



CORRIGENDUM/ADDENDUM

(Dated- 10.07.2023)

Reference Advertisement No: F-126282/Rect./Non-Faculty/2023, dated- 26.04.2023

Following has been amended with the approval of the Competent Authority:

1. The last date for filling of online application form has now been extended from 11.07.2023 to 14.07.2023 (before 07:00 PM) for the first phase of 29 posts which has been advertised by AIIMS Patna.
2. Age relaxation for Group-B & C posts:

Sl. No.	Ex-Servicemen- For Group 'B & C' posts	
1	Ex-Servicemen (Unreserved/General)	03 years after deduction of the military service rendered from the actual age as on the Closing date for receipt of application.
2	Ex-Servicemen (OBC)	06 years (3 years+3 Years) after deduction of the military service rendered from the actual age as on the Closing date for receipt of application.
3	Ex-Servicemen (SC & ST)	08 years (3 years+5 Years) after deduction of the military service rendered from the actual age as on the Closing date for receipt of application.

3. Refer to syllabus for the post of Technical Assistant/Technician.

The syllabus for the post of Technical Assistant Technician provided from the page no: 198 to 202 would be considered for the recruitment examination vide the above cited Advertisement Number. The effective syllabus for the post is reproduced as below for information:

A. General Intelligence & Reasoning (5 Marks):

It would include questions of both verbal and non-verbal type. This component may include questions on analogies, similarities and differences, space visualization, spatial orientation, problem solving, analysis, judgment, decision making, visual memory, discrimination, observation, relationship concepts, arithmetical reasoning and figural classification, arithmetic number series, non-verbal series, coding and decoding, statement conclusion, syllogistic reasoning etc. The topics are, Semantic Analogy, Symbolic/Number Analogy, Figural Analogy, Semantic Classification, Symbolic/Number Classification, Figural Classification, Semantic Series, Number Series, Figural Series, Problem Solving, Word Building, Coding & decoding, Numerical Operations, symbolic Operations, Trends, Space Orientation, Space Visualization, Venn Diagrams, Drawing inferences, Punched hole/pattern –folding & unfolding, Figural Pattern – folding and completion, Indexing, Address matching, Date & city matching, Classification of centre codes/roll numbers, Small & Capital letters/numbers coding, decoding and classification, Embedded Figures, Critical thinking, Emotional Intelligence, Social Intelligence, Other sub-topics, if any.

B. General Awareness (5 Marks):

Questions in this component will be aimed at testing the candidate's general awareness of the environment around him and its application to society. Questions will also be designed to test knowledge of current events and of such matters of every day observations and experience in their scientific aspect as may be expected of any educated person. The test will also include questions relating to India and its neighboring countries especially pertaining History, Culture, Geography, Economic Scene, General Policy & Scientific Research.

C. Quantitative Aptitude (5 Marks):

The questions will be designed to test the ability of appropriate use of numbers and number sense of the candidate. The scope of the test will be computation of whole numbers, decimals, fractions and relationships between numbers, Percentage. Ratio & Proportion, Square roots, Averages, Interest, Profit and Loss, Discount, Partnership Business, Mixture and Allegation, Time and distance, Time & Work, Basic algebraic identities of School Algebra & Elementary surds. Graphs of Linear Equations, Triangle and its various kinds



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of centres, Congruence and similarity of triangles, Circle and its chords, tangents, angles subtended by chords of a circle, common tangents to two or more circles, Triangle, Quadrilaterals, Regular Polygons, Circle, Right Prism, Right Circular Cone, Right Circular Cylinder, Sphere, Hemispheres, Rectangular Parallelepiped, Regular Right Pyramid with triangular or square base, Trigonometric ratio, Degree and Radian Measures, Standard Identities, Complementary angles, Heights and Distances, Histogram, Frequency polygon, Bar diagram & Pie chart.

D. English Language (5 Marks):

Candidates' understanding of the Basics of English Language, its vocabulary, grammar, sentence structure, synonyms, antonyms and its correct usage, etc. his/her writing ability would be tested.

