

B. Sc Cardiac Technology 1st Year

(BF/2014/09)

Anatomy

M.M. : 80

Time : 3 Hours

Note : **Attempt all questions.**

Each section to be attempted in a separate answer book.

Section-A

Write about the following:

1. What are the different types of cartilages in the body? Describe briefly giving examples of each one. [5]
2. Describe the movements taking place at a joint. Give examples. [5]
3. Describe the structure of the Tracheal wall. What is the extent of trachea? [5]
4. Name the artery of the upper limb. What are its important branches? Which artery do we feel at the wrist for the pulse. [5]
5. Describe briefly the course and branches of the right coronary artery. [5]
6. What is known as "The pacemaker" of the heart? How is the electrical impulse transmitted through the cardiac muscle? [5]
7. Name the different chambers of the heart. Describe briefly the right atrium of the heart. [5]
8. Classify bones according to their structure and shape. What are the parts of a long bone. [5]

Section -B

Write about the following:

1. What are the main differences between small intestine and large intestine? [5]
 2. Describe the position and different parts of the stomach. Draw a diagram and label it to show the parts. [5]
 3. Write briefly the function of the ovary. What is ovarian cycle? [5]
 4. Describe briefly the supra renal gland. Name the hormones produced by its different parts. [5]
 5. Describe the structure of a neuron. Draw and label a diagram to show its different parts. [5]
 6. Describe briefly the urinary passage from the kidney to the urethra. [5]
 7. What is hind brain? Name the cavity which has in the hind brain. [5]
 8. Describe the position and extent of the spinal cord. Draw and label a transverse section of the spinal cord. [5]
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B. Sc Cardiac Technology 1st Year

(BF/2014/09)

Pathology and Microbiology

M.M. : 80

Time : 3 Hours

Note : **Attempt all questions.**

Each section to be attempted in a separate answer book.

Section-A

Write about the following:

1. What is EDTA? Describe its uses and disadvantages. [5]
2. Causes of Neutrophilia. [5]
3. Indications of bone marrow aspiration. [5]
4. Osmotic Fragility Test. [5]
5. Investigations done to diagnose autoimmune hemolytic anemia. [5]
6. Bile stained ova in stool. [5]
7. What is Hematocrit? Describe the test used for assessing hematocrit. [5]
8. Schilling test. [5]

Section -B

Write about the following:

1. Light Microscope. [5]
 2. Robert Koch. [5]
 3. Capsule. [5]
 4. Bacterial growth curve. [5]
 5. Plasmids. [5]
 6. Phenol disinfectants. [5]
 7. Cephalosporins. [5]
 8. Collection of urine samples from catheterized patients. [5]
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B. Sc Cardiac Technology 1st Year

(BF/2014/09)

Physiology including Biochemistry

M.M. : 80

Time : 3 Hours

Note : **Attempt all questions.**

Each section to be attempted in a separate answer book.

Section-A

Write about the following:

1. Discuss functions of cerebrospinal fluid (CSF). [5]
2. Enumerate factors affecting heart rate. [5]
3. What is chloride shift. [5]
4. Write a note on anti-coagulants. [5]
5. What are the functions of saliva. [5]
6. Describe spermatogenesis. [5]
7. Write a note on glomerular filtration rate. [5]
8. Explain errors of refraction. [5]

Section -B

Write about the following:

1. Write the principle, types & uses of various types of balances in Biochemistry. [5]
 2. Explain the principle and working of pH meter. [5]
 3. Write a short note on invert sugar. [5]
 4. What are phospholipids? Discuss their various types & their physiological importance. [5]
 5. Enumerate the nutritionally essential amino acids. [5]
 6. Write the differences between DNA & RNA. [5]
 7. **Define:** [5]
 - a. Normality
 - b. Molarity
 8. How will you prepare stock standard of 1gm/dl for glucose. [5]
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B.Sc Dialysis Technician 1st Year

(BF/2014/09)

Human Anatomy

M.M. : 80

Time : 3 Hours

Note: Each section to be attempted in a separate answer book.
Draw well labelled diagram wherever necessary.

Section-A

1. **Write about the following.** (All the five questions are compulsory) [5x5=25]
 - a. Sternal angel.
 - b. Deltoid muscle.
 - c. Histology of compact bone.
 - d. Synovial joints.
 - e. Muscles of intercostals space.

2. Attempt any one. Both questions carry equal marks.
 - a. Describe the kidney. [15]

OR

 - b. Describe the heart. [15]

Section -B

1. **Write about the following.** (All the five questions are compulsory) [5x5=25]
 - a. Vertebral column.
 - b. Nephron.
 - c. Histology of ureter.
 - d. Great saphenous vein.
 - e. Spinal nerve.

