



BRAINWARE UNIVERSITY

Term End Examination 2021 - 22

Programme – Bachelor of Science in Medical Radiology & Imaging Technology

Course Name – Physics of Newer Imaging Modalities

Course Code - BMRIT401

(Semester IV)

Time allotted : 1 Hrs.15 Min.

Full Marks : 60

[The figure in the margin indicates full marks.]

Group-A

(Multiple Choice Type Question)

1 x 60=60

Choose the correct alternative from the following :

- (1) Image reconstruction was evaluated Mathematically by?

a) Wilhelm Cornard Roentgen	b) Alan Cormack
c) Godfrey Hounsfield	d) None of these
- (2) Contrast resolution in Computed Tomography is ?

a) Less than conventional film	b) Better than conventional films
c) Same as conventional films	d) None of these
- (3) CT number of water is?

a) (+)1	b) (-)1
c) 0	d) (+)200
- (4) Coefficient of Bone is?

a) 0.38	b) 0
c) 0.19	d) 0.91
- (5) 3rd & 4th generation CT Scan uses?

a) Multiple X-ray beam	b) Narrow Fan Beam
c) Pencil beam of X-rays	d) Broad fan beam
- (6) 5th generation CT Scan uses?

a) Multiple X-ray beam	b) Broad fan beam
c) Narrow Fan Beam	d) Pencil beam of X-rays
- (7) In CT Scan the 3rd generation is?

a) Rotate-rotate type	b) Translate-rotate type
c) Stationary-rotate type	d) None of these

- (21) MRI drawback?
- a) Limited spatial resolution
 - b) Takes longer imaging time
 - c) Inability to demonstrate dense bone detail
 - d) All of these
- (22) Atomic nuclei are made up of?
- a) Proton
 - b) Neutron
 - c) both (a) & (b)
 - d) Electron
- (23) Contra indication for MRI technique?
- a) Patient on lithium
 - b) Intracranial metallic aneurysm
 - c) psychotic patient
 - d) Patient received radiotherapy
- (24) Which magnets require the use of cryogenics
- a) Bar
 - b) Resistive
 - c) Superconducting
 - d) Permanent
- (25) 1 gauss =tesla
- a) 5×10^3 T
 - b) 10^{-4} T
 - c) 10^{-3} T
 - d) None of these
- (26) Contrast media used for MRI?
- a) Iodinated CM
 - b) Barium Sulphate CM
 - c) Gadolinium
 - d) All of these
- (27) MRI room shielding also called as ?
- a) Faraday's Cage
 - b) Bird's Cage
 - c) Newton's Cage
 - d) Einstein's Cage
- (28) Piezoelectric material used in medical ultrasound
- a) Lead Zirconate Titanate
 - b) Calcium tungstate
 - c) Zinc Cadmium sulphate
 - d) None of these
- (29) To sterilize the transducer, it should be
- a) Heated
 - b) Autoclaved
 - c) Clean with spirit
 - d) None of these
- (30) These days , piezoelectric crystal material is
- a) Phosphor
 - b) Bismuth Zirconate
 - c) Lead Zirconate Titanate
 - d) All of these
- (31) What has the greatest amount of attenuation?
- a) Water
 - b) Bone
 - c) Muscle
 - d) Fat
- (32) Range of high frequency ultrasound ?
- a) 4-5MHz
 - b) 5-7MHz
 - c) 1-5MHz
 - d) 8-10MHz
- (33) Interaction of ultrasound with matter?
- a) Reflection
 - b) Refraction
 - c) Absorption
 - d) All of these
- (34) Ultrasound is a reflection of
- a) Soft tissues only
 - b) Hard tissues only
 - c) Both hard and soft tissues
 - d) Hard muscles only

- a) 1990
c) 2000
- b) 1983
d) 1975
- (48) Advantages of digital radiography system is ?
- a) Quality control of the images are good so less repetition.
c) Radiation dose is less
- b) Work flow increased, thus saving time and labour
d) All of these
- (49) Amorphous selenium substance is used in detector in
- a) Flat Panel Detector (FPD) based system (direct X-ray conversion type)
c) Both (a) and (b)
- b) Flat Panel Detector (FPD) based system (indirect X-ray conversion type)
d) None of these
- (50) Tomosynthesis is possible with
- a) D.R System
c) Scattering
- b) C.R System
d) None of these
- (51) Disadvantages of the PET are
- a) No anatomical details
c) Difficult to differentiate lesions from areas of normal physiological uptake
- b) Large number of false positive and false negative results
d) All of these
- (52) PET-MRI has advantages
- a) Almost no radiation
c) High sensitivity
- b) Specific molecular, enzymes and gene suppression
d) All of these
- (53) The benefit of the PACS include
- a) Security of the image storage
c) Better availability of the images
- b) Elimination of the film stores
d) All of these
- (54) ^{99m}Tc is obtained from
- a) ^{99}Mo
c) ^{111}In
- b) ^{67}Ga
d) ^{125}I
- (55) Which radionuclide is an ideal radionuclide and accounts for over 70% in nuclear imaging ?
- a) ^{131}I
c) ^{99m}Tc
- b) ^{99}Mo
d) ^{201}Tl
- (56) ^{99m}Tc has a half-life of
- a) 128 days
c) 6 hr
- b) 2.5 hr
d) 2 days
- (57) Which of the following is used in PET ?
- a) Na:I
c) CaWO_4
- b) $\text{Bi}_4\text{Ge}_3\text{O}_{12}$
d) Xenon
- (58) Iodine has a half life of
- a) 6 hr
c) 128 days
- b) 8.06 days
d) 23 hr
- (59) The atomic number of Bismuth is
- a) 83
- b) 4

c) 74

d) 131

(60) Radioiodine is used for

a) Liver scanning

b) Thyroid scanning

c) Bone scanning

d) Lung scanning