRP                          d. ALARA
4. A digital fluoroscopy with a charge coupled device has lower\_\_\_\_\_ and \_\_\_\_\_ than conventional fluoroscopy.  
a. light sensitivity, patient dose                      b. patient dose, light sensitivity  
c. detective quantum efficiency, maintenance    d. signal-to-noise ratio, patient dose
5. Image integration results in\_\_\_\_\_.  
a. increased patient dose.                              b. decreased patient dose.  
c. decreased contrast resolution.                      d. increased noise artifact.
6. When using the PACS system, \_\_\_\_\_ is useful for viewing fractures and small, high contrast objects.  
a. windowing                      b. edge enhancement  
c. subtraction                      d. highlighting
7. Teleradiology refers to \_\_\_\_\_ of images.  
a. long-term storage                      b. realtime viewing  
c. remote transmission                      d. telephone transmission
8. Serial radiography requires x-ray equipment with a \_\_\_\_\_.  
a. large small target angle.                      b. small anode disk.  
c. low heat capacity.                                  d. high power rating.
9. The size and construction of the \_\_\_\_\_ determines the anode heat capacity.  
a. tube housing                      b. cathode wire  
c. bearing assembly                      d. anode disk
10. The use of \_\_\_\_\_ reduces the risk of a drug reaction during interventional and angiographic procedures.  
a. hydrophilic catheters                      b. ionic contrast  
c. nonionic contrast                                  d. heparin coating

(p.t.o.)

**II. Write Short Answers on any FIVE of the following:**

**(5 x 5 = 25)**

11. Define Non-ionizing Radiation
12. Define Half life
13. Explain about TLD
14. Film badge
15. X-ray machine and accessories
16. Write short notes on single and double coated film
17. Explain about image resolution

**III. Write Short Essays on any TWO of the following:**

**(2 x 10 = 20)**

18. Write the short notes on production of x-ray
19. Radiation safety
20. Write working principle of x-ray film processing dark room
21. Application of contrast medium

**IV. Write Essays on any ONE of the following:**

**(1 x 20 = 20)**

22. Write short notes on biological effect of radiation Explain about fluoroscopic procedures
23. Write short notes on ultrasound procedures

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