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B.Sc. (BMIT)*1st Year Examination***Radiography, Anatomy and Physiology applied to Radiography
& Basic views***Time : 3 Hours]**[Max. Marks : 75**Note: Attempt all questions. Make diagrams wherever required.***SECTION - A (Radiography)**

1. Discuss the principle of ultrasound and describe various types of transducers. [10
2. Write short notes on: [5×3=15
 - (i) Radiation monitoring device (TLD)
 - (ii) X-Ray Room lay out
 - (iii) Rotating anode X-Ray Tube

SECTION - B (Anatomy)

1. Classify glands. Describe thyroid gland in detail. [10
2. Write short notes on: [5×2=10
 - (i) Cerebellum
 - (ii) Humerus bone
3. Enumerate:- [1×5=5
 - (i) Parts of brain stem
 - (ii) Types of synovial joint
 - (iii) Parts of a nephron
 - (iv) Differences between small and large intestine
 - (v) Types of bones

SECTION - C (Physiology)

1. Draw diagrams different types of WBC. Write down 2 functions of each cell. [10]
2. Write short notes on: [5×3=15]
 - (i) Functions of spinal cord
 - (ii) Hormones of pancreas
 - (iii) Vital capacity

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B.Sc. (M.I.T.)

Ist Year Examination**HUMAN ANATOMY AND PHYSIOLOGY**

Time : 3 Hours]

[Max. Marks : 70

*Note: Draw well labeled diagram wherever necessary***Section –A (ANATOMY) (30 Marks)****1. Attempt any five MCQs. select the correct choice as [2x5=10] applicable**

- a. Knee joint is
 - (i) Synovial joint
 - (ii) Cartilaginous joint
 - (iii) Fibrous joint
 - (iv) None of the above
- b. Radial nerve supplies muscles of
 - (i) Lower limb
 - (ii) Upper limb
 - (iii) Thorax
 - (iv) Abdomen
- c. Mitochondria are present in
 - (i) Nucleus
 - (ii) cytoplasm
 - (iii) Nucleolus
 - (iv) None of the above
- d. Number of cranial nerves is
 - (i) 24 pairs
 - (ii) 10 pairs
 - (iii) 12 pairs
 - (iv) 25 pairs
- e. Left ventricle has
 - (i) Oxygenated blood
 - (ii) Deoxygenated blood
 - (iii) Mixed blood
 - (iv) None of the above
- f. Cerebrum has
 - (i) Sulci
 - (ii) Gyri
 - (iii) Both sulci and gyri
 - (iv) None of the above

2. Fill in blanks. Attempt all**[2x5=10]**

- (a) Ascending colon is a part of intestine
- (b) thyroid gland is gland
- (c) Left subclavian artery is a branch of
- (d) Hip joint is a type of joint.

(e) Uterus is a part of genital system.

3. Write true or false. Attempt all

[2x5=10]

- (a) Right lung has one fissure.
- (b) Inferior vena cava opens in right atrium.
- (c) Testis is not a male genital organ.
- (d) Trachea has hyaline cartilage.
- (e) Ureter does not open in urinary bladder.

Section – B (PSHYSIOLOGY) (40 Marks)

4. Attempt any four of the following

[5x4=20]

- (a) Differentiate between Iron deficiency & Megaloblastic anemia.
- (b) Enumerate the functions of liver.
- (c) Discuss the functions of pulmonary surfactant & its clinical significance.
- (d) Describe the functions of saliva.
- (e) Enumerate the functions of stomach.

5. Attempt any two of the following:

[10x2=20]

- (a) Describe the different phases of Menstrual cycle.
- (b) Define blood pressure. Describe the short term regulation of blood pressure.
- (c) List the hormones of anterior pituitary gland. Describe the functions of growth hormone.

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B.Sc.-MIT**(1st Year) EXAMINATION**

**FUNDAMENTAL OF MEDICAL IMAGING & BASIC
RADIATION PHYSICS**

Time : 3:00 Hours]

[Max. Marks : 70

**Note:- All question are compulsory. Make diagrams wherever required.
Read the instructions carefully.**

1. Attempt any five MCQs. Select the correct choice. [2×5=10]

i) Skyline view is done for:

- | | |
|------------|-------------------|
| a) Scapula | b) Glenoid cavity |
| c) Patela | d) Calcenium |

ii) X-ray was discovered on:

- | | |
|---------|---------|
| a) 1895 | b) 1995 |
| c) 2005 | d) 1896 |

iii) Which of the following is the sensitive material in radiology department?

- | | |
|----------------------|--------------|
| a) x-ray cassette | b) developer |
| c) Radiographic film | d) Dark room |

iv) Area required for x-ray room layout (design) is:

- | | |
|-------------------------|------------------------|
| a) 18-25cm ² | b) 18-25m ² |
| c) 30-50 inches | d) 25 feet |

v) The first stage of film development is:

- | | |
|--------------|------------|
| a) Fixer | b) Washing |
| c) Developer | d) Drying |

vi) Centering of X-ray KUB is:

- | | |
|-----------------------|------------------|
| a) At umblicus | b) At sternum |
| c) At symphysis pubis | d) 13 at glabela |

2. Fill in the blanks. Attempt all.

[2×5=10

i) Atoms having same atomic number but different mass number is known as.....

ii) The process by which AC is converted to DC is known as.....

- iii) X-rays was discovered by.....
- iv) Unit of radioactivity is.....
- v) Filament of x-ray tube is made up of.....

