

FINAL ANSWER KEY

Question Paper Code: 82/2022/OL
Category Code: 347/2021
Exam: Radiographer Grade II
Date of Test: 01-10-2022
Department: Medical Education
Alphacode: A

Question1:-Number of electrons flowing per second from filament to target in an x-ray tube refers to

- A:-Tube voltage
- B:-Tube current
- C:-Tube emission
- D:-Tue capacitance

Correct Answer:- Option-B

Question2:-Melting point of tungsten is

- A:-3370 degrees C
- B:-9371 degrees C
- C:-1000 degrees C
- D:-500 degrees C

Correct Answer:- Option-A

Question3:-Range of anode angle in x-ray tubes

- A:-1 to 2 degree
- B:-30 to 40 degree
- C:-6 to 20 degree
- D:-90 to 100 degree

Correct Answer:- Option-C

Question4:-Bucky factor indicates the absorption of

- A:-only primary radiation
- B:-only secondary radiation
- C:-scattered radiation
- D:-both primary and secondary radiation

Correct Answer:- Option-D

Question5:-Noise which arises which from the statistical fluctuations in the number of x-ray photons absorbed by the intensifying screen to form an image in a film is also called

- A:-Luminescence
- B:-Dynamic Range
- C:-Quantum Mottle
- D:-Speed

Correct Answer:- Option-C

Question6:-Q-factor of a transducer refers to

- A:-purity of the sound wave
- B:-length of the time of sound wave
- C:-acoustic impedance
- D:-purity and length of time of sound wave

Correct Answer:- Option-D

Question7:-SI unit for absorbed dose

- A:-gray
- B:-rem
- C:-sievert
- D:-roentgen

Correct Answer:- Option-A

Question8:-The time interval between 2 90 degree pulses in MR image acquisition is

- A:-PD
- B:-TE
- C:-TR
- D:-GRE

Correct Answer:- Option-C

Question9:-In a CT image, each square in the image matrix is called

- A:-voxel
- B:-data
- C:-element
- D:-pixel

Correct Answer:- Option-D

Question10:-'Characteristics curve' depicts relationship between

- A:-power and amplitude
- B:-frequency and wavelength
- C:-pitch and distance
- D:-exposure and density

Correct Answer:- Option-D

Question11:-The structure known as the 'pacemaker of the heart' is

- A:-AV node
- B:-Bundle of His
- C:-Purkinje fibres
- D:-SA node

Correct Answer:- Option-D

Question12:-Diabetes insipidus is a medical condition due to deficiency of

- A:-Growth hormone
- B:-ACTH
- C:-ADH
- D:-LH

Correct Answer:- Option-C

Question13:-Elevation of medially-rotated eye, abduction and lateral rotation is the action of which extra-ocular muscle

- A:-superior oblique
- B:-inferior oblique
- C:-superior rectus
- D:-inferior rectus

Correct Answer:- Option-B

Question14:-Mental foramen is located in which bone ?

- A:-scapula
- B:-clavicle
- C:-mandible
- D:-femur

Correct Answer:- Option-C

Question15:-A hollow cavity inside a bone is called

- A:-fossa
- B:-sinus
- C:-sulcus
- D:-trochlea

Correct Answer:- Option-B

Question16:-Breast is a _____ gland.

- A:-salivary

B:-sweat

C:-sebaceous

D:-lacrimial

Correct Answer:- Option-B

Question17:-Innermost layer of the meninges - the membranous covering surrounding the brain is

A:-dura mater

B:-pia mater

C:-arachnoid mater

D:-grey matter

Correct Answer:- Option-B

Question18:-Forceps major is an anatomical structure in

A:-kidney

B:-brain

C:-liver

D:-lung

Correct Answer:- Option-B

Question19:-The terminal branches of external carotid artery are

A:-lingual A and facial A

B:-superior thyroid A and inferior thyroid A

C:-superficial temporal A and maxillary A

D:-ascending pharyngeal A and lingual A

Correct Answer:- Option-C

Question20:-Nerve within the carpal tunnel is

A:-radial nerve

B:-ulnar nerve

C:-median nerve

D:-sciatic nerve

Correct Answer:- Option-C

Question21:-In a conventional photographic film, gelatin and silver halide are components of

A:-adhesive layer

B:-super-coating

C:-base

D:-emulsion

Correct Answer:- Option-D

Question22:-In film processing, the chemical process that amplifies the latent image - by a factor of millions - to form a visible silver pattern is called

