

FINAL ANSWER KEY

Question Paper Code:	28/2023/OL
Category Code:	063/2021
Exam:	X-Ray Technician
Medium of Question:	English
Date of Test	14-02-2023
Department	Animal Husbandry
Alphacode	A

Question1:-'The body of a person who gets an electric shock is to be massaged well'. Reason for this statement is based on which property of blood ?

- A:-Capillarity
- B:-Density
- C:-Elasticity
- D:-Viscosity

Correct Answer:- Option-D

Question2:-The direction of current in an ac generator is given by

- A:-Gauss's law
- B:-Fleming's right hand rule
- C:-Cork-screw rule
- D:-Ampere's law

Correct Answer:- Option-B

Question3:-Pick out the unit of permeability.

- A:- $(Tm)/(A^2)$
- B:- $(Tm)/(A)$
- C:-TmA
- D:- $(Am)/(T)$

Correct Answer:- Option-B

Question4:-A capacitor is used in the primary circuit of an induction coil

- A:-To block dc and allow ac
- B:-To supply voltage to the circuit
- C:-To avoid sparking by the high induced voltage
- D:-To eliminate electric ripples

Correct Answer:- Option-C

Question5:-The current passing through a galvanometer is 30 mA, resistance of the galvanometer is 50Ω and a shunt 1Ω is connected to the galvanometer. Maximum current that can be measured by the ammeter is

- A:-1.53 A
- B:-15.3 A
- C:-0.153 A
- D:-153 A

Correct Answer:- Option-A

Question6:-Read the following statements :

Statement 1 : Regurgitation of ingested food and rumination of food boluses is a feature in ox.

Statement 2 : Wall of oesophagus is made up of entirely skeletal muscle in ox.

- A:-Statement 1 and 2 are correct and 2 is the correct explanation for the statement 1
- B:-Statement 1 and 2 are correct and 2 is not the correct explanation for the statement 1
- C:-Only statement 1 is correct
- D:-Only statement 2 is correct

Correct Answer:- Option-A

Question7:-Site of intravenous injection in dogs are

- i. Cephalic vein in the hind limb.
- ii. Saphenous vein in the hind limb.
- iii. Cephalic vein in the fore limb.
- iv. Saphenous vein in the fore limb.

- A:-Only i and ii
- B:-Only i and iv
- C:-Only ii and iii
- D:-None of the options

Correct Answer:- Option-C

Question8:-Protein synthesis occurs within the rough endoplasmic reticulum of the cell. However, the concentration and post-translational modification of protein occurs within the cell organelle known as

- A:-Smooth Endoplasmic reticulum
- B:-Golgi body
- C:-Mitochondria
- D:-Lysosome

Correct Answer:- Option-B

Question9:-Cerebrospinal Fluid (CSF) is continuously produced within the Central Nervous System (CNS). The anomalous condition hydrocephalus is produced by

- i. Increased production as well as drainage of CSF from the CNS.
- ii. Increased production and reduced drainage of CSF from the CNS.
- iii. Normal production of CSF and blockage of CSF drainage from the CNS.
- iv. Normal production of CSF and normal drainage of CSF from the CNS.

- A:-Only i and ii
- B:-Only ii and iii
- C:-Only i and iv
- D:-Only ii and iv

Correct Answer:- Option-B

Question10:-Read the following statements :

Statement 1 : External surface of the kidney reveal polygonal lobes in ox and its longitudinal section exhibits many pyramids in the medulla.

Statement 2 : Complete fusion of different kidney lobes occurs in ox.

- A:-Statement 1 and 2 are correct and 2 is the correct explanation for the statement 1
- B:-Statement 1 and 2 are correct and 2 is not the correct explanation for the statement 1
- C:-Only statement 1 is correct
- D:-Only statement 2 is correct

Correct Answer:- Option-C

Question11:-Adam's apple is a large laryngeal prominence on the larynx in man. The laryngeal prominence is located on which laryngeal cartilage ?