 2. Attempt any one. Both questions carry equal marks.
 - a. Describe the structure of skeletal muscle. [15]

OR

 - b. Describe the respiratory system of man. [15]
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B.Sc Dialysis Technician 1st Year

(BF/2014/09)

Human Physiology

M.M. : 80

Time : 3 Hours

Note: Each section to be attempted in a separate answer book.
Draw well labelled diagram wherever necessary.

Section-A

1. **Write about the following.** (All the five questions are compulsory) [5x5=25]
 - a. Difference between exocytosis & endocytosis?
 - b. Structure & function of haemoglobin?
 - c. Blood groups?
 - d. Cardiac output?
 - e. Non-respiratory functions of respiratory tract?
2. Attempt any one. Both questions carry equal marks.
 - a. Define blood pressure? How blood pressure is regulated in our body? [15]

OR

 - b. Definition and normal values of lung volumes and capacities? [15]

Section -B

1. **Write about the following.** (All the five questions are compulsory) [5x5=25]
 - a. Function of saliva?
 - b. Posterior pituitary hormones?
 - c. Structure & function of nephron?
 - d. Function of thyroid hormones?
 - e. Pancreatic juice?
 2. Attempt any one. Both questions carry equal marks.
 - a. Menstrual cycle. [15]

OR

 - b. Renal dialysis. [15]
-

B.Sc Dialysis Technician 1st Year

(BF/2014/09)

Human Biochemistry

M.M. : 80

Time : 3 Hours

Note: Each section to be attempted in a separate answer book.
Draw well labelled diagram wherever necessary.

Section-A

1. Write about the following. (All the five questions are compulsory) [5x5=25]
 - a. Define carbohydrates. Classify them giving examples.
 - b. **Discuss:**
 - a. Calorific value of foods.
 - b. Antibodies.
 - c. Draw the structure of a eukaryotic cell and label it.
 - d. Write short note on dialysis.
 - e. Explain the structure of DNA.
 2. Attempt any one. Both questions carry equal marks.
 - a. Define protein. Write different levels of organization of protein structure. [15]
- OR
- b. Name different fat soluble vitamins. Write in detail vitamin D. [15]

Section -B

1. Write about the following. (All the five questions are compulsory) [5x5=25]
 - a. Define lipids, classify them. Explain simple lipids.
 - b. **Write short notes on:**
 - a. Calcium (Ca)
 - b. Marasmus.
 - c. **Discuss:**
 - a. Osmosis.
 - b. Balanced diet.
 - d. Name different purine and pyrimidine bases. Draw the structure of tRNA.
 - e. Define Basal Metabolic Rate (BMR) and the factors affecting BMR.
 2. Attempt any one. Both questions carry equal marks.
 - a. Write in detail hormones of adrenal medulla and adrenal cortex. [15]
- OR
- b. Define enzyme. Classify them giving one example from each class. Write the factors affecting enzyme activity. [15]

B. Sc Operation Theatre Technology 1st Year

(BF/2014/09)

Anatomy

M.M. : 80

Time : 3 Hours

Note : **Each section to be attempted in a separate answer book.**

Section-A

1. **Write about the following.** (All the five questions are compulsory)
[5x5=25]
 - a. Functions of placenta.
 - b. Structure of mammary gland.
 - c. Histology of trachea.
 - d. Urinary bladder.
 - e. Parts and blood supply of stomach.

2. **Attempt any one. Both questions carry equal marks.**
 - a. Enumerate the Dural venous sinuses and describe in detail the cavernous sinus. [15]

OR

 - b. Give the formation, termination and tributaries of inferior vena caeve. [15]

Section -B

1. **Write about the following.** (All the five questions are compulsory)
[5x5=25]
 - a. Pancreas.
 - b. Greater Omentum.
 - c. Inguinal lymph nodes.
 - d. Synovial joints.
 - e. Types of cartilage and their histological structure.

 2. **Attempt any one. Both questions carry equal marks.**
 - a. Describe the formation and termination of portal veins. Add a note on its tributaries and portosystemic anastomoses. [15]

OR

 - b. Describe the coronary arteries. [15]
-

B. Sc Operation Theatre Technology 1st Year

(BF/2014/09)

Physiology

M.M. : 80

Time : 3 Hours

Note : Each section to be attempted in a separate answer book.