A:-sensitisation

B:-development

C:-fixing

D:-attenuation

Correct Answer:- Option-B

Question23:-Measurement of film blackness is called

A:-linear attenuation

B:-photographic density

C:-transmission

D:-exposure gradient

Correct Answer:- Option-B

Question24:-Film contrast depends on all the following except

A:-characteristic curve of a film

B:-film processing

C:-film density

D:-differential attenuation

Correct Answer:- Option-D

Question25:-Maximum slope of a characteristic curve is

A:-film gamma

B:-film alpha

C:-film theta

D:-film delta

Correct Answer:- Option-A

Question26:-Development of unexposed silver halide grains that do not contain the latent image is called

A:-oxidation

B:-photoelectric effect

C:-fog

D:-automatic exposure

Correct Answer:- Option-C

Question27:-Fixation removes unexposed

A:-gelatin

B:-silver halide

C:-ammonium thiosulphate

D:-polyester base

Correct Answer:- Option-B

Question28:-Increasing the time or temperature of film development will cause

A:-decreased film speed

B:-increased radiation exposure

C:-increased fog

D:-decreased average gradient

Correct Answer:- Option-C

Question29:-Range of log-relative exposure, that will produce a density within the accepted range for diagnostic radiology, is called

A:-speed

B:-latitude

C:-contrast

D:-spectrum

Correct Answer:- Option-B

Question30:-_____ reaction occurs when the photon energy and the electron binding energy are nearly the same.

A:-Pair production

B:-Coherent scattering

C:-Photo-electric reaction

D:-Compton scattering

Correct Answer:- Option-C

Question31:-Nuclides with the same number of protons but different neutrons are

A:-isomer

B:-isotone

C:-isotope

D:-isobar

Correct Answer:- Option-C

Question32:-Technetium-99 has a half life of

A:-6 minutes

B:-6 hours

C:-6 days

D:-6 weeks

Correct Answer:- Question Cancelled

Question33:-Types of biological effects of radiation are

- A:-balanced and unbalanced
- B:-reversible and irreversible
- C:-stochastic and deterministic
- D:-linear and non-linear

Correct Answer:- Option-C

Question34:-In PC-PNDT Act, 1994, which is the form for informed consent for invasive procedures

- A:-Form A
- B:-Form B
- C:-Form F
- D:-Form G

Correct Answer:- Option-D

Question35:-The MR equivalent of 'power absorbed per unit mass', just like we measure Gy in ionizing radiation, is

- A:-Tesla (T)
- B:-Thermal Index (TI)
- C:-Specific Absorption Rate (SAR)
- D:-Mechanical Index (MI)

Correct Answer:- Option-C

Question36:-In MRI, the abbreviation TE in a pulse-echo sequence, stands for

- A:-tesla echo
- B:-thermal efficiency
- C:-time to exit
- D:-time to echo

Correct Answer:- Option-D

Question37:-The _____ is the thickness of a specific substance that, when introduced in the path of a beam of radiation, reduces exposure rate by half.

- A:-Attenuation Difference (AD)
- B:-Half-Life Thickness (HLT)
- C:-Half-Value Layer (HVL)
- D:-None of these

Correct Answer:- Option-C

Question38:-To differentiate between calcification and haemorrhage, the sequence used in MRI is

- A:-Diffusion-weighted image
- B:-MR spectroscopy
- C:-Susceptibility-weighted imaging
- D:-MR perfusion

Correct Answer:- Option-C

Question39:-Active CSF leak is confirmed with _____ investigation.

- A:-CT fistulogram
- B:-CT enterography
- C:-CT cisternogram
- D:-CT angiogram

Correct Answer:- Option-C

Question40:-Transducer crystals in the USG probe are made up of

- A:-Piezoelectric crystals
- B:-LCD crystals
- C:-Thermocouple crystals
- D:-Strain guage

Correct Answer:- Option-A

Question41:-MRI sequence for detecting microscopic fat content in the tissue is

- A:-Diffusion-weighted imaging

B:-functional MRI

C:-in-phase and out-of-phase sequence

D:-MR contrast

Correct Answer:- Option-C

Question42:-The appropriate attitude towards a patient seeking assistance in a hospital setting would be

A:-sympathy

B:-empathy

C:-antipathy

D:-apathy

Correct Answer:- Option-B

Question43:-In female patients presenting for ionizing radiation-based investigations, the most important clinical history to be elicited is