- A:-Arytenoid
- B:-Cricoid
- C:-Thyroid
- D:-Epiglottis

Correct Answer:- Option-C

Question12:-Which of the following statement is/are correct for the lining epithelium of the trachea ?

- i. Pseudo stratified epithelium.
- ii. Stratified columnar epithelium.
- iii. Stratified epithelium.
- iv. Ciliated columnar epithelium.

- A:-Only i and ii
- B:-Only i and iii
- C:-Only ii and iv
- D:-Only i and iv

Correct Answer:- Option-D

Question13:-Which of the following statement is/are correct ?

- i. Patella is a sesamoid bone of hock joint.
- ii. Femur is the bone of leg region.
- iii. Patella is a sesamoid bone of stifle joint.
- iv. Tibia is the bone of leg region.

- A:-Only i and ii
- B:-Only iii and iv
- C:-Only ii and iv
- D:-Only i and iv

Correct Answer:- Option-B

Question14:-Which of the following statement is/are correct for the cheek teeth in ruminants ?

- i. Table surface of the cheek teeth show semilunar ridges.
- ii. Table surface of the cheek teeth show longitudinal ridges.
- iii. Cheek teeth are hypsodont type.
- iv. Cheek teeth are brachydont type.

- A:-Only ii and iii
- B:-Only ii and iv
- C:-Only i and iii

D:-Only i and iv

Correct Answer:- Option-C

Question15:-Which among the following function as both an endocrine and exocrine gland ?

i. Pancreas

ii. Thyroid

iii. Parathyroid

iv. Ovary

A:-Only i

B:-Only ii and iv

C:-Only i and iv

D:-Only ii

Correct Answer:- Option-C

Question16:-The ratio of protein and lipid composition in cell membrane of human erythrocyte is approximately

A:-52% protein and 40% lipid

B:-50% protein and 50% lipid

C:-42% protein and 50% lipid

D:-25% protein and 35% lipid

Correct Answer:- Option-A

Question17:-Select the correct sequence in enzymatic digestion of DNA.

A:-Nucleotides → Nucleosides → Nucleic acid

B:-Nucleic acid → Nucleotides → Nucleosides

C:-Nucleic acid → Nucleosides → Nucleotides

D:-Nucleosides → Nucleotides → Nucleic acid

Correct Answer:- Option-B

Question18:-Receptors associated with aortic arch and carotid artery involved in regulation of

A:-Neural system

B:-Hormonal system

C:-Cardiovascular system

D:-Respiratory system

Correct Answer:- Option-D

Question19:-Select the correct pair.

A:-Hormone - Second messenger

B:-Crypts of Lieberkuhn - Large intestine

C:-Succus entericus - Small intestine

D:-Oxytocin - Placenta

Correct Answer:- Option-C

Question20:-Which of the following statement is/are correct ?

i. Approximately 1100 - 1200 ml of blood is filtered by the kidneys per minute.

ii. GFR in a healthy individual is about 125 ml/minute.

iii. The osmolarity gradient towards inner medullary interstitium of kidney is mainly caused by NaCl and $\text{HCO}^{(-)3}$

A:-Only i and ii

B:-Only iii

C:-Only ii and iii

D:-All of the above

Correct Answer:- Option-A

Question21:-Which of the following is true ?

A:-1 amu = 931 MeV

B:-1 eV = $1.602 \times 10^{(-19)}$ J

C:- E_0 = 0.511 MeV

D:-All of the above

Correct Answer:- Option-D

Question22:-Ionisation is followed by the emission of

A:-X-radiation

B:-Gamma radiation

C:-Visible or UV radiation

D:-All of the above

Correct Answer:- Option-A

Question23:-SI Unit for absorbed dose is

A:-Gray

B:-rem

C:-Sievert

D:-Roentgen

Correct Answer:- Option-A

Question24:-Pre reading kilovoltmeter is used in

A:-Filament circuit

B:-High voltage circuit

C:-Autotransformer

D:-Both 1 and 2

Correct Answer:- Option-B

Question25:-eLORA stands for

A:-e Licensing for Radiation Accreditation

B:-electronic Licensing for Rated Accreditation

C:-e Location of Radiation Accreditation

D:-e Licensing of Radiation Application

Correct Answer:- Option-D

Question26:-The following are examples of Einstein's mass energy equivalence theory

A:-Annihilation radiation

B:-Pair production

C:-Nuclear fission

D:-All of the above

Correct Answer:- Option-D

Question27:-The relationship between the voltage (V) applied to an X-ray tube and the maximum frequency ν of the X-rays emitted from the target.