Section-A

1. Write about the following. (All the five questions are compulsory) [5x5=25]
 - a. Pain pathway.
 - b. Neuron structure.
 - c. Middle ear.
 - d. Hypothermia.
 - e. Saltatory conduction.

2. Attempt any one. Both questions carry equal marks.
 - a. Discuss the parathroid hormone & its pathophysiology. [15]
OR
 - b. Discuss the hormone secreted by adrenal cortex. [15]

Section -B

1. Write about the following. (All the five questions are compulsory) [5x5=25]
 - a. Artificial respiration.
 - b. Jaundice.
 - c. Disadvantage of mismatch blood transfusion.
 - d. Erythrocyte.
 - e. Structure of nephron.

 2. Attempt any one. Both questions carry equal marks.
 - a. Hypoxia. [15]
OR
 - b. Septic shock. [15]
-

B. Sc Operation Theatre Technology 1st Year

(BF/2014/09)

Biochemistry

M.M. : 80

Time : 3 Hours

Note : **Each section to be attempted in a separate answer book.**

Section-A

1. **Write about the following.** (All the five questions are compulsory)
[5x5=25]
 - a. Acetyl Co A.
 - b. Degradation of cholesterol.
 - c. Phenyl ketonuria.
 - d. Von Gierke's disease.
 - e. Synthesis of creatine.

2. **Attempt any one. Both questions carry equal marks.**
 - a. What are vitamins? How are they classified? Enumerate the differences between the fat soluble & water soluble vitamins. [15]

OR

- b. Write in detail the therapeutic & diagnostic importance of isotopes. [15]

Section -B

1. **Write about the following.** (All the five questions are compulsory)
[5x5=25]
 - a. Physiologically importance nucleotides.
 - b. Triacylglycerols.
 - c. Neurotransmitters.
 - d. Beriberi.
 - e. Blood buffers.

 2. **Attempt any one. Both questions carry equal marks.**
 - a. Describe the role of HDL cholesterol & LDL cholesterol in genesis of atherosclerosis. [15]
- OR
- b. What is Glycolysis? Write its steps & significance of glycolysis. [15]

B. Sc (MRIT) 1st Year
(BF/2014/09)

Anatomy & Physiology of Human body-Part-I

M.M. : 100

Time : 3 Hours

Part-I

1. What are the bones forming the shoulder girdle? Describe how it is formed. [20]
2. What do you mean by muscle? Describe the types of muscles found in human body. [10]
3. **Write short note about the following:** [5x4=20]
 - a. Squamous epithelium.
 - b. Synovial membrane.
 - c. Smooth muscle.
 - d. Larynx.

Part-II

4. Discuss the respiratory functions in detail. [20]
 5. What are the common types of joints? Describe their movements. [10]
 6. **Write short note about the following:** [5x4=20]
 - a. Fibrous tissue.
 - b. Pelvic girdle.
 - c. Sternum.
 - d. Talus bone.
-

B. Sc (MRIT) 1st Year
(BF/2014/09)

Radiographic Photography

M.M. : 100

Time : 3 Hours

Part-I

1. What do you mean by sensitometry. Explain the various parts of the characteristic curve alongwith its significance. [20]
2. Explain the lay out and planning of a dark room in a radiology department alongwith the various requirements for an ideal dark room. [10]
3. **Write short note about the following:** [5x4=20]
 - a. Care and maintenance of the intensifying screens.
 - b. Latent image.
 - c. Storage of the X-Ray films.
 - d. Silver recovery system.

Part-II

4. What do you mean by quality of a radiographic image. Explain the various factors which effect the quality of the radiography image. [20]
 5. What do you mean by systems for day light film handling. Explain in detail. [10]
 6. **Write short note about the following:** [5x4=20]
 - a. Common film faults.
 - b. Safe light.
 - c. Viewing boxes.
 - d. Subtraction techniques.
-

B. Sc (MRIT) 1st Year
(BF/2014/09)

Radiographic Techniques Part-I

M.M. : 100

Time : 3 Hours

Part-I

1. Describe in detail all the views that can be taken to see scaphoid bone. [20]
2. Write a short note on; X-Ray imaging technique of sacro-iliac joints. [10]
3. **Write short note about the following:** [5x4=20]
 - a. Radiographic technique of atlano-occipital articulation.
 - b. Radiographic technique of coccyx.
 - c. Radiographic technique for patella.
 - d. X-rays for flat foot.

