

MAY 2019

**PAPER I – MEDICAL RADIATION PHYSICS AS APPLIED TO
RADIO DIAGNOSIS**

I. Elaborate on: (2 x 15 = 30)

1. Describe the basic principles of MRI. Discuss briefly about T1 and T2 relaxation and its utility in MRI.
2. Describe the different types of contrast media reactions. Discuss briefly the precautions to be taken to avoid these reactions and their management.

II. Write notes on: (10 x 7 = 70)

1. 3D and 4D ultrasound.
2. Personal dosimeters.
3. What are grids? Classify them and discuss their utility in imaging.
4. Methods to reduce radiation dose in CT.
5. Acoustic Radiation Force Impulse (ARFI) imaging.
6. Hepatobiliary-specific MRI contrast agents.
7. CT artifacts.
8. Principle and utility of MR spectroscopy.
9. Tissue Harmonic Imaging.
10. X-ray beam restriction devices.

M.D. EXAMINATION

BRANCH DIAGNOSIS

[LO 137]

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PAPER II – RADIO DIAGNOSIS INCLUDING NUCLEAR MEDICINE

I. Elaborate on: (2 x 15 = 30)

1. A 60-year-female presents to the casualty with features of obstructive jaundice. Enumerate the possible causes for the same. Discuss the role of imaging in the diagnosis and management of patients with pancreatic head carcinoma.
2. What are the causes of mesenteric ischemia? Discuss the role of imaging in the diagnosis and management of patients with mesenteric ischemia.

II. Write notes on: (10 x 7 = 70)

1. Clinical utility of Ga-68 DOTATATE PET-CT.
2. Role of imaging in differentiating focal nodular hyperplasia and fibrolamellar carcinoma of liver.
3. Penile Doppler.
4. Imaging features of renal tuberculosis.
5. Retro-peritoneal fibrosis.
6. Role of imaging in differentiating adrenal adenoma from metastasis.
7. Radionuclide cisternogram.
8. Superior mesenteric artery syndrome.
9. Auto-immune pancreatitis.
10. Emphysematous pyelonephritis.

**PAPER III – RADIO DIAGNOSIS INCLUDING INSTRUMENTATION AND
CONTRAST STUDIES**

I. Elaborate on: (2 x 15 = 30)

1. Discuss pathophysiology and imaging findings in newborn respiratory distress.
2. Briefly describe the anatomy of the retroperitoneum and imaging differentials of retroperitoneal masses in childhood.

II. Write notes on: (10 x 7 = 70)

1. Enumerate the various causes of first trimester bleeding and describe in brief the sonographic features.
2. Total Anomalous Pulmonary Venous Connection (TAPVC).
3. Craniosynostosis.
4. Imaging in neurofibromatosis.
5. Imaging features in mucopolysaccharoidosis.
6. Tracheoesophageal fistula.
7. Contrast induced nephrotoxicity.
8. Pre-cochlear implant temporal bone imaging.
9. Role of imaging in testicular torsion.
10. Evaluation of cystic renal disease in infants.

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**PAPER IV – RADIO DIAGNOSIS INCLUDING INTERVENTIONAL
PROCEDURES AND RECENT ADVANCES**

I. Elaborate on: (2 x 15 = 30)

1. Imaging evaluation of hepatic nodules and Interventional management of hepatocellular carcinoma.
2. Role of imaging in hemoptysis with a note on indications, technique and complications of bronchial artery embolization.

II. Write notes on: (10 x 7 = 70)

1. Tissue harmonic imaging – principles and applications.
2. Ultrasound contrast agents.
3. MR imaging in prostatic carcinoma.
4. MR cholangiogram – technique and applications.
5. Hysterosalpingogram.
6. Whole body diffusion weighted imaging.
7. Chemical shift imaging.
8. CT colonography – technique and applications.
9. Computer aided detection in mammography.
10. Targeted imaging for foetal anomaly.