A:-Duane Hunt Law

B:-Reciprocity law

C:-Inverse square law

D:-All of the above

Correct Answer:- Option-A

Question28:-The following type of target are used in megavoltage X-ray tubes

A:-Reflection type of target

B:-Rotating type target

C:-Transmission type target

D:-Fixed type target

Correct Answer:- Option-C

Question29:-Low energy X-ray spectrum is required in

A:-Dental Radiography

B:-OPG

C:-Fluoroscopy

D:-Mammography

Correct Answer:- Option-D

Question30:-X-ray quantity is the

A:-Penetration of X-ray beam

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

C:-Energy of electrons striking the target

D:-All of the above

Correct Answer:- Option-B

Question31:-Punched out lytic lesions in X-ray skull is seen in

A:-Chondrosarcoma

B:-Prostate cancer

C:-Multiple myeloma

D:-Osteosarcoma

Correct Answer:- Option-C

Question32:-Most common oral cavity cancer is

A:-Adenocarcinoma

B:-squamous cell carcinoma

C:-Papilloma

D:-Mucinous carcinoma

Correct Answer:- Option-B

Question33:-The following mammary gland tumor is benign

- A:-Fibroadenoma
 - B:-Fibrosarcoma
 - C:-Angiosarcoma
 - D:-Lobular carcinoma
- Correct Answer:- Option-A

Question34:-Rat tail appearance in barium swallow is seen in

- A:-Esophageal cancer
- B:-Colon cancer
- C:-Jejunal cancer
- D:-Rectal cancer

Correct Answer:- Option-A

Question35:-Basal cell carcinoma is commonly seen in

- A:-Stomach
- B:-Skin
- C:-Liver
- D:-Kidney

Correct Answer:- Option-B

Question36:-Concept of annihilation photons is used in

- A:-CT
- B:-MRI
- C:-USG
- D:-PET scan

Correct Answer:- Option-D

Question37:-Edge enhancement is a phenomenon related to

- A:-Radiographic film
- B:-Gafchromic film
- C:-Xeroradiography
- D:-Gel dosimetry

Correct Answer:- Option-C

Question38:-Range of density in a medical radiograph

- A:-7 to 8
- B:-0.25 to 2
- C:-2.5 to 5
- D:-2 to 10

Correct Answer:- Option-B

Question39:-Commonly used fixing agent is

- A:-Hydroquinone
- B:-Sodium thiosulphate
- C:-Sodium sulphite
- D:-Potassium bromide

Correct Answer:- Option-B

Question40:-Mammography system uses

- A:-Low KVP
- B:-High KVP
- C:-Tungsten target
- D:-Aluminium filter

Correct Answer:- Option-A

Question41:-Rotate - Rotate geometry is used in _____ generation CT scanners.

- A:-First generation
- B:-Second generation
- C:-Third generation
- D:-Fourth generation

Correct Answer:- Option-C

Question42:-The parallel component in an ultrasonic beam beyond which it disperses is called

- A:-Fresnel zone
- B:-Fraunhofer zone
- C:-Pressure zone
- D:-All of the above

Correct Answer:- Option-A

Question43:-Photostimulable phosphor imaging is the basis of

- A:-MRI
 - B:-Ultrasound
 - C:-Computed radiography
 - D:-Digital radiography
- Correct Answer:- Option-C

Question44:-Larmor Precession Frequency is relevant in

- A:-Nuclear medicine
 - B:-CT
 - C:-MRI
 - D:-USG
- Correct Answer:- Option-C

Question45:-Negative effect in film contrast is due to

- A:-Photoelectric effect
 - B:-Compton effect
 - C:-Pair production
 - D:-Photo disintegration
- Correct Answer:- Option-B

Question46:-Characteristic curve shifts towards _____ for shorter development time.