Part-II

4. Describe in detail the techniques for detecting pleural effusion on X-rays. [20]
 5. Write a short note on X-ray techniques of shoulder girdle. [10]
 6. **Write short notes on X-ray technique of:** [5x4=20]
 - a. Supra condylar fracture.
 - b. Ankle joint.
 - c. Elbow joint.
 - d. Intervertebral foramina.
-

B. Sc (MRIT) 1st Year
(BF/2014/09)

Basic Radiation Physics

M.M. : 100

Time : 3 Hours

Part-I

1. What are Bremsstrahlung radiations, how are they generated? What is the difference in production of Bremsstrahlung and characteristic radiations? [20]
2. What are electromagnetic radiations? Write down the physical properties of x-radiations. [10]
3. **Write short note about the following:** [5x4=20]
 - a. Filament circuit.
 - b. Pairproduction.
 - c. Polychromatic radiation.
 - d. Space charge effect.

Part-II

4. Describe the intensity of radiation. Write down the factors affecting the intensity of radiation during their interaction with matter. [20]
 5. Explain briefly the basic interaction between x-rays and matter. [10]
 6. **Write short note about the following:** [5x4=20]
 - a. Saturation voltage.
 - b. Three phase generators.
 - c. X-ray tube anode.
 - d. Exposure timers in radiography.
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Bachelor of Audiology & Speech Language Pathology 1st Year
(BASLP)
(BF/2014/09)

Introduction to Human Communication

M.M. : 80

Time : 3 Hours

Note : **Each section to be attempted in a separate answer book.**

Section-A

1. **Short answer questions.** (All the five questions are compulsory) [5x5=25]
- a. Speech, language and communication.
 - b. Neuron.
 - c. Respiration for life and speech.
 - d. Standing Waves.
 - e. Muscles of tongue.
2. **Attempt any one. Both questions carry equal marks.** [15]
- a. Describe the development of voice.
- OR
- b. Discuss various setting of service delivery for speech language pathologists.

Section -B

3. **Short answer questions.** (All the five questions are compulsory) [5x5=25]
- a. Cricothyroid muscle.
 - b. Synapse.
 - c. Function of communication, speech and language.
 - d. Trachea.
 - e. Articulation.
4. **Attempt any one. Both questions carry equal marks.** [15]
- a. Describe the pitch changing mechanism of the larynx.
- OR
- b. Describe the various muscles of the soft palate with their innervation and functions.
-

Bachelor of Audiology & Speech Language Pathology 1st Year
(BASLP)
(BF/2014/09)

Basic Medical Sciences related to Speech & Hearing

M.M. : 80

Time : 3 Hours

Note : **Each section to be attempted in a separate answer book.**

Section-A

1. **Short answer questions.** (All the five questions are compulsory) [5x5=25]
- a. Acoustic neuroma.
 - b. Velopharyngeal incompetence.
 - c. TIA.
 - d. Aneurysm.
 - e. Genetic mutation.
2. **Attempt any one. Both questions carry equal marks.** [15]
- a. With a neat diagram explain the anatomy of middle ear.
- OR
- b. Write an essay on congenital anomalies of the ear.

Section -B

3. **Short answer questions.** (All the five questions are compulsory) [5x5=25]
- a. Laryngomalacia.
 - b. Circle of Willis.
 - c. Sub mucosal cleft.
 - d. Laryngectomy.
 - e. GERD.
4. **Attempt any one. Both questions carry equal marks.** [15]
- a. Write a detailed essay on physiology of larynx.
- OR
- b. Write a note on various disorders of middle ear.

Bachelor of Audiology & Speech Language Pathology 1st Year
(BASLP)
(BF/2014/09)

Management of the hearing Impaired

M.M. : 80

Time : 3 Hours

Note : **Each section to be attempted in a separate answer book.**

Section-A

1. **Short answer questions.** (All the five questions are compulsory) [5x5=25]
- a. Unisensory approach.
 - b. Early identification.
 - c. Computer aided methods.
 - d. Home training.
 - e. Total communication.
2. **Attempt any one. Both questions carry equal marks.** [15]
- a. What is aural rehabilitation? Write down the goals of aural rehabilitation in detail.
- OR
- b. What is counseling? Highlight the counseling procedure for the education of the hearing handicapped.