E. Subject Knowledge (80 Marks):

Biochemistry –

- Cleaning and care of general laboratory glass ware and equipment. Types of pipettes, calibration of pipettes.
- Distilled water. Method of preparation and storage of distilled water. Type of water distillation plants.
- Preparation of solutions – units of weights and volume, Calculation of concentration and methods of expressing concentration of solution.
- Units of Measurement - S.I unit and CGS units. Normality, Molarity, Molality
- Calibration of volumetric apparatus
- Principle, working and maintenance of Analytical balance
- Quality control and quality assurance in a clinical biochemistry laboratory
- Laboratory organization, management and maintenance of records
- Principles of assay procedures, Normal range in blood, Serum, Plasma and Urine and reference values.
- pH – Definition, Henderson Hasselbach equation, Pka value, pH indicator, Methods of measurement of pH, pH paper, pH meter, Principle, working, maintenance and calibration of pH meter
- Volumetric analysis- Normal and molar solutions, Standard solutions, Preparation of reagents, Storage of chemicals
- Working principles Types and applications of Electrophoresis – Paper, Agarose Gel, Cellulose Acetate and PAGE.
- Working principles, types and applications of Chromatography - Paper Chromatography, TLC, Ion Exchange, Affinity Gel, Filtration, Gas Chromatography and HPLC.
- Working principles, types and application of centrifugation
- Working Principles and application of photometry, and atomic absorption, Spectrophotometry and colorimetry.
- Definition, basic concepts of classification mechanism of action and properties of enzymes, factors influencing enzyme action
- Basic and elementary concepts of chemistry and properties of carbohydrates as applicable to the human body. (Classification, Digestion and Absorption, Metabolism, Disorders of metabolism)
- Overview of metabolism of carbohydrates – Methods for determining glucose, ketones, lactate, pyruvate reducing sugars and mucopolysaccharides and their clinical significance. Biochemistry, types, criteria parameters in diagnosis and prognosis of Diabetes mellitus.
- Basic and elementary concepts of chemistry and properties of lipids as applicable to the human body. (Classification, Digestion and Absorption, Metabolism, Disorders of metabolism)
- Overview of lipid. Importance of lipids in the body in body basic metabolic aspects and analytical importance. Disorders of lipid metabolism. Lipoproteins patterns in disease – analytical methods and procedures applicable to detecting and monitoring such disorders.
- Basic and elementary concepts of chemistry and properties of proteins & amino acids as applicable to the human body. (Classification, Digestion and Absorption, Metabolism, Disorders of metabolism)



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- Overview of metabolism of amino acids and proteins – current methodologies for their determination and identification in biological specimens – disease associated with alterations in or deficiencies of amino acids and proteins.
- Basic and elementary concepts of chemistry and properties of nucleic Acids as applicable to the human body.
- Basic concepts of principles of nutrition and nutrients macro and micro nutrients. Vitamins & Minerals. Vitamins- Fat soluble vitamins, Water soluble vitamins sources, Biochemical role, RDA, deficiency manifestations Minerals – Calcium, Phosphorus, Iron, Copper, Zinc, Magnesium, Manganese, Iodine.
- Analytical methods and recommendations for testing and assessing nutritional deficiency – Methods for assessing concentration of vitamins in biological samples.
- General requirements for laboratory assessment of trace elements including specimen collection, handling, selection of analytical methodology and establishing quality.
- Overview of Biochemical roles of major electrolytes and blood gases and their changes in pathological states – relationship between major electrolytes and acid base balance – application of physical and chemical principles to biological system – laboratory measurements of electrolytes and blood gases. Acid base balance disorders
- Overview of current concepts in endocrinology RIA, ELISA, chemiluminescence assay procedure for hormones – physiological effects produced by normal and abnormal levels of various hormones. Thyroid function test and Adrenal function test.
- Introduction to molecular Biology. Recombinant DNA technology, Role of recombinant DNA technology as diagnostic tool. Polymerase chain reaction.
- Overview of porphyrins, their precursors, primary and secondary disorders of porphyrin metabolism – diagnostic laboratory methodologies including appropriate specimen collection and preservation techniques related to porphyrins
- Laboratory tests and analytical methods used in identification and evaluation of hepatobiliary disorders, renal disorders and disorders of Stomach, pancreas and intestinal tract
- Overview of calcium and inorganic phosphate metabolism current laboratory analytical