- A:-Left
 - B:-Right
 - C:-No change
 - D:-Down
- Correct Answer:- Option-B

Question47:-The optimal development time to get high gamma, good speed and minimal fog level is

- A:-0-2 minutes
 - B:-5-8 minutes
 - C:-10-15 minutes
 - D:-None of the above
- Correct Answer:- Option-B

Question48:-Location of radiodiagnostic dark room.

- A:-Central
 - B:-Rt corner
 - C:-Left corner
 - D:-Front
- Correct Answer:- Option-A

Question49:-Base of intensifying screen consists of

- A:-Polyester
 - B:-Cesium iodide
 - C:-Barium acetate
 - D:-Cellulose nitrate
- Correct Answer:- Option-A

Question50:-Single coated X-ray films are used in all of the following except

- A:-Mammography
 - B:-CT films
 - C:-Skull X-ray
 - D:-Fluoroscopy
- Correct Answer:- Option-C

Question51:-Function of fixer in film processing is

- A:-Dissolve unexposed and under developed silver halide crystals
 - B:-Preserve the film image
 - C:-Hardens the film emulsion
 - D:-All of the above
- Correct Answer:- Option-D

Question52:-X-ray film is most sensitive to which part of the light spectrum ?

- A:-Blue - Green
- B:-Yellow - Red
- C:-Purple - Green
- D:-Orange - Red

Correct Answer:- Option-A

Question53:-For pregnant radiation workers exposure of radiation should not exceed

- A:-20 mSv
- B:-2 mSv
- C:-1 mSv
- D:-6 mSv

Correct Answer:- Option-C

Question54:-10 day rule is applicable in

- A:-Radiography
- B:-USG
- C:-MRI
- D:-All of the above

Correct Answer:- Option-A

Question55:-The appropriate attitude towards a patient in a hospital would be

- A:-Sympathy
- B:-Empathy
- C:-Antipathy
- D:-Apathy

Correct Answer:- Option-B

Question56:-Patient effective dose in interventional radiology

- A:-0.1 - 1 mSv
- B:-2 - 20 mSv
- C:-1 - 100 mSv
- D:-0.005 - 0.1 mSv

Correct Answer:- Option-C

Question57:-Total radiation safety is achieved by

- A:-Built in safety + operational safety
- B:-Built in safety + industrial safety
- C:-Built in safety + laser safety
- D:-All of the above

Correct Answer:- Option-A

Question58:-The current AERB recommendations regarding periodicity of quality assurance tests for radiography equipments.

- A:-Once in two years
- B:-Once in four years
- C:-Once in five years
- D:-Yearly

Correct Answer:- Option-A

Question59:-TLD renewal frequency is

- A:-2 months
- B:-3 months
- C:-6 months
- D:-Yearly

Correct Answer:- Option-B

Question60:-The wall of dark room should have lead equivalent thickness of

- A:-1.5 mm
- B:-2.5 mm
- C:-0.5 mm
- D:-4.0 mm

Correct Answer:- Option-A

Question61:-The following position is used for storage of unexposed X-ray films to reduce artifacts

- A:-Horizontal
- B:-Vertical
- C:-Both 1 and 2
- D:-None of the above

Correct Answer:- Option-B

Question62:-Barium swallow is used for

- A:-Colon
- B:-Oesophagus

C:-Duodenum

D:-Jejunum

Correct Answer:- Option-B

Question63:-The usual thickness of radiographic film is about

A:-0.05 mm

B:-0.75 mm

C:-0.25 mm

D:-1.00 mm

Correct Answer:- Option-C

Question64:-Safe light distance from the processing tank should not be less than

A:-10 cm

B:-120 cm

C:-50 cm

D:-80 cm

Correct Answer:- Option-B

Question65:-Which of the following is negative side in the X-ray tube ?