A:-financial history

B:-surgical history

C:-menstrual history

D:-medical history

Correct Answer:- Option-C

Question44:-All these are ionizing radiation except

A:-x-ray

B:-gamma ray

C:-beta ray

D:-ultra-violet radiation

Correct Answer:- Option-D

Question45:-The 3 basic principles of radiation protection

A:-sensitisation, standardisation, subsidisation

B:-jurisdiction, optimization, legalisation

C:-justification, optimization, dose-limitation

D:-sustainability, compatibility, longevity

Correct Answer:- Option-C

Question46:-What is the relationship between the radiation dose and distance ? Doubling distance will decrease dose by

A:-one-half

B:-one-third

C:-one-fourth

D:-one-fifth

Correct Answer:- Option-C

Question47:-AERB stands for

A:-Applied and Essential Radiology Background

B:-Assisted and Enhanced Radiation Barrier

C:-Applied Exposure Regulatory Board

D:-Atomic Energy Regulatory Board

Correct Answer:- Option-D

Question48:-The absolute density in CT is measured in _____ units.

A:-tesla

B:-voxel

C:-hounsfield

D:-roentgen

Correct Answer:- Option-C

Question49:-Radiation -induced cancer and genetic effects are considered _____ biological effects of radiation.

A:-deterministic

B:-stochastic

C:-characteristic

D:-catastrophic

Correct Answer:- Option-B

Question50:-In ante-natal pregnancy scanning, a dedicated fetal anomaly scan is done at _____ gestational age.

A:-5-6 weeks

B:-18-20 weeks

C:-28-32 weeks

D:-38-40 weeks

Correct Answer:- Option-B

Question51:-Half-life ($T_{1/2}$) of a radioactive substance is related to the average life (T_a) by which equation ?

A:- $T_{1/2} = 1.44T_a$

B:- $T_{1/2} = 1.44 \times T_a$

C:- $T_{1/2} = T_a / 1.44$

D:- $T_{1/2} = T_a - 1.44$

Correct Answer:- Option-C

Question52:-X-ray quantity is the

A:-Energy of the X-ray beam

B:-Number of X-ray photons in the X-ray beam

C:-Energy of electrons hitting the target

D:-All of the above

Correct Answer:- Option-B

Question53:-Which of the following is not a gas filled detector ?

A:-Scintillation detector

B:-Proportional counter

C:-GM detector

D:-Ionization chamber

Correct Answer:- Option-A

Question54:-Track of ionization produced by secondary electrons are known as

A:-Bragg peak

B:-Delta rays

C:-Alpha rays

D:-Stopping power

Correct Answer:- Option-B

Question55:-Tissue Air Ratio (TAR) is independent of

A:-Depth

B:-Field size

C:-Beam energy

D:-SSD

Correct Answer:- Option-D

Question56:-Fluoroscopy images can be recorded by means of

A:-Spot film cassette

B:-Photo spot films

C:-Digital recording

D:-All of the above

Correct Answer:- Option-D

Question57:-The line passing through points of equal dose is known as

A:-Isocentre

B:-Penumbra

C:-Isodose curve

D:-Build up depth

Correct Answer:- Option-C

Question58:-The measure of total energy absorbed in treated volume is

- A:-Effective dose
- B:-Equivalent dose
- C:-Integral dose
- D:-None of the above

Correct Answer:- Option-C

Question59:-The unit of absorbed dose is

- A:-rem
- B:-rad
- C:-curie
- D:-sievert

Correct Answer:- Option-B

Question60:-In the Build Up region, KERMA is _____ absorbed dose.

- A:-Greater than
- B:-Equal to
- C:-Smaller than
- D:-Twice the

Correct Answer:- Option-A

Question61:-The half-life of Gold 198 (Au-198) is

- A:-6.02 hrs
- B:-73.8 days
- C:-17 days
- D:-2.7 days

Correct Answer:- Option-D

Question62:-The total activity of all radioisotopes discharged into the sewage in one year by any institution shall not exceed

- A:-1 Ci
- B:-2 Ci
- C:-5 Ci
- D:-10 Ci

Correct Answer:- Option-A

Question63:-Tc-99 m emits gamma energy of

- A:-159 keV
- B:-80 keV
- C:-364 keV
- D:-140 keV

Correct Answer:- Option-D

Question64:-Which of the following is the AERB safety directive describes the dose limits for exposures from ionizing radiations for workers and the members of the public

- A:-AERB Directive No. 01/2011
- B:-AERB Directive No. 02/2011
- C:-AERB Directive No. 01/2021
- D:-AERB Directive No. 02/2021

Correct Answer:- Option-A

Question65:-What is the minimum primary wall thickness of a typical Telecobalt bunker ?