Microbiology –

- History of Medical Microbiology - Host-Microbe relationship.
- Safety Measures in clinical microbiology
- Cleaning, care and handling of glassware
- Care and maintenance of Equipment in Microbiology.
- Microscopy: Principle, types and uses of microscope
- Sterilization and Disinfection - Definition, Types, principles, mode of action and methods. Qualities of a good disinfectant. Assay for various disinfectants.
- Biomedical waste management in a lab
- General characteristics & classification of Microbes : Classification of microbes. Morphological classification of bacteria, Bacterial anatomy (Bacterial cell structures)
- Growth and nutrition of bacteria, Culture media and culture methods-aerobic and anaerobic
- Quality control and safety in microbiology.
- Handling and care of laboratory animals.
- Antimicrobial agents, Antimicrobial susceptibility tests.
- Stains used in bacteriology Principle, procedures, significance and interpretation - Simple staining, Gram stain, Ziehl –Neelsen staining, Albert's stain, Capsule staining.
- Principle, procedures and interpretation of the biochemical tests for identification of different bacteria.
- Immunity – innate and acquired immunity, humoral and cell mediated.
- Antigen antibody reactions and their applications
- Complement
- Hypersensitivity
- Vaccines



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- Gram positive & Gram negative cocci – Staphylococci, Streptococci, Enterococci, Pneumococci, Neisseria
- Gram positive bacilli – Corynebacterium, Mycobacterium, Actinomyces, Listeria, Bacillus, Clostridia
- Gram negative bacilli – Enterobacteriaceae, Pseudomonas, Vibrio, Aeromonas, Plesiomonas, Campylobacter, Bacteroides, Fusobacterium, Brucella, Haemophilus, Bordetella, Pasteurella, Francisella
- Spirochaetes, Chlamydia, Rickettsia, Mycoplasma, L forms
- General properties of viruses – Structure, classification and replication.
- Laboratory diagnosis of virus
- DNA virus –Adenovirus, Papova virus, Herpes virus, Varicella zoster virus, Cytomegalo virus, Hepatitis B virus
- RNA virus – Polio virus, Influenza virus, Para influenza virus, Mumps virus, Measles virus, Rubella virus, Respiratory syncytial virus, Rhinovirus, Rotavirus, Hepatitis virus, Arbo viruses prevalent in India (Dengue, West Nile, Japanese Encephalitis, KFD), HIV, Rabies virus, SARS virus.
- Bacteriophage
- Introduction to Parasitology –Common definitions, Types and Classification of parasites.
- Collection transport and preservation of specimens for parasitological examination
- Protozoa: Entamoeba Trichomonas, Trypanosomes, Leishmania, Giardia, Plasmodium, Isospora, Balantidium, and Toxoplasma.
- Cestodes - Diphyllbothrium, Taenia, Echinococcus, Hymenolepis.
- Trematodes - Schistosoma, Fasciola, Fasciolopsis, Clonorchis, Paragonimus
- Intestinal Nematodes - Ascaris, Ancylostoma, Necator, Strongyloides, Trichinella Enterobius, Trichuris
- Tissue Nematodes - Wuchereia, Brugia, Loa loa, Onchocerca, Dracunculus
- Collection and preservation of specimens for parasitological examination, preservation of specimens of parasitic eggs and embryos, Preserving Fluids, Transport of specimens.
- Morphology and classification of fungus
- Laboratory diagnosis of fungus- Culture media used in mycology, Direct microscopy in Medical mycology laboratory, Processing of clinical samples for diagnosis of fungal infections i.e. Skin, nail, hair, pus, sputum, CSF and other body fluids.
- Superficial fungal infections
- Subcutaneous fungal infections
- Deep fungal infections
- Opportunistic fungal infections
- Techniques used for isolation and identification of medically important fungi
- Methods for identification of yeasts and moulds
- Preservation of fungal cultures

Pathology –

- General-Haematology: Origin, development, morphology, maturation, function and fate of blood cells, nomenclature of blood cells.
- Various methods of blood collection, anticoagulants-mechanism and uses.
- Basic concepts of automation in haematology
- Counting chamber- hemocytometry. Enumeration of RBC including various counting chambers, diluting fluids for RBC count.
- Haemoglobinometry. Principles and methods of quantitating Hb. Concentration of blood including knowledge of errors and quality control in various method. Abnormal hemoglobin and its investigation.
- ESR: introduction, factors affecting ESR, principles and methods of determining ESR, increasing and decreasing conditions of ESR.
- WBC: introduction, development of WBC, diluting fluids. Absolute eosinophil count, errors in sampling, mixing, diluting and counting.
- Cell counting, advantages and disadvantages, uses and mechanism of cell counting, quality control in cell counts.