A:-Cathode

B:-Anode

C:-Both

D:-None of the above

Correct Answer:- Option-A

Question66:-The side of the body part closest to the midline is

A:-Medial

B:-Lateral

C:-Posterior

D:-Anterior

Correct Answer:- Option-A

Question67:-The part of the body touching the image receptor in a right posterior oblique projection is

A:-Left anterior

B:-Left posterior

C:-Right posterior

D:-Right anterior

Correct Answer:- Option-C

Question68:-Geometric unsharpness can be reduced by

A:-Reducing the object film distance

B:-Using small focal spot size

C:-Using large focal spot size

D:-Both 1 and 2

Correct Answer:- Option-D

Question69:-In radiography of glenohumeral joint, the plane of glenoid fossa is made perpendicular to the cassette by rotating the patient by

A:-5 degree

B:-30 degree

C:-45 degree

D:-90 degree

Correct Answer:- Option-B

Question70:-Frog leg position is used in

A:-AP view of both knees

B:-AP view of both foot

C:-Lateral view of both hips

D:-Lateral view of both knees

Correct Answer:- Option-C

Question71:-Non screen film is used in

A:-Mammography

B:-Intraoral radiography

C:-Cervical spine radiography

D:-Chest radiography

Correct Answer:- Option-B

Question72:-Towne's projection is

- A:-Fronto occipital 30 degree caudad
 - B:-Fronto occipital 30 degree cranial
 - C:-Occipito frontal 30 degree caudad
 - D:-Occipito frontal 30 degree cranial
- Correct Answer:- Option-A

Question73:-In occipito mental projection the petrous ridge should be projected

- A:-Above the orbit
 - B:-Through the orbit
 - C:-Through the maxillary sinus
 - D:-Below the maxillary sinus
- Correct Answer:- Option-D

Question74:-Autotomography is used in

- A:-Lateral view of thoracic spine
 - B:-Mandible radiography
 - C:-Cervical spine lateral view
 - D:-Both 1 and 3
- Correct Answer:- Option-A

Question75:-Atomic number of Barium is

- A:-63
- B:-53
- C:-56
- D:-75

Correct Answer:- Option-C

Question76:-Iohexol is

- A:-Nonionic dimer
- B:-Nonionic monomer
- C:-Ionic dimer
- D:-Ionic monomer

Correct Answer:- Option-B

Question77:-Bilbao-Dotter tube is used in

- A:-Enterography
- B:-Enteroclysis
- C:-Barium meal follow through
- D:-Barium enema

Correct Answer:- Option-B

Question78:-T-tube cholangiography is performed on which post operative day

- A:-10
- B:-5
- C:-12
- D:-15

Correct Answer:- Option-A

Question79:-Hysterosalpingography is ideally performed on which day of menstrual cycle ?

- A:-6 - 11
- B:-10 - 14
- C:-14 - 17
- D:-20 - 24

Correct Answer:- Option-A

Question80:-Contrast used in cisternography is

- A:-Ioxaglate
- B:-Sodium diatrizoate
- C:-Iotrolan
- D:-Iohexol

Correct Answer:- Option-D

Question81:-Deterministic effects of radiation include all except

- A:-Cataract
- B:-Hair loss
- C:-Leukemia
- D:-Skin discolouration

Correct Answer:- Option-C

Question82:-Effective dose of a typical barium enema examination in mSv is

- A:-3
- B:-5
- C:-7
- D:-9

Correct Answer:- Option-C

Question83:-Advantages of thermoluminescent dosimeters are all except

- A:-They can be reused
- B:-They can be used to measure both shallow and deep doses
- C:-They can be used to monitor eye doses
- D:-They can measure dose rates

Correct Answer:- Option-D

Question84:-Which of the following statement is true regarding the grid ?

