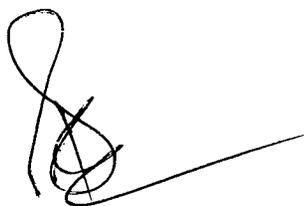


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X - RAY



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**DEPARTMENT OF HEALTH, [MEDICAL EDUCATION, &INDIGENOUS MEDICINE.]
GOVERNMENT OF BIHAR, PA TNA.**

**COURSE/CURRICULUM FOR 2 YEARS DIPLOMA COURSE IN
X - RAY TECHNICIAN.
First Year**

THEORY				
Sl. No.	Subject		Full Marks	Pass Marks
1	Applied Anatomy & Physiology		100	50
2	Radio Physics Pertaining to Radiology		100	50
Total Theory Marks			200	100
PRACTICAL				
4	A.	Practical	100	50
	B.	Viva	40	20
Total Practical Marks			140	70

Second Year

THEORY				
Sl. No.	Subject		Full Marks	Pass Marks
1	Discovery & Production		100	50
2	Dark room techniques and Requirement		100	50
Total Theory Marks			200	100
PRACTICAL				
5	A.	Practical	100	50
	B.	Viva	40	20
Total Practical Marks			140	70

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FIRST YEAR**ANATOMY****SECTION - I**

1. Histology - Cell, tissue of the body, epithelium, connective tissue, cartilage, bone, lymph, muscle, Nerve.
2. Osteology - Formation, Function, growth & repair of bones.
3. Embryology - Ovum, Spermatozoas fertilization, differentiation, development of various systems.
4. Blood Vascular system - Arteries, Capillaries, Veins, heart, Lymphatic system.
5. The Respiratory system - Anatomy of Larynx. Trachea and Bronchi, pleura, lungs.
6. The digestive system.
7. The urogenital system.
8. Surface Anatomy.

SECTION - II

Anatomy, Microscopic and gross study of:

- | | | |
|----------------------------------|---------------------------------|-------------------------------|
| 1. Peripheral Nerves | 2. Neuromuscular Function | 3. Sensory end Organs. |
| 4. Spinal Cord - segment & Areas | 5. Brainstem | 6. Cerebellum |
| 7. Inferior Colliculi | 8. Superior' CoUiculi | 9. Diencephalon |
| 10. Hypothalamus. | 11. Epithaiamus | 12. Thalamus |
| 13. Cerebral Hemispheres | 14. Corpus Straitum | 15. Rhinencephalon |
| 16. Lateral Ventricles | 17. Meninges | 18. Blood supply of the brain |
| 19. Internal capsule | 20. Visual radiation | 21. Auditory radiation |
| 22. Lamocortical radiations | 22. Pyramidal system | 24. Extra - pyramidal system |
| 25. Anatomic integration | 26. Intra- cortical integration | |

SECTION - III

1. Fascias and muscles of head, neck & face.
2. Fascias and muscles of trunk.
3. Fascias and muscles of upper limb.
4. Fascias and muscles of lower limb.
5. Classification of joints.
6. movements of joints.
7. Factors permitting and limiting movements.
8. Joints of head & Neck.
9. Joints of Trunk.
10. Joints of Upper Limb.
11. Joints of Lower Limb.

Surface Anatomy:-

1. To study the surface land marks on human body.
2. To study the muscle of trunk, lower and upper extremities and face on a dissected human body.
3. To study the Bones of Human body with special emphasis on origin and insertion, land mark of muscles.
4. To study the anatomy of joints of upper and lower - extremities and vertebral column on a dissected human body.
5. To study the anatomy of C. N. S. and P. N. S. on a dissected human body.
6. To study the Anatomy of Respiratory, Digestive, Urinary and Genital system on a dissected human body.

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PHYSIOLOGY

SECTION - I

1. The Cell Function.
2. Cell Membrane.
3. Digestion - Control of food & water intake and secretion, movements of the alimentary canal.
Circulation - Cardio - vascular system, mechanical and electro Physiological activity of the heart, regulation of heart, coronary circulation, haemodynamics, circulation through brain, skin and skeletal muscle.
4. Blood and lymph - cell renewal system, haemoglobin, Erythrocyte, granulocyte, lymphocyte, coagulation, regulation of hydrogen within concentration of body fluid, fluid distribution and exchange.
5. Renal Function.
6. Respiration - respiratory gases, pulmonary gas exchange, control and mechanics of breathing. Hypoxia, asphyxia, dyspnoea, oxygen therapy and resuscitation.
7. Endocrine systems - pituitary gland, thyroid, parathyroid, adrenal glands, gonads.