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- Preparation of peripheral smear and bone marrow smear. Thin smear, thick smear. Buffy coat smear, wet preparation. Romanowsky stain. Preparation advantages and disadvantages.
- Principle and methods of staining of Blood smears and bone marrow smears. Supravital stain. Reticulocyte count. Heinz bodies.
- Description of morphology of normal and abnormal red cells. Blood differential WBC counting. Recognition of abnormal cell. Anaemia – definition etiology classification and laboratory diagnosis.
- Methods of identification and estimation of abnormal hemoglobin including spectroscopy. HB electrophoresis. Alkali denaturation Test. Sick cell preparation.
- Various benign leucocyte reaction – Leukocytosis. Neutrophilia, Eosinophilia, Lymphocytosis. Infectious mononucleosis. leucopenias.
- Leukemias – definition, causes, classification, detection of leukemia. Total leucocyte count in leukemias. Multiple myeloma.
- Blood Coagulation and disorders of hemostasis. Classification of coagulation factors, Principles and methods of assessment of coagulation. BT, CT, Prothrombin time, partial thromboplastin time, thromboplastin regeneration time
- Thrombocytopenia, thrombocythemia, platelet function test, platelet count. Clot retraction test. Platelet factor III Test.
- LE cell – definition, morphology causative agents. Various methods of demonstrating LE cells. Blood parasites. Malaria, LD bodies, microfilaria and methods of demonstration.
- Preparation of donor and collection of blood. Solution and apparatus used. Storage of blood. Preparation and storage of plasma. Preparation of packed red cells.
- Principles involved in Blood grouping. ABO system and the methods used. Factors influencing the results of blood grouping, Rh system. Rh antigen. Principles and methods used.
- Cross matching. Compatibility test, direct and indirect Coomb's test – Principle involved and the methods used. Blood transfusion and its Hazards.
- Definition, sources and types histological specimens, kinds of histological presentations
- Labelling, fixation, properties of fixing fluids, classification and composition of fixing fluids. Advantages and disadvantages of secondary fixatives. Post chroming.
- Tissue processing, dehydration and cleaning.
- Embedding. Water soluble substances, embedding in paraffin nitrocellulose
- Equipment for sectioning microtome, knife, honing and stropping. Types, care and use of microtome.
- Technique for sectioning – frozen section. Technique for sectioning – Paraffin embedded tissue. Errors in sectioning and remedies. Attaching blocks to carriers.
- Technique of processing bone for histological studies. Mounting and covering. Mounting media.
- Staining – theory, types of staining agent. Mordents and differentiation. H & E staining. Types of hematoxylin and its preparation. Eosin stock stain and other counter stain used.
- Demonstration of collagen, reticulin, elastin, fat, amyloid, glycogen, mucin, pigments and minerals (malarial, mercury, bile, lipofuscin, calcium, iron, copper).
- Principles of histochemistry and its application
- Demonstration of neuron, neuroglia, myelin and axon. Processing of eye ball for histology.
- Demonstration of fat, iron, amyloid, bile in large sections of tissue.
- Cytology – introduction, definition, types of cytological specimen, preparation of slide for microscopic studies, stains used.
- Museum technique. Preparation, setting up of and arrangement of museum.
- Preparation of cell blocks, mailing of slides.
- FNAC, definition, techniques involved in preparation of smear and staining. PAP smear.
- Calibration and Validation of Clinical Laboratory instruments

4. Refer to syllabus for the post of Radiographic Technician Grade-I:



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The syllabus for the post of Radiographic Technician provided from the page no: 156 to 161 is hereby withdrawn. The effective syllabus for the post is reproduced as below for information:-