- i. Interspace is filled with Aluminium
- ii. Interspaces are usually thicker than the lead strips
- iii. The grid ration is the ratio between the height of lead strips and the distance between them
- iv. Reduces the scatter dose to the patient

- A:-Only i is correct
- B:-i and ii are correct
- C:-i, ii and iii are correct
- D:-All are correct

Correct Answer:- Option-C

Question85:-Effective focal spot is influenced by

- A:-Target angle
- B:-Target size
- C:-Filament angle
- D:-All of the above

Correct Answer:- Option-A

Question86:-The technique of radiography in which the part to be visualized remains stationary during exposure while overlying structures produce unsharp images due to its motion is called

- A:-Computed tomography
- B:-Autotomography
- C:-Orthopantomography
- D:-Stationary radiography

Correct Answer:- Option-B

Question87:-Which of the following statement is true ?

- A:-Optimisation is benefit vs risk determination
- B:-Justification is benefit vs risk determination
- C:-A pregnant patient can not have radionuclide imaging
- D:-Lead apron used in intervention radiology is 0.35 mm lead equivalent

Correct Answer:- Option-B

Question88:-Scattered radiation reaching the film can be reduced by which of the following ?

- i. A high tube kV
- ii. A moving grid
- iii. Using tubes with high heat rating
- iv. Using cones and cylinders

- A:-i and iii
- B:-ii and iv
- C:-All of the above
- D:-None of the above

Correct Answer:- Option-B

Question89:-Advantage of high kV radiography is

- A:-Scattered radiation is increased
- B:-Greater exposure latitude
- C:-Increasing the electrical loading of X-ray tube
- D:-Radiation dose to the patient is reduced

Correct Answer:- Option-D

Question90:-Advantages of compressing the breast tissue in mammography is all except

- A:-It reduces the total volume of breast
- B:-It reduces the proportion of scattered radiation reaching the breast

- C:-Reduces the dose to the breast
 - D:-Uniformly distributes the soft tissue of the breast
- Correct Answer:- Option-A

Question91:-Which of the following statement is true regarding photostimulable phosphor plates ?

- A:-Made up of Europeum activated barium fluorohalide
- B:-Final image density depends only on the exposure factor used
- C:-Image is read by continuous sampling
- D:-Double emulsion film is used as image plate

Correct Answer:- Option-A

Question92:-In digital radiography, false statement is

- A:-The charged coupled device converts photons into an electric signal
- B:-Image windowing can be altered after the image has been taken
- C:-The digital image is made up of pixels
- D:-The digital image can be directly displayed on a monitor

Correct Answer:- Option-D

Question93:-Digital image acquisition and processing can be used by the following modalities

- i. CT
- ii. MRI
- iii. PET
- iv. SPECT

- A:-Only i
- B:-i and ii
- C:-i, ii and iii
- D:-All of the above

Correct Answer:- Option-D

Question94:-Typical effective dose of a CT head examination is

- A:-2 mSv
- B:-8 mSv
- C:-0.02 mSv
- D:-100 mSv

Correct Answer:- Option-A

Question95:-As the pitch factor in CT decreases, effective radiation dose to the body

- A:-Increases
- B:-Decreases
- C:-Remains same
- D:-None of the above

Correct Answer:- Option-A

Question96:-Which among the following statement is true regarding the CT number ?

- A:-The CT number of white matter and gray matter of brain is same
- B:-CT number of air is 0
- C:-It represents the linear attenuation coefficient in each pixel
- D:-The CT number of water is - 1000

Correct Answer:- Option-C

Question97:-True statement regarding diagnostic ultrasound is

- A:-It is audible to human
- B:-It uses frequencies between 2 - 15 MHz
- C:-It is not propagated as a wave
- D:-The speed of ultrasound remains same in different tissues

Correct Answer:- Option-B

Question98:-Contraindication for MRI examination is

- A:-Orthopaedic implant
- B:-Cochlear implant
- C:-Prosthetic heart valve
- D:-Titanium implants

Correct Answer:- Option-B

Question99:-In MRI, scan time depends on

- i. TR
- ii. Number of frequency encoding steps
- iii. NEX
- iv. TE

A:-i and iv

B:-i, iii and iv

C:-i, ii and iii

D:-All of the above

Correct Answer:- Option-C

Question100:-Which among the following is not an artifact in fluoroscopy ?

A:-Lag

B:-Vignetting

C:-Pincushion distortion

D:-Beam hardening

Correct Answer:- Option-D