Section -B

3. **Short answer questions.** (All the five questions are compulsory) [5x5=25]
- a. Recent technology of hearing aid.
 - b. Microphone & receiver.
 - c. EAC.
 - d. Loop induction system.
 - e. Importance of harness.
4. **Attempt any one. Both questions carry equal marks.** [15]
- a. Discuss classroom amplification devices with their advantages & disadvantages in detail.
- OR
- b. What is hearing aid? Discuss their types in detail.
-

Bachelor of Audiology & Speech Language Pathology 1st Year
(BASLP)
(BF/2014/09)

Speech Language Development & Disorders

M.M. : 80

Time : 3 Hours

Note : **Each section to be attempted in a separate answer book.**

Section-A

1. **Short answer questions.** (All the five questions are compulsory) [5x5=25]
- a. Bound and free morphemes.
 - b. Synonyms.
 - c. Content & function words.
 - d. Grammatical categories of language.
 - e. Non-verbal communication.
2. **Attempt any one. Both questions carry equal marks.** [15]
- a. Describe the behavioral and linguistic models of language acquisition in humans.
- OR
- b. Describe the various stages of speech and language development of a child from 0-2 years.

Section -B

3. **Short answer questions.** (All the five questions are compulsory) [5x5=25]
- a. SODA.
 - b. Seizure disorder.
 - c. ADHD.
 - d. TBI
 - e. SLI.
4. **Attempt any one. Both questions carry equal marks.** [15]
- a. What is mental Retardation? Discuss the speech characteristics of a child with mental Retardation.
- OR
- b. What is learning disability? Discuss its etiology & classification.
-

Bachelor of Audiology & Speech Language Pathology 1st Year
(BASLP)
(BF/2014/09)

Introduction to Hearing & Hearing Sciences

M.M. : 80

Time : 3 Hours

Note : **Each section to be attempted in a separate answer book.**

Section-A

1. **Short answer questions.** (All the five questions are compulsory) [5x5=25]
 - a. Action potentials.
 - b. Threshold concept.
 - c. Equal loudness contour.
 - d. Power & loudness.
 - e. MAP Vs MAF.

2. **Attempt any one. Both questions carry equal marks.** [15]
 - a. Explain the afferent auditory pathway with a neat diagram.

OR

 - b. Explain the functions of utricle, saccule & vestibular apparatus.

Section -B

3. **Short answer questions.** (All the five questions are compulsory) [5x5=25]
 - a. Middle ear ossicles.
 - b. Theories of hearing.
 - c. Schwabach test.
 - d. Phones & sones.
 - e. DL.

 4. **Attempt any one. Both questions carry equal marks.** [15]
 - a. Mention the importance of case history in audiological assessment in detail.

OR

 - b. Define frequency & intensity & discuss in detail their psychological correlates.
-

Bachelor of Audiology & Speech Language Pathology 1st Year
(BASLP)
(BF/2014/09)

Psychology related to Speech & Hearing

M.M. : 80

Time : 3 Hours

Note : **Each section to be attempted in a separate answer book.**

Section-A

1. **Short answer questions.** (All the five questions are compulsory) [5x5=25]
- a. Application of psychology in the field of speech and hearing.
 - b. Define reinforcement. Explain the schedules of reinforcement.
 - c. Define motor development. Write down the stages of motor development.
 - d. Explain the various psychological test used in the field of speech and hearing.
 - e. Explain the hazards of personality development.
2. **Attempt any one. Both questions carry equal marks.** [15]
- a. Define learning. Explain the theory of classical conditioning and its applications in the field of speech and hearing.
- OR
- b. Define cognition. Explain Jean Piaget theory of cognitive development.

Section -B

3. **Short answer questions.** (All the five questions are compulsory) [5x5=25]
- a. Play as a therapeutic tool.
 - b. Behavioral analysis.
 - c. Definition and types of counselling.
 - d. Briefly explain stages of motor development.
 - e. Scope of clinical psychology.
4. **Attempt any one. Both questions carry equal marks.** [15]
- a. Define counselling. Explain the process of counselling in rehabilitation.
- OR
- b. Explain Noam Chomsky theory and its application in the field of speech and hearing.
-

B. Sc (MRIT) 2nd Year
(BF/2014/09)

Anatomy & Physiology of Human body-Part-II

M.M. : 100

Time : 3 Hours

Part-I

1. Describe in detail parts of excretory system & formation & excretion of urine. [20]
2. Describe menstrual cycle in detail. [10]
3. **Write short note about the following:** [5x4=20]
 - a. Diagram of lower limb arterial system.
 - b. Draw sagittal section of brain
 - c. Draw diagram of ventricular system.
 - d. Draw circle of Willis.

