SRI DEVARAJ URS ACADEMY OF HIGHER EDUCATION & RESEARCH

(A DEEMED TO BE UNIVERSITY)

B.Sc. Imaging Technology Third Year Semester-V

February 2020 Examination

Time: 2.30 Hrs. **Paper-I** **[Max. Marks: 80]**

Physics of Ultrasound with PCPNDT act

Q.P Code: J5410

Your answers should be specific *to the questions asked.*
Draw neat labeled diagrams wherever necessary.

LONG ESSAY **2 X 10 = 20 Marks**

1 Write in detail about the characteristic nature of ultrasound imaging &discuss about reflection, refraction and attenuation of ultrasound waves.

2 Describe the construction and working of transducer. Explain about different types of probes used.

SHORT ESSAY (Answer any six) **6 X 5 = 30 Marks**

3 Explain about the ultrasound displays Mode B with neat diagram and M Mode ultrasound.

4 What is PCPNDT and its importance?

5 Discuss the Doppler principle. How is it used in colour flow imaging?

6 Discuss about 3D and 4D ultrasound. Where 3D scan is commonly performed?

7 Write about therapeutic procedures using ultrasound?

8 Write a note on sterilisation of probes and needles?

9 Write about ultrasound beam and its different zones?

10 Write briefly about patient handling during ultrasound?

SHORT ANSWERS (Answer any Ten) **10 X 3 = 30 Marks**

11 Define quality assurance for safety considerations in ultrasound?

12 What is meant by comet tail artefact? Give an example. Where it is seen?

13 Name three diagnostic procedures using ultrasound?

14 What are the different types of arrays used in ultrasound?

15 What is B mode ultrasound?

16 What is reverberation artefact. And where is it seen?

17 What are documentation for safety considerations in ultrasound?

18 Write about acoustic impedance.

19 Write few indications for ultrasound abdomen?

20 Electronic acoustic coupling media.

21 What is tissue harmonic imaging?

22 Piezoelectric effect.

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B.Sc. Imaging Technology Third Year Semester-V

February 2020 Examination

Time: 2.30 Hrs. **Paper-II** **[Max. Marks: 80]**

Sub: Physics of CT & Imaging Techniques

Q.P Code: J5420

Your answers should be specific *to the questions asked.*
Draw neat labeled diagrams wherever necessary.

LONG ESSAY **2 X 10 = 20 Marks**

1 Enumerate in detail about 1st, 2nd and 3rd generation of CT.

2 Explain in detail about the CT imaging of the brain?

SHORT ESSAY (**Answer any six)** **6 X 5 = 30 Marks**

3 Write about quality control in CT?

4 What is HU? How it plays role in diagnosis?

5 Write about image display, pixel, and voxel?

6 What are the detectors used in CT scan?

7 What are the factors affecting image quality in CT?

8 Discuss the advantages of CT guided biopsy.

9 Describe multi planar reconstruction.

10 Give short notes on (i) beam hardening artefact (ii) ring artefacts.

SHORT ANSWERS (Answer any Ten) **10 X 3 = 30 Marks**

11 What is effective dose?

12 Name the phases in abdominal CECT?

13 What is pitch?

14 What is advantage of spiral CT?

15 Oral contrast in CT.

16 Define window level and window width.

17 Write indications for CECT KUB?

18 What is the basic principle of CT?

19 What type of target material used in CT?

20 What is metal artifact in CT scan?

21 What is helical CT scanner?

22 What is partial volume artefact?

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Time : 2.30 Hrs. **[Max. Marks : 80]**

Paper-III

Mammography and Nuclear medicine

Q.P Code : J5430

Your answers should be specific to the questions asked.
Draw neat labeled diagrams wherever necessary.

LONG ESSAY **2 X 10 = 20 Marks**

1 Explain the various types of collimators and their applications.

2 Rectilinear scanner. Describe in detail.

SHORT ESSAY (**Answer any six)** **6 X 5 = 30 Marks**

3 Write about mammography.

4 What is PACS? Write about types and uses.

5 Common radiopharmaceuticals and their uses in nuclear medicine.

6 Write about computed radiography.

7 Advantages of digital radiography and uses of PACS.

8 Define activity and specific activity.

9 What are the precautions are taken during handling of radiopharmaceuticals?

10 Explain about principle of PET.

SHORT ANSWERS (Answer any Ten) **10 X 3 = 30 Marks**

11 Principle of SPECT.

12 Write about properties of alpha rays

13 Isomeric transmission.

14 What is biological and effective half-life?

15 Write about crystal using in detectors.

16 Time, Distance and shielding.

17 Safety considerations of radiation dose in PET.

18 Write about digital film detector.

19 Charged coupled device.

20 Define isotopes, isotones, isobars.

21 Define Quality assurance and write about daily QA tests for nuclear medicine.

22 Flat panel detectors.

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