



होमी भाभा राष्ट्रीय संस्थान  
Homi Bhabha National Institute

(Tata Memorial Centre)  
Dr. Ernest Borges Marg, Parel Mumbai – 400 012

**Theory Examination MD – Radio-Diagnosis**

**May – June 2013**

**RADIATION PHYSICS, PROTECTIVE MEASURES AND PHYSICS INVOLVING  
IMAGING TECHNIQUES AND RELATED BASIC SCIENCES E.G. ANATOMY,  
PHYSIOLOGY AND PATHOLOGY.**

**PAPER I**

Duration: 3 Hours

Total Marks: 100

**Instructions:** 1) Use black/black –ball point pen only.

2) Do not write anything on the blank portion of the question paper.

If written anything such type of act will be considered as an attempt to resort to unfair means.

3) All questions are compulsory.

4) The number to right indicates full marks.

5) Draw diagrams wherever necessary.

1. What are the differences between spin echo, gradient echo & STIR in magnetic resonance imaging? Why are different types of sequences needed?

2. Describe radiological anatomy of bronchopulmonary segment. Discuss lung emphysema. Describe various types of Lung emphysema and their radiological finding in detail.

3. Solve any five questions out of six:

(5 X 10 = 50)

i. Digital subtraction angiography.

ii. MIP image in computed tomography.

iii. Mobile X-ray unit.

iv. Discuss briefly Physics of colour doppler and its application in obstetrics.

v. Discuss briefly pathology and imaging in GIT tuberculosis.



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Paper II

RADIOLOGICAL IMAGING IN CONGENITAL AND SYSTEMIC DISEASES( I )

PAPER II –

Duration: 3 Hours

Total Marks: 100

**Instructions:** 1) Use black/black –ball point pen only.

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3) All questions are compulsory.

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5) Draw diagrams wherever necessary.

1. Discuss the radiographic anatomy of the orbit. How will you proceed to investigate intra-conal lesions? 25

2. Discuss in detail role of imaging in evaluation of a patient with haematemesis. 25

3. Solve **any five** questions out of six: (5 X 10 = 50)

i. Pulmonary edema.

ii. Corpus callosum agenesis.

iii. Renal tuberculosis

iv. MRI in avascular necrosis of hip

v. Aortic aneurysm.

vi. Rheumatoid arthritis



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Paper IV

MISCELLANEOUS, RADIOLOGICAL PROCEDURES , INTERVENTIONAL  
RADIOLOGY, RECENT ADVANCES AND NEWER TECHNIQUES

Duration: 3 Hours

Total Marks: 100

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3) All questions are compulsory.

4) The number to right indicates full marks.

5) Draw diagrams wherever necessary

1. Write in brief the role of ultrasonography in evaluation of wrist and hand.

25

2. Discuss role of imaging and interventional radiology in STROKE

25

3. Solve **any five** questions out of six:

(5 X 10 = 50)

i. Elastography

ii. Varicocoele

iii. MR spectroscopy

iv. Carotid body tumor

v. Pulmonary artery interventions.

vi. Radiological evaluation of opaque ocular media



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**Paper III**

RADIOLOGICAL IMAGING IN CONGENITAL AND SYSTEMIC DISEASES ( II )  
Duration: 3 Hours Total Marks: 100

Instructions: 1) Use black/black –ball point pen only.

2) Do not write anything on the blank portion of the question paper.

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3) All questions are compulsory.

4) The number to right indicates full marks.

5) Draw diagrams wherever necessary

1. Discuss causes & imaging features of Acute paraplegia

25

2. Describe in detail the differential diagnosis, radiological & imaging feature of unilateral large kidney.

25

3. Solve any five questions out of six:

(5 X 10 = 50)

i. Merits and demerits of captopril renogram

ii. Left atrial myxoma

iii. Paget's disease of bone

iv. Choledochal cyst

v. Anterior mediastinal masses.

vi. Eventration of diaphragm