SECTION - II

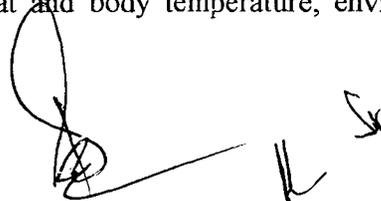
Neuro - Physiology and muscle mechanism:

1. Cell membrane - Ionic and potential gradients and transport.
2. Action potential.
3. Special Properties of nerve, trunk and tracts.
4. Muscle - contraction, mechanism, chemistry and biophysics.
5. Motor Units.
6. Reflex physiology,
7. Synapses.
8. Spinal Control.
9. Cortical Control.
10. Cerebellum and basal ganglia.
11. Autonomic nervous System.
12. Somatic sensation.
13. Pain.
14. Taste, Olfaction and visceral sensations.
15. Auditory system.
16. Vision.
17. Neuro Physiological Physiology.

SECTION - III

Physiology of Exercise and Work:

1. Neuromuscular activity, human movement, Physiological mechanism in movement behaviour, skill strength, endurance, analysis of movement.
2. Circulatory and respiratory response to exercise and work of the heart, blood circulation, body fluid changes, pulmonary ventilation, gas exchange and transport.
3. Effects of exercise and work of the body function.
4. Metabolic and environmental aspects of exercise and work - Metabolism, energy requirement, efficiency of muscular work, nutritional aspects, heat and body temperature, environmental factors.

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5. Fatigue and training - endurance fatigue and recovery training.
6. Fitness and Health, Age, Sex, Body type and race stress, medical aspects of exercise.

RADIO PHYSICS

1. Simplified Arithmetics: - Decimals, Algebra, Chemistry, Graphs and Chart, Large and Small numbers.
2. Physics and the Units of measurement.
3. Physical concept of energy: - Force, Work, Energy.
4. Matter the co - open substance: - Subdivisions of matter, Atomic number, Mass number, Chemical behavior, Ionisation.
5. Fatigue and health - endurance, fatigue and recovery training.
6. Fitness and health - age, sex, body type and race stress medical aspects of exercise.
7. The Electric current: - Definition, The nature of an electric sources of current electricity, The factors in the simple batteries or cell. Elementary electric circuits current.
8. Magnetism: - Definition, 'Classification of magnets, Magnetic fields, Classified materials Nature of magnetism, Magnetic conduction, Ability of magnets, Characteristics of ions of force.
9. Electromagnetism: - Definition, Electromagnetic phenomena electromagnetic induction, *Direction of induced electric current, self-induction, Meter.*
10. Electric Generator and Motors: - Electric generator, properties of alternating current circuits, Direct Current generator, Advantages of alternating current, Electric motors, Definition and principle of a motor The implements of motors, Tubes of electric motors, Current measuring devices.
11. Production and control of High Voltage: - Transformer, Construction of Transformers, Transformer loss, Voltage Control, Autotransformer system.
12. Rectification: - Definition, Methods of rectifying all Currents.

RADIOLOGY - I

SECTION - I

1. Radio activity and Radium: - Unstable atoms, Radioactive series Radio Properties, Radip Active radiation, The radium series, Halflife.
2. Radio Dosage: - Types of applicators, FiltratiQn, containers, Protection, Losses radioactive Iso - topes.
3. Artificial Radioactivity: - Definition, Isotopes in imaging.

SECTION - II

1. X - Ray [Roentgen Rays]: - How X - Ray are discovered, what are X - Rays Sources of Roentgen of X - Rays consideration of production.
2. Roentgen Rays: - Target materials, properties of Roentgen rays, Quality of Roentgen rays, radiation, Hard and soft X - Rays.
3. Respiratory system, X - Ray of chest, trauma and its disease.
4. CVS - X - Ray of chest AP & Lateral view to see heart.
5. GI - X - Ray of plain abdomen Ba swallow of esophagus, Ba Meal of Stomach & Duodenum, Ba Meal esophagus ileo caecal junction, Ba. Enema, Hiatus Hernia
6. The interaction of penetrating radiation and matter.

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