Part-II

4. Describe anatomy of pituitary gland. Describe in detail hormones secreted by pituitary & their function. [20]
 5. Describe in detail structure of larynx. [10]
 6. **Write short note about the following:** [5x4=20]
 - a. Diagram of lower limb venous system.
 - b. Diagram of visual pathway.
 - c. Anatomy of brain stem with diagram.
 - d. Diagram of upper limb arterial system.
-

B. Sc (MRIT) 2nd Year
(BF/2014/09)

Conventional Radiology

M.M. : 100

Time : 3 Hours

Part-I

1. What is transformer? Explain different types of transformers used in X-Ray circuit. [20]
2. Describe difference between stationary anode and rotating anode X-Ray tubes. [10]
3. **Write short note about the following:** [5x4=20]
 - a. Four valve rectification.
 - b. Inverse square law.
 - c. Exposure timers.
 - d. Beam limiting devices.

Part-II

4. What do you mean by anti-scattered grid? Explain various types of grids used in radiography. [20]
 5. Draw neat and labeled diagram of rotating anode X-ray tube. [10]
 6. **Write short note about the following:** [5x4=20]
 - a. Thermionic emission.
 - b. High frequency generator.
 - c. Heat dissipation in X-Ray tubes.
 - d. Air gap technique.
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B. Sc (MRIT) 2nd Year
(BF/2014/09)

Radiographic Techniques Part-II

M.M. : 100

Time : 3 Hours

Part-I

1. Describe in detail the radiography for paranasal sinuses. [20]
2. Describe in detail macroradiography. [10]
3. **Write short note about the following:** [5x4=20]
 - a. Radiography for optic foramen.
 - b. How will you take aseptic precautions while doing radiography in operation theatre.
 - c. Dxiolateral oblique projection for ® TM joint.
 - d. Radiography for mandible.

Part-II

4. Describe in detail the radiography for Trauma patients. How will you do radiography of the spine suspected to have spinal injury. [20]
 5. Describe the radiography for a foreign body in trachea. [10]
 6. **Write short note about the following:** [5x4=20]
 - a. Medillateral (MLO) view in mammography.
 - b. "Rule of 10" for radiography in females.
 - c. Lateral view of skull for pituitary fossa.
 - d. Oblique projection for mastoid air cells.
-

B. Sc (MRIT) 2nd Year
(BF/2014/09)

Radiological Physics & Radiation Protection

M.M. : 100

Time : 3 Hours

Part-I

1. Write in detail about components of X-ray tube. [20]
2. What is scatter radiation? What are the various factors affecting it? [10]
3. **Write short note about the following:** [5x4=20]
 - a. TLD.
 - b. Characteristic radiation.
 - c. K edge filters.
 - d. Magnification radiography.

Part-II

4. Write in detail about the grids. [20]
 5. Write short note on photoelectric effect. [10]
 6. **Write short note about the following:** [5x4=20]
 - a. Heel effect.
 - b. Primary barriers of radiation protection.
 - c. Collimators.
 - d. Biological effects of ionizing radiation.
-

B. Sc Radiotherapy 1st Year

(BF/2014/09)

Anatomy of Human Body-I

M.M. : 80

Time : 3 Hours

Note : **Each section to be attempted in a separate answer book.**

Section-A

1. **Write about the following.** (All the five questions are compulsory) [5x5=25]
 - a. Coloumnar epithelium.
 - b. Cardiac muscle.
 - c. Cartilage.
 - d. Sutures.
 - e. Surface anatomy of lungs and heart.

2. **Attempt any one. Both questions carry equal marks.**
 - a. Osteogenesis and its types. [15]

OR

 - b. Describe pelvic girdle in detail. [15]

Section -B

1. **Write about the following.** (All the five questions are compulsory) [5x5=25]
 - a. Respiratory and vocal functions of larynx.
 - b. Structure and function of respiratory passages.
 - c. Surface anatomy of:
 - i. Brachial artery.
 - ii. Radial artery.
 - iii. Femoral artery.
 - iv. Poptletial artery.
 - d. Healing of bone.
 - e. Role of ribs in respiration.

 2. **Attempt any one. Both questions carry equal marks.**
 - a. Diseases of bones and joints. [15]

OR

 - b. Describe the skull under the following heads:-
 - i. Bones of skull.
 - ii. Fontanelles.
 - b. Sutures.
 - c. Air sinuses.
-

B. Sc Radiotherapy 1st Year

(BF/2014/09)