3. True or false. Attempt all.

[2×5=10]

- i) The difference between soft and hard x-ray is of velocity.
- ii) The quality of x-rays depends on anode angle, atomic number, kVp.
- iii) W.C. roentgen was Canadian technologist.
- iv) In photoelectric emission, patient dose is high.
- v) Isobar are those elements which have different atomic number but same mass number.

4. Attempt any four of the following.

[5×4=20]

- i) Properties of X-ray.
- ii) Drawback of Boher's atomic model.
- iii) Film Developing & processing.
- iv) Dark room design.
- v) Krichoff's law
- vi) Electromagnetic spectrum

5. Attempt any two of the following.

[10×2=20]

- i) Explain the Semiconductors and Semiconductor devices.
- ii) Discuss the methods of Radiation Protection of patients, radiation workers and public.
- iii) Explain the Rutherford's atomic model of atom.

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B.Sc.-MIT

**(1st Year) EXAMINATION
MEDICAL BIOCHEMISTRY**

Time : 3:00 Hours]

[Max. Marks : 70

**Note:- All question are compulsory. Make diagrams wherever required.
Read the instructions carefully.**

1. Attempt any five MCQs. Select the correct choice. [2×5=10]

- i) Cellulose is a polymer of:
 - a) α -D Glucose
 - b) β -D Glucose
 - c) Both
 - d) None
- ii) VLDL synthesized in
 - a) Liver
 - b) Intestine
 - c) Blood circulation
 - d) None
- iii) Hydroxyl group containing amino acid is:
 - a) Serine
 - b) Valine
 - c) Glycine
 - d) Alanine
- iv) The Hormone Oxytocin secreted by:
 - a) Pancreas
 - b) Pituitary
 - c) Peneal
 - d) Thyroid
- v) fluid mosaic model of cell membrane is given by
 - a) Singer and Nicolson
 - b) Emil fisher
 - c) Robert Hook
 - d) Robert brown
- vi) Non-protein part of enzymes are
 - a) Cofactor
 - b) Coenzyme
 - c) A poenzyme
 - d) None

2. Fill in the blanks. Attempt all.

[2×5=10

- i) Bile salts synthesized in.....
- ii) Epimer of glucose is.....
- iii) Spectrometer works on principle of.....
- iv) Active transport require for the transportation.

v) Aromatic Amino acid is.....

3. True or false. Attempt all.

|2×5=10

- i) LDL is synthesized in intestine.
- ii) NADPH is the product of HMP shunt.
- iii) Insulin regulate the blood glucose level.
- iv) Carnitine shuttle is used for the transport of fatty acid.
- v) Myoglobin is a secondary structured of protein.

4. Attempt any four of the following.

|5×4=20

- i) Describe β -oxidation of fatty acid and its regulation.
- ii) Define Gluconeogenesis and its regulation.
- iii) What is protein? Describe secondary and tertiary structure of protein.
- iv) Write principle, working process and application of electrophoresis.
- v) Describe factors which affect the enzyme activities?

5. Attempt any two of the following.

|10×2=20

- i) What is Lipids? Describe classification and functions of Lipids.
- ii) Describe Urea cycle and its regulation.
- iii) Write working principle, application and process of GM counter and ELISA.

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B.Sc.-MIT**(1st Year) EXAMINATION****BASICS RADIOGRAPHY AND RADIOGRAPHIC EQUIPMENTS****Time : 3:00 Hours]****[Max. Marks : 70**

**Note:- All question are compulsory. Make diagrams wherever required.
Read the instructions carefully.**

1. Attempt any five MCQs. Select the correct choice. [2×5=10

- i) Film badge is used for:
 - a) Radiation protection
 - b) To measure personnel radiation dose
 - c) To record the film
 - d) To expose of film
- ii) In photoelectric emission, patient dose is:
 - a) High
 - b) Low
 - c) Medium
 - d) No effect
- iii) The x-ray tube said to be "gassy" when:
 - a) Filament has burnt out
 - b) Presence of the gass molecule
 - c) Pitting of the anode
 - d) None of the above
- iv) In PA projection of hand, it is:
 - a) Pronated
 - b) Supinated
 - c) Everted
 - d) Flexed
- v) The grid is not necessary in making a radiograph of:
 - a) Lateral pelvis
 - b) AP lumbar spine
 - c) Lateral cervical spine
 - d) AP view of pelvis
- vi) The leakage radiation is that radiation which comes out:
 - a) Through glass window
 - b) Through tube housing
 - c) Both above
 - d) None of the above

2. Fill in the blanks. Attempt all.

[2×5=10

- i) Hallux view basically done for.....
- ii) Another name for the seventh cervical vertebra is.....

iii) Stryker's view is done for.....

iv) Function of the grid to.....

v) Filament in x-ray tube emits electron by process known as.....

3. True or false. Attempt all.

[5×5=25] [2×5=10]

i) X-ray tube are surrounded by lead to absorb unwanted radiation.

ii) The threshold energy for pair production is 1.022 MeV.

iii) The central ray location for a Towne's method is 2 inches above glabella.

iv) To do a medial oblique projection of the elbow bend the elbow 45 degrees.

v) Fixer is not important in x-ray film development.

4. Attempt any four of the following.

[5×4=20]

i) Radiographic of mandible

ii) Photoelectric effects.

iii) Cassettes.

iv) Intensifying screen

v) Radiography of cervical spine.

5. Attempt any two of the following.

[10×2=20]

i) Write the basic view of lumbar spine and explain about it in detail.

ii) Explain various steps involved in x-ray film processing. Discuss the theory of latent image, its development and fixing.

iii) Describe the interaction of ionizing radiation with matter. Discuss the role of beam limiting devices in Radiology.