



MVPS DR. VASANTRAO PAWAR MEDICAL COLLEGE, HOSPITAL AND
RESEARCH CENTER
VASANTDADA NAGAR, ADGAON, NASHIK, 422003

Department of Radio diagnosis

2.5.4 Midcourse Improvement

The Institute Has Defined Policy Documents To Provide Opportunities To Students For Midcourse Improvement Of Performance Through Specific Interventions.

PG

Year	Timely Administration Of CIE	On Time Assessment And Feedback	Make Up Assignments/ Tests	Remedial Teaching Support
2015-16	Yes	Yes	No	No
2016-17	Yes	Yes	No	No
2017-18	Yes	Yes	Yes (01)/	Yes (04)
2018-19	Yes	Yes	No	No
2019-20	Yes	Yes	No	No

HOD

Department of Radio diagnosis

HOD

DEPT. OF RADIOLOGY

Dr. Vasant Rao Pawar Medical College
Hospital & Research Center, Adgaon, Nashik

Department of Radio diagnosis

Repeat Examination

Radiation Physics, Protective Measures and Physics Involving Imaging Techniques and Related Basic Sciences e.g. Anatomy, Physiology and Pathology - I

Date- 09/04/2018

Duration: 3 Hour
100

Total Marks-

Instructions:

1. Use **blue/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 unfair means.
3. **All questions are compulsory.**
4. The number to the **right indicates full marks.**
5. **Draw diagrams wherever necessary.**

1. Describe the anatomy of para nasal sinuses and variants with a neat and labeled diagram. Explain the role of CT in imaging paranasal sinus pathology.

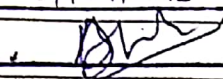
25 Marks

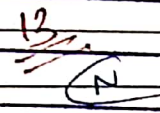
2. Describe the various types of X ray tube. Mention the details of rectifiers. **25 Marks**

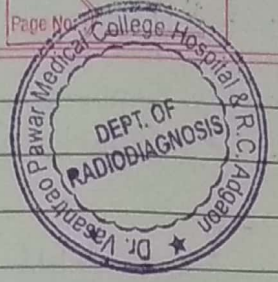
3. **Short Notes (Any five)**
Marks

5x10=50

1. Compton Effect.
 2. Construction and Design of Imaging Plate (CR Cassette).
 3. USG Contrast Media.
 4. Radiation Hazards.
 5. Transducer.
 6. Pulse sequence in MRI.
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DR. VASANT PAWAR MEDICAL COLLEGE, NASHIK-422 003	
NAME OF DEPARTMENT	Radiology
NAME OF COURSE	DMRD.
NAME OF CANDIDATE	Prashant Patil
PAPER No.	one
DATE	09/04/2018
SIGNATURE OF INVIGILATOR	

QUESTION NO.	MARKS OBTAINED	OUT OF (MAXIMUM)
1	4	25
2	2	25
3 (BEST 5)		(50)
A	2	10
B	—	10
C	1	10
D	1	10
E	2	10
F	—	10
TOTAL MARKS	13	100
SIGNATURE OF EXAMINER		



① Paranasal Sinuses :->

• Anatomy ->

Paranasal sinuses are 4 in no. ->

- 1) Maxillary
- 2) Sphenoid
- 3) Ethmoid
- 4) Frontal.

• Variant anatomy ->

Sphenoid -> optic nerve dehiscence
Sphenoidal hypoplasia.

Maxillary -> Posterior fontanelle
Maxillary hypoplasia

4 other -> concha bullosa.
Ant. ethmoidal Artery.
Nasal septum pneumatization.

• Role of CT in PNS imaging ->

a) for determining anatomical landmarks & variants.

b) for detecting any hyperdensities within
- secretions
- fungus
- blood.

c) Fracture of sinus walls if any.

d) optic nerve types.

e) Any tumor growth, extent.

f) Sinusitis detection.

2) Types of X-ray tube →

There are 2 basic types of microfocus X-ray tubes →

- a) solid anode tubes
- b) Metal jet anode tubes.

• Rectifiers →

a) Full wave rectifier →

- contains at least 4 diodes.
- changes the polarity of negative half of wave
- allows 120 pulses of X-ray per second
- Exposure time can be cut in half compared to half-wave systems

b) Half wave rectification →

when one or two diodes are placed in circuit that stops negative flow of electrons, it is called half wave rectification.

SAG

4) Radiation exposure hazards →

a) USG → Overheating & burning of body tissue.

b) X-ray → somatic effects
Genetic effects - reflects to offsprings

(1)

5) Transducers →

- linear array
- phased array
- curved array

convex → 2.5 MHz - 7.5 MHz

- for abdominal, transvaginal & transrectal examination.

linear → 2.5 - 12 MHz

- for breast, thyroid, vascular tendon.

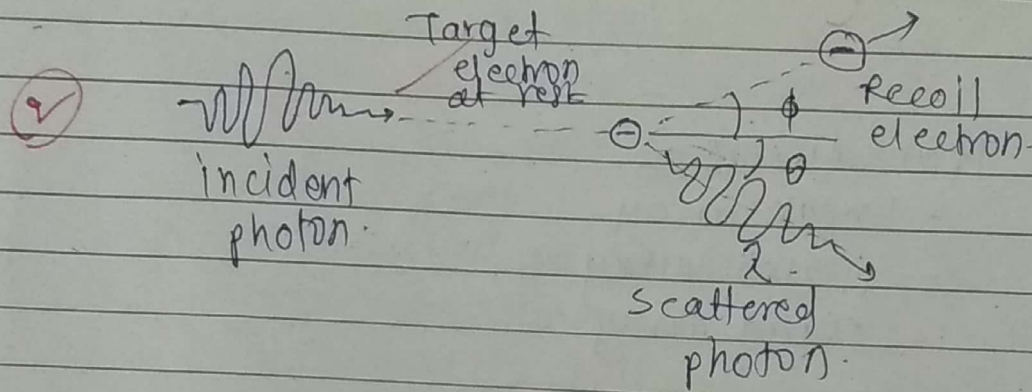
(2)

Pencil → called cw doppler.

- To measure blood flow & speed of sound in blood.

1) Compton effect \rightarrow

Process in which photons interacts with "free" atomic electron that is the binding energy of electron is much less than energy of bombarding photon.



3) USG contrast media \rightarrow

- a) Targeted - enhanced USG
- b) non-targeted - enhanced USG.

① composed of microbubbles.
They have high degree of echogenicity.