

N.A



LIBRARY  
Brainware University  
Barasat, Kolkata - 700125

## BRAINWARE UNIVERSITY

Term End Examination 2021 - 22

Programme – Bachelor of Science in Physician Assistant

Course Name – Fundamental of Radiology and Imaging Technology

Course Code - BPA405

( Semester IV )

Time : 1 Hr.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) For X-rays to travel
  - a) No medium required
  - b) Presence of water
  - c) Presence of oxygen
  - d) None
- (2) Soft X-ray have the tube voltage of
  - a) 0-10 kV
  - b) 20-60 kV
  - c) 150-400 kV
  - d) 400-3000 kV
- (3) The amount of the kinetic energy utilized in production of X-rays are
  - a) Less than 1%
  - b) Less than 40%
  - c) Less than 90%
  - d) Less than 99%
- (4) The Aluminium filter used in the diagnostic X-ray tube is
  - a) For absorption of the low energy photons
  - b) For absorption of scattered photons
  - c) For absorption of high energy photons
  - d) None
- (5) Anode in rotating anode X-ray tube is made-up of
  - a) Tungsten nickel alloy
  - b) Tungsten rhenium alloy
  - c) Nickel tin alloy
  - d) Tungsten aluminium alloy
- (6) During fluoroscopy, the X-ray tube operates at
  - a) Less than 5 mA
  - b) 10-15 mA
  - c) 25-35 mA
  - d) Above 60 mA
- (7) X-ray tubes are surrounded by \_\_\_\_\_ to absorb unwanted radiation
  - a) Lead
  - b) Glass
  - c) Aluminium
  - d) Oil

- (8) Which of the following are the ionizing radiation
- a) Alpha radiation  
b) Beta radiation  
c) Gamma radiation  
d) All
- (9) Which of the following is highly ionizing radiation with very short range in matter?
- a) Alpha particle  
b) Beta particle  
c) X-rays  
d) None
- (10) Which of the following are called photons?
- a) X-ray  
b) Gamma ray  
c) Alpha ray  
d) Both a,b
- (11) Intensity of radiation depends on
- a) Quality and quantity of X-ray photon  
b) Quality of X-ray photon  
c) Quantity of X-ray photon  
d) All
- (12) Quality of radiation depends on
- a) mAs  
b) kVp  
c) Sec  
d) Both a,b
- (13) The effective device to reduce the scattered radiation is
- a) Grid  
b) Glass tube  
c) Diaphragm  
d) Cone
- (14) Air gap technique is used to
- a) Reduce scattered radiation  
b) Magnification radiography  
c) Image sharpness deteriorates  
d) All
- (15) Grid ratio is the
- a) Height of lead strip by distance between the m  
b) Distance between lead strips by height  
c) Height of the lead strip multiplied by the distance  
d) None
- (16) Grid are generally used in
- a) Fatty person  
b) Thin person  
c) Children  
d) Pregnant women
- (17) The bucky factor \_\_\_\_\_ with increasing kVp.
- a) Increases  
b) Decreases  
c) Halves  
d) Quarter
- (18) High ratio grids are used for \_\_\_\_\_ examination.
- a) Low kVp  
b) High kVp  
c) Both  
d) None
- (19) High frequency generator has
- a) High tube current with short exposure  
b) More efficient  
c) Ripple factor is minimum  
d) All
- (20) X-ray generator provides
- a) Electric power to energize X-ray tube  
b) Mechanism to select technique appropriate for or a given examination  
c) To protect X-ray tube from possible overload situation  
d) All

- (21) Rectification means
- a) Change AC to DC
  - b) Increasing the voltage
  - c) Decreases the current
  - d) All
- (22) Modern X-ray tube have
- a) 3 conductor H.T cable
  - b) 1 Conductor H.T cable
  - c) 5 conductor H.T cable
  - d) 2 conductor H.T cable
- (23) Electric current is measured in
- a) Watt
  - b) Erg
  - c) Volt
  - d) Ampere
- (24) Electric resistance is measured in
- a) Ohm
  - b) Ampere
  - c) Ergs
  - d) Farad
- (25) 1 gray (Gy) equal
- a) 100 rads
  - b) 1 rad
  - c) 100mRad
  - d) 1 mRad
- (26) Who discovered X-ray
- a) Godfrey Hounsfield
  - b) W.C. Röntgen
  - c) Raymond Damadian
  - d) None of these
- (27) What are X-ray
- a) Electro magnetic Wave
  - b) Magnetic wave
  - c) Electric wave
  - d) All of these
- (28) Why tungsten is used in x ray tube
- a) For high melting point
  - b) For low melting point
  - c) for low atomic number
  - d) For low mass number
- (29) Dental X-Ray is also known as \_\_\_\_\_
- a) Orthopedics
  - b) Orthopentology
  - c) Orthology
  - d) Orthopantomography
- (30) The X-Ray is recorded on a plate coated with \_\_\_\_\_
- a) Gold Halide
  - b) Silver Halide
  - c) Copper Halide
  - d) Iron Halide
- (31) In a normal X-Ray machine, X – Rays are produced by \_\_\_\_\_
- a) bombardment of cathode rays on a radioactive material
  - b) nuclear fission
  - c) nuclear fusion
  - d) super heating of an element
- (32) Which of the following part of human skeleton forms the helmet for the protection of human brain?
- a) Cranium
  - b) Temporal bone
  - c) Hyoid
  - d) Mandible
- (33) Which of the following part of the parietal pleura covers the superior surface of the human diaphragm?
- a) Intercostal nerves
  - b) Pneumothorax
  - c) Mediastinal pleura
  - d) Diaphragmatic pleura
- (34) Why is contrast used in CT scan?