- A:-190 cm
- B:-220 cm
- C:-130 cm
- D:-45 cm

Correct Answer:- Option-C

Question66:-1 TVT = _____ HVT.

A:-33

B:-0.33

C:-33.33

D:-3.3

Correct Answer:- Option-D

Question67:-Lateral wall of Nasopharynx contain all except

A:-Torus tubarius

B:-Fossa of Rosemuller

C:-Basilar portion of sphenoid

D:-Pharyngo tympanic tube

Correct Answer:- Option-C

Question68:-Bimodal age distribution is found in which Carcinoma of head and neck ?

A:-Cancer oropharynx

B:-Cancer nasopharynx

C:-Cancer larynx

D:-Cancer oral cavity

Correct Answer:- Option-B

Question69:-Acinic cell carcinoma salivary gland arises from

A:-Mucus producing cells and cells of intermediate type

B:-Myoepithelial cells

C:-Excretory duct cells

D:-Terminal ducts & Intercalated ducts

Correct Answer:- Option-D

Question70:-In AJCC staging of head and neck tumors, which carcinoma staging takes into consideration the human papilloma virus status

A:-Cancer oropharynx

B:-Cancer nasopharynx

C:-Cancer larynx

D:-None of the above

Correct Answer:- Option-A

Question71:-In cervical carcinoma, presence of hydronephrosis is staged as

A:-Stage II A

B:-Stage II B

C:-Stage III A

D:-Stage III B

Correct Answer:- Option-D

Question72:-First site of distant metastasis in cervical cancer is

A:-Lung

B:-Abdominal cavity

C:-Spine

D:-Liver

Correct Answer:- Option-A

Question73:-Breast anatomically extends cranio-caudally from

A:-First rib to sixth rib anteriorly

B:-First rib to fifth rib anteriorly

C:-Second rib to sixth rib anteriorly

D:-Second rib to fifth rib anteriorly

Correct Answer:- Option-C

Question74:-Well established risk factors in development of cancer breast includes all except

A:-Early menarche

B:-Germ line mutation

C:-Obesity after menopause

D:-Early menopause

Correct Answer:- Option-D

Question75:-R-S cells are signature neoplastic cells of

A:-Classic non-Hodgkin's lymphoma

B:-Classic Hodgkin's lymphoma

C:-Chronic myeloid leukemia

D:-Acute myeloblastic leukemia

Correct Answer:- Option-B

Question76:-Rectum is approximately _____ in length.

A:-8 to 11 cm

B:-10 to 13 cm

C:-12 to 15 cm

D:-15 to 18 cm

Correct Answer:- Option-C

Question77:-Cancer registry in India under ICMR include

A:-Population based and community based registry

B:-Population based and hospital based registry

C:-Community based and clinic based registry

D:-Population based registries only

Correct Answer:- Option-B

Question78:-Common ethical issues directly affecting Oncology patients are all except

A:-Electronic record keeping

B:-Financial relationship into industry sponsors

C:-Genetic counseling

D:-Plagiarism and fabrication

Correct Answer:- Option-D

Question79:-Patient counseling before radiation planning and start of treatment should include all except

A:-Informed consent duly signed

B:-Giving educational brochure on instructions, common side effects and their initial management

C:-Both of the above

D:-None of the above

Correct Answer:- Option-D

Question80:-Radiation induced salivary dysfunction can be prevented by

A:-Limiting mean dose to parotid glands to 45 Gy

B:-Amifostine therapy

C:-Both of the above

D:-None of the above

Correct Answer:- Option-B

Question81:-Intensity modulated radiotherapy includes _____ before plan acceptance.

A:-Inverse planning and defining constraints

B:-Forward planning and selecting beam parameters

C:-Optimization of treatment design

D:-Both 1 and 3

Correct Answer:- Option-D

Question82:-Which volume takes into consideration the organ motion and setup variations in IMRT planning ?