A. General Intelligence and Reasoning (10 Marks):

It would include questions of both verbal and non-verbal type. This component may include questions on analogies, similarities and differences, space visualization, spatial orientation, problem solving, analysis, judgement, decision making, visual memory, discrimination, observation, relationship concepts, arithmetical reasoning and figural classification, arithmetic number series, non-verbal series, coding and decoding, statement conclusion, syllogistic reasoning etc. The topics are, Semantic Analogy, Symbolic/Number Analogy, Figural Analogy, Semantic Classification, Symbolic/Number Classification, Figural Classification, Semantic Series, Number Series, Figural Series, Problem Solving, Word Building, Coding & decoding, Numerical Operations, symbolic Operations, Trends, Space Orientation, Space Visualization, Venn Diagrams, Drawing inferences, Punched hole/pattern –folding & unfolding, Figural Pattern – folding and completion, Indexing, Address matching, Date & city matching, Classification of centre codes/roll numbers, Small & Capital letters/numbers coding, decoding and classification, Embedded Figures, Critical thinking, Emotional Intelligence, Social Intelligence, Other sub-topics, if any.

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D. English Language (10 Marks):

Spot the Error, Fill in the Blanks, Synonyms/Homonyms, Antonyms, Spellings/ Detecting Mis-spelt words, Idioms & Phrases, One word substitution, Improvement of Sentences, Active/Passive Voice of Verbs, Conversion into Direct/Indirect narration, Shuffling of Sentence parts, Shuffling of Sentences in a passage, Cloze Passage, Comprehension Passage.

E. Anatomy and Physiology (10 Marks):

- Structure of the body–cells, tissues. Musculoskeletal System: Skull, Vertebral column, Shoulder Girdle Bones of upper extremities, Bones of lower extremities, pelvis and its muscles, Ossification.
- Cardiovascular System: Heart–blood– Arteries–Veins.
- Lymphatic System: Circulation of Lymph, Lymph glands, Thoracic duct. Digestive System: Mouth–oesophagus– stomach–small intestines large intestines spleen Liver Gall bladder Pancreas.
- Respiratory System: Nose, Larynx Trachea–Lungs Bony-case.
- Nervous System: Brain–meninges ventricles–Spinal cord and nerves.
- Eye: Structure and its function.
- Ear: Structure and function.



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- Surface Anatomy and Cross-sectional Anatomy.
- Reproductive System: Female & Male organs.
- Urinary System: Kidneys, Ureters, Bladder, Prostate and Urethra.
- Skin: Structure and its function.
- Endocrine System: Pituitary gland, Penial gland, Thymus gland, thyroid and parathyroid gland, suprarenal glands

F. Dark Room Techniques (10 Marks):

- Photographic Process: Light image, Image produced by radiation, Light Sensitive materials, latent image.
- Film Material: The structure of X-ray & Imaging films, Resolving power, Grains of films, sensitivity of film, contrast of films, Type of films.
- X-ray Film Storage: Storage of unexposed films.
- Screens: Construction of intensifying screens.
- Choice of fluorescent material.
- Intensification factor, Detail, Sharpness. Speed, Screen contact, care of intensifying screens, Types of Screens. Cassettes: Cassette designs, Care of cassette, mounting of intensifying screen in the cassettes, various types of cassettes.
- Safe Light: Constituents, filter, testing. Film Processing: Constituents of processing solution and replenishes.
- Factors affecting the development. Types of developer and fixer, Factors affecting the use of fixer. Silver recovery methods.
- Film Rising, Washing and
- Drying: Intermediate rinse-washing and drying.
- Film Processing Equipment: Manual and Automatic processing. Dark Room Design: Outlay and materials used.
- Radiographic Image: The sharpness, contrast, detail, definition, viewing conditions & artifacts.
- Miscellaneous: Trimming, identification of films, legends, records filing, report distribution.