- a) To suppress particular tissues  
b) To enhance a particular tissue  
c) To ensure correct tissue is being imaged  
d) To reduce bone interference
- (35) The current generation CT scanner use \_\_\_\_\_ for scanning  
a) pencil beam and stationary detectors  
b) pencil beam and rotating detectors  
c) fan beam and detectors  
d) electron beam and detectors
- (36) Why pressure injector used in CT  
a) For injecting IV contrast  
b) For injecting BaSo<sub>4</sub>  
c) For pumping blood  
d) None of these
- (37) What property of sound waves acts like the principle of ultrasound?  
a) Reflection and Refraction  
b) Reflection only  
c) Refraction only  
d) Propagation
- (38) Which of the following medical imaging modality other than ultrasound does not use any form of radiation?  
a) PET Scan  
b) SPECT Scan  
c) CT Scan  
d) MRI
- (39) For which of these areas can the ultrasound be taken for an infant but not for an adult?  
a) Cranium  
b) Chest  
c) Arms  
d) Legs
- (40) How is a medium characterized?  
a) By its thickness  
b) By its acoustic impedance  
c) By its water content  
d) By its density
- (41) The three forms of ionizing radiation are  
a) Microwave, alpha, beta  
b) Visible light, x-ray, gamma  
c) Gamma, alpha, beta  
d) X-ray, laser, microwave
- (42) What is the effective dose limit for general public  
a) 3 miliseiverts per year  
b) 1 milisievert per year  
c) 20 miliseiverts per year  
d) None of the above
- (43) Super conducting magnet used in  
a) MRI  
b) CT  
c) USG  
d) X-RAY
- (44) The commonly used MRI's have a magnetic strength of \_\_\_\_\_  
a) 1.5 – 3 Tesla  
b) 3 – 6 Tesla  
c) 6 – 12 Tesla  
d) 12 – 24 Tesla
- (45) The cooling agent for the MRI magnet is \_\_\_\_\_  
a) Helium  
b) Neon  
c) Argon  
d) Xenon
- (46) The smallest unit in the reconstruction/projection of an MRI image is called as \_\_\_\_\_  
a) pixel  
b) voxel  
c) binary unit  
d) dot
- (47) Which of the following materials is paramagnetic?  
a) Water  
b) Fat  
c) Bone  
d) Air

- (48) The first company to produce a clinical whole-body MRI scanner for commercial use was
- a) GE  
b) Fonar  
c) Siemens  
d) Technicare
- (49) The temperature of liquid helium is approximately
- a) 4 °K  
b) 0 °K  
c) -4 °K  
d) -400 °C
- (50) How many sets of paired physical gradients are present in an MR scanner?
- a) 2  
b) 1  
c) 3  
d) 5
- (51) The superconducting component in the main windings of nearly all clinical MR scanners is an alloy of
- a) Niobium (Nb) and Titanium (Ti)  
b) Niobium (Nb) and Copper (Cu)  
c) Nickel (Ni) and Titanium (Ti)  
d) Nickel (Ni) and Copper (Cu)
- (52) Missiles affect happen in
- a) CT  
b) X-ray  
c) MRI  
d) None of these
- (53) A major advantage of MRI is:
- a) the ease with which equipment is updated or replaced.  
b) its relatively low cost, compared to CT scans.  
c) dose not require specialized room  
d) the ability to reposition the 'cross-section' through the body without repositioning the patient.
- (54) A growing application of MRI is "MRA", which stands for:
- a) Magnetic Resonance Application  
b) Magnetic Resonance Angiography  
c) Minimal Radiology Applications  
d) Medical Research Assistance
- (55) What does "MRI" stand for?
- a) Magneto-Ray Idometry  
b) Medical Radiometry Instrument  
c) Magnetic Resonance Imaging  
d) Maximal Radiology Imaging
- (56) What is a major health concern with MRI?
- a) Reaction to applied drugs  
b) extreme cold?  
c) Radiation dose  
d) localized burns due to metallic implants?
- (57) Compare MRI to CT ("CAT scans"). Which is true?
- a) Both methods use X-rays, but exposure is higher with CT.  
b) CT reveals soft structures, while MRI is better at dense material, such as bone.  
c) Both methods produce cross-sectional images at a specified plane through the body.  
d) None of these
- (58) Select one of the following objects that you think would always be safe in the MRI suite.
- a) A wheelchair  
b) A stretcher  
c) Scissors  
d) None of the listed
- (59) What is the maximum strength of magnet approved for medical imaging of patient?
- a) 7.0 T  
b) 1.5 T  
c) 5.0 T  
d) 3.0 T

(60) Which of the following modalities does not use a form of ionizing radiation:

a) a. Radiography.

b) b. Computed tomography.

c) c. Magnetic resonance imaging.

d) d. Positron emission tomography.