A:-Gross tumor volume

B:-Clinical target volume

C:-Planning target volume

D:-Planning risk volume

Correct Answer:- Option-C

Question83:-The rationale for _____ fractionation is that reduction of overall treatment time decreases the opportunity for tumor cell regeneration.

- A:-Accelerated fractionation radiotherapy
- B:-Hyper fractionation radiotherapy
- C:-Conventional fractionation radiotherapy
- D:-Both 1 and 2

Correct Answer:- Option-A

Question84:-Biological effect of concurrent chemo radiation include all except

- A:-Shift of cell survival curves towards higher cell killing levels
- B:-A decrease in tumor mass and re-oxygenation
- C:-Increased apoptosis
- D:-Favorer DNA repair

Correct Answer:- Option-D

Question85:-Spinal cord tolerance in radiotherapy

- A:-35 Gy
- B:-45 Gy
- C:-55 Gy
- D:-65 Gy

Correct Answer:- Option-B

Question86:-SBRT is

- A:-Systemic Based Radiotherapy
- B:-Stereotactic Based Radiotherapy
- C:-Stereotactic Body Radiotherapy
- D:-Systemic Body Radiotherapy

Correct Answer:- Option-C

Question87:-All can be used in cancer treatment except

- A:-Proton therapy
- B:-Neutron therapy
- C:-Carbon ions
- D:-Nitrogen ions

Correct Answer:- Option-D

Question88:-HDR (High Dose Rate) brachytherapy is

- A:->12 Gy/hour
- B:->10 Gy/hour
- C:->20 Gy/hour
- D:->22 Gy/hour

Correct Answer:- Option-A

Question89:-Brachytherapy technique is commonly used in all except

- A:-Cancer Cervix
- B:-Cancer Prostate
- C:-Cancer Buccal Mucosa
- D:-Cancer Brain

Correct Answer:- Option-D

Question90:-ICRU (International Commission on Radiation Units and Measurements) 38 defines

- A:-IMRT
- B:-3DCRT
- C:-Brachytherapy
- D:-IGRT

Correct Answer:- Option-C

Question91:-Radiopharmaceuticals include all except

- A:-Iodine-131
- B:-Phosphorus-32
- C:-Strontium-89
- D:-Radium-203

Correct Answer:- Option-D

Question92:-In nasopharyngeal carcinoma, gross disease is given a total dose of

- A:-80 Gy
- B:-70 Gy
- C:-60 Gy
- D:-54 Gy

Correct Answer:- Option-B

Question93:-Left parotid gland radiation treatment is conventionally planned in which treatment position ?

- A:-Supine with neck extended
- B:-Supine with neck flexed
- C:-Supine with head turned to left
- D:-Supine with head turned to right

Correct Answer:- Option-D

Question94:-Level IV neck node include

- A:-Upper deep cervical lymph nodes
- B:-Lower deep cervical lymph nodes
- C:-Middle deep cervical lymph nodes
- D:-None of the above

Correct Answer:- Option-B

Question95:-Palliative radiotherapy common schedules to spine metastasis include

- A:-50 Gy/25 fractions/5 weeks
- B:-65 Gy/20 fractions/5 weeks
- C:-30 Gy/10 fractions/2 weeks
- D:-None of the above

Correct Answer:- Option-C

Question96:-In breast planning, brachial plexus dose volume constraints is kept at

- A:-maximum 54 Gy
- B:-Mean dose 54 Gy
- C:-Maximum 44 Gy
- D:-Mean dose 44 Gy

Correct Answer:- Option-A

Question97:-Neo adjuvant radiotherapy is used for down staging and functional preservation in treatment of

- A:-astrocytoma brain
- B:-cancer lung
- C:-cancer rectum
- D:-none of the above

Correct Answer:- Option-C

Question98:-Which chemotherapy drug is not used in concurrent chemo radiotherapy for anal cancer ?

- A:-Adriamycin
- B:-Mitomycin C
- C:-5-fluorouracil
- D:-Cyclophosphamide

Correct Answer:- Option-A

Question99:-Early vocal cord cancers can be treated by all except

- A:-Radical radiotherapy
- B:-Trans oral laser micro surgery

C:-Trans oral robotic surgery

D:-Total laryngectomy

Correct Answer:- Option-D

Question100:-Superior border in cancer cervix, external beam radiotherapy planning is taken as

A:-L2-L3 vertebral inter space

B:-L3-L4 vertebral inter space

C:-L5-S1 vertebral inter space

D:-None of the above

Correct Answer:- Option-B