Basic Radiation Physics-I

M.M. : 80

Time : 3 Hours

Note : **Each section to be attempted in a separate answer book.**

Section-A

1. **Write about the following.** (All the five questions are compulsory) [5x5=25]
- Differentiate between Electromagnetic radiation and Particulate radiation.
 - Define attenuation coefficient, mass attenuation and mass energy absorption coefficients.
 - Explain the differences between coherent and incoherent scattering of electromagnetic radiation with an example.
 - Write short notes about annihilation radiation.
 - Define wavelength, frequency and amplitude of an oscillating electric field.
2. **Attempt any one. Both questions carry equal marks.**
- Explain Compton effect phenomenon for the interaction of electromagnetic radiation with matter and their utilities in medicine. [15]

OR

- Explain the dual properties of electromagnetic radiation and their spectrum. [15]

Section -B

1. **Write about the following.** (All the five questions are compulsory) [5x5=25]
- Define decay constant and explain the method to find the number of radionuclide atoms $N(t)$ at an instant t using the decay constant and initial number of radionuclide N_0 .
 - Define half life of a radionuclide. Innumerate the importance of half life of radionuclide in radiotherapy and nuclear medicine diagnosis.
 - Write short notes on α -particle decay.
 - Write short notes about positron emission.
 - What is photodisintegration and explain why the knowledge of photodisintegration is required in radiotherapy?

2. **Attempt any one. Both questions carry equal marks.**

- Explain the construction and working principle of an x-ray tube. [15]

OR

- Discuss the method of voltage rectification and resulted changes in x-ray intensity with time. [15]

B. Sc Radiotherapy 1st Year

(BF/2014/09)

Basic Principles of Radiotherapy-I

M.M. : 80

Time : 3 Hours

Note : **Each section to be attempted in a separate answer book.**

Section-A

1. **Write about the following.** (All the five questions are compulsory) [5x5=25]
 - a. Megavoltage.
 - b. Pair production.
 - c. Surface mould.
 - d. Acute radiation effect.
 - e. Intraluminal Brachytherapy.

2. **Attempt any one. Both questions carry equal marks.**
 - a. Discuss in detail about radium and its substitute and their uses in radiotherapy. [15]

OR

 - b. Define Brachytherapy. Discuss in detail. [15]

Section -B

1. **Write about the following.** (All the five questions are compulsory) [5x5=25]
 - a. Direct and indirect action of radiation.
 - b. OER.
 - c. Cell survival curve.
 - d. Elkind recovery.
 - e. Reoxygenation.

2. **Attempt any one. Both questions carry equal marks.**
 - a. Discuss different type of damage caused by interaction of radiation with cell. Also discuss their significance. [15]

OR

 - b. Discuss the type of radiation ionizing and non-ionizing. Give example of particulate radiation. [15]

B. Sc Radiotherapy 1st Year

(BF/2014/09)

Radiotherapy Equipments & Quality Assurance Procedure-I

M.M. : 80

Time : 3 Hours

Note : **Each section to be attempted in a separate answer book.**

Section-A

1. **Write about the following.** (All the five questions are compulsory) [5x5=25]
 - a. Compare deep therapy x-rays units with super voltage therapy machines (Physical features).
 - b. Advantages of super voltage radiation over deep therapy radiation.
 - c. Penumbra.
 - d. Applications of MRI in management of cancer patients.
 - e. Betatron.

2. **Attempt any one. Both questions carry equal marks.**
 - a. Safety features in a telecobalt unit. [15]
OR
 - b. Application of MRI and Doppler principle in management of cancer patients. [15]

Section -B

1. **Write about the following.** (All the five questions are compulsory) [5x5=25]
 - a. Timer in teletherapy machine.
 - b. Beam collimation.
 - c. Target & beam flattening filter in Linac.
 - d. Uses of CT-Simulator in radiotherapy.
 - e. Briefly describe therapy tube.

 2. **Attempt any one. Both questions carry equal marks.**
 - a. Enumerate and briefly describe charged particle accelerators. [15]
OR
 - b. Briefly describe external beam therapy machines. [15]
-

B. Sc Ophthalmic Techniques 1st Year

(BF/2014/09)

Human Anatomy & Physiology

M.M. : 50

Time : 3 Hours

Note: Attempt all questions.

Part-I

1. Describe anatomy of lungs? Add a note on functions of respiratory system.[10]
2. Write about the following: [5x3=15]
 - a. Classification of joints.
 - b. Draw a labelled diagram of neuron and give its functions.
 - c. Functions of digestive system.

Part-II

3. Explain the mechanism of urine formation. [10]
 4. Write about the following: [5x3=15]
 - a. Physiology of hearing.
 - b. Classification of plasma proteins.
 - c. Physiological changes in mother during pregnancy.
-

B. Sc Ophthalmic Techniques 1st Year

(BF/2014/09)

Ocular Anatomy, Pathology & Microbiology

M.M. : 50

Time : 3 Hours

Note: Attempt all questions.

Part-I

1. Describe the visual pathway and their lesions at various levels. [10]
2. Write about the following: [5x3=15]
 - a. Microscopic examination of urine.
 - b. Pathogenic fungi.
 - c. Draw a well labelled diagram of eyeball.

Part-II

3. Describe the anatomy of lid with the help of appropriate diagrams. [10]
 4. Write about the following: [5x3=15]
 - a. Tissue processing and fixation techniques in histopathology.
 - b. Development cycle of Chlamydia.
 - c. Blood supply of eye.
-

B. Sc Ophthalmic Techniques 1st Year

(BF/2014/09)

Optics

M.M. : 50

Time : 3 Hours

Note: Attempt all questions.

Part-I

1. Explain image formation by a convex lens for different position of object. [10]
2. Write about the following: [5x3=15]
 - a. Principle of refraction of light.
 - b. Listing's reduced eye.
 - c. Destructive interference.

Part-II

3. Define accommodation and its type. What are the various methods to measure accommodation. [10]
 4. Write about the following: [5x3=15]
 - a. Facultative hypermetropia.
 - b. Refraction room standards.
 - c. Jackson's cross cylinder.
-

B. Sc Ophthalmic Techniques 1st Year

(BF/2014/09)

Ocular Physiology & Biochemistry including Binocular reflexes & its maintenance

M.M. : 50

Time : 3 Hours

Note: Attempt all questions.

Part-I

1. Discuss various methods of measuring visual acuity. [10]
2. Write about the following: [5x3=15]
 - a. Metabolism of lens.
 - b. Tear film and its function.
 - c. Factors affecting night vision.

Part-II

3. Discuss in short various electrophysiologic tests of eye. [10]
 4. Write about the following: [5x3=15]
 - a. Stereopsis.
 - b. Convergence insufficiency.
 - c. Conjugate movements of eye.
-

B. Sc Ophthalmic Techniques 2nd Year

(BF/2014/09)

Pharmacology & Pharmacy

M.M. : 50

Time : 3 Hours

Note: Attempt all questions.

Part-I

1. Describe different routes of drug administration in ophthalmology in detail. [10]
2. Write about the following: [5x3=15]
 - a. Acetazolamide.
 - b. Atropine.
 - c. Pilocarpine.

Part-II

3. Describe topical antibacterial drugs in detail. [10]
 4. Write about the following: [5x3=15]
 - a. Natamycin eye drops.
 - b. Ocular preservatives.
 - c. Use of betadine in ophthalmology.
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B. Sc Ophthalmic Techniques 2nd Year

(BF/2014/09)

Refraction

M.M. : 50

Time : 3 Hours

Note: Attempt all questions.

Part-I

1. Define myopia. What is the management of myopia? [10]
2. Write about the following: [5x3=15]
 - a. Aniseikonia.
 - b. Optics of aphakia.
 - c. Facultative hypermetropia.

Part-II

3. Define accommodation. What are the methods for assessment of accommodation. [10]
 4. Write about the following: [5x3=15]
 - a. Jackson cross cylinder.
 - b. Worth four dot test.
 - c. Ideal trial frame.
-

B. Sc Ophthalmic Techniques 2nd Year

(BF/2014/09)

Investigative Ophthalmology

M.M. : 50

Time : 3 Hours

Note: Attempt all questions.

Part-I

1. Describe various methods of assessment of visual acuity in children. [10]
2. Write about the following: [5x3=15]
 - a. Head postures in squint.
 - b. Pleoptics.
 - c. Orthoptic exercises.

Part-II

3. Describe various methods of measurements of angle of squint. [10]
 4. Write about the following: [5x3=15]
 - a. Grades of binocular vision.
 - b. Heterophoria.
 - c. Maddox wing.
-

B. Sc Ophthalmic Techniques 2nd Year

(BF/2014/09)

Ophthalmic instruments and appliances

M.M. : 50

Time : 3 Hours

Note: Attempt all questions.

Part-I

1. Enumerate methods of fundus examinations & describe direct ophthalmology in detail. [10]
2. Write about the following: [5x3=15]
 - a. Lensometer.
 - b. Schiottz Tonometer.
 - c. Haag streit slit lamp.

Part-II

3. List methods of corneal assessment and describe keratometry in detail. [10]
 4. Write about the following: [5x3=15]
 - a. Goldmann perimeter.
 - b. Ishihara chart.
 - c. Optical pachymetry.
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