G. General Physics (10 Marks):

- Elementary idea of thermionic emission, Electron-idea of mass and nature of charge, Coulomb's law, Electric field, Unit of potential.
- Ohm's law, Units of resistance, potential and current, Combination of resistance in series and parallel. Fuses, Units of electric power, Earthing of electrical equipment.
- Magnetic fields, Lines of force, Field pattern due to a straight current carrying conductor, coil carrying current, electromagnet, Construction and working of galvanometer, voltmeter and ammeter, (moving coil type and moving magnet type). Heat and methods of transference of heat, condensers, Inductance and Impedance. A.C. and D.C. currents-effective current, RMS value, peak value. Electromagnetic induction – Laws, fields, influence. Transformers – Principles, construction, and uses of step down and High tension transformers.
- Diode valves and their use in rectifiers solid-state rectifiers, its various rectifying circuits uses in X-ray machines, production of X-rays and their properties, X-ray tube-Stationary anode and rotating anode & therapy tubes, X-ray circuit, interlocking circuits, relay and timers.

H. Radiographic Techniques (10 Marks):

- Upper Limb: Fingers individual and as a whole hands, Carpal bones wrists, Forearm, elbow-head of radius, humerus, shoulder joint, Acromioclavicular joint, scapula, sternoclavicular joint, small joints.
- Lower Limb: Toes, foot, calcaneum & other tarsal bones, ankle joint, legs, knees, patella, fibula, femur, intercondylar notch.
- Hip & Pelvis: Hip, Neck of femur, theatre procedure, for hip pinning or reduction, pelvis, sacro-iliac joints, pubic bones, acetabulum.



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- Vertebral Column: Curves, postures, relative levels atlanto, occipital region, odontoid process, Cervical spine, thoracic Inlet, Cervico, thoracic spine,
- lumbosacral spine, sacrum, coccy scoliosis, kyphosis, flexion, extension and neutral.
- Bones of the thorax: Sternum ribs. Skull: Land marks, Cranium, facial bones, maxilla, mandible, zygoma, T.M.
- joints, mastoids, petrous bones, optic foramen, sella turcica, P.N.S.
- Chest: Chest in teleradiography, chest supine & portable, Lordotic, apicogram and MMR.
- Abdomen: Preparation, indication and contraindication, acute abdomen, pregnancy abdomen for multiplicity maturity and foetal abnormality.
- Pelvimetry.
- Soft tissue: Neck and breast.
- Emergency Radiography: Bedside radiography, O.T. Radiography.
- Radiography for age evidence: Bone age evidence.
- Dental Radiography: Occlusal view, Dental X-ray, Panoramic view.

I. Radiographic Procedures (10 Marks):

- Pathology: Definition, cell growth, cell deformities, cell damage, defence mechanism, cell repair.
- Neoplasia: Benign & Malignant including its mode of growth and metastasis.
- Radiation: Local and systemic.
- Radiotherapy techniques.
- Emergency in Radiology.
- Contrast media.
- Urinary Tract: I.V.P., Retrograde Pyelography, Cystourethrography. Presacral Insufflation.
- Biliary Tract: Oral cholecystography, I.V.C, Trans hepatic percutaneous cholangiography preoperative cholangiography – T-tube cholangiography, E.R.C.P.
- Tomography: Principle, equipment and types of movements, procedure.
- Venography:
- Splenoportovenography, Peripheral venography.
- Lymphangiography.
- Mammography and Xeroradiography.
- Radiculography.
- Dacrocystography.
- Gastro-intestinal Tract: Ba-swallow, Ba-meal upper G.I.T., Ba-meal follow throughs, Ba-Enema.
- Female Genital Tract: Hystero Salpingography, Gynecography, Placentography & Pelvimetry.
- Angiography: Carotid angiography, Femoral arteriography, Aortography, Selective angiography etc.
- CNS: Ventriculography,
- Myelography, Pneumoencephalography.
- Sialography
- Sinography
- Nasopharyngography
- Laryngography
- Bronchography
- Arthrography
- Discography

J. Radiation Physics and related equipments (20 Marks):

- Latent images formation and its processing.
- Various units used for measuring radiation—Roentgen, rad and rem. Construction of X-ray tube, X-rays—its production and properties.
- Ionization chambers, G.M. Counter and Scintillation Counter, Interaction of X-ray with matter.



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- Quality and quantity of X-rays, HVT, linear absorption coefficient, Grid, Cones and Filters.
- Inverse square law, scattered radiations and appliances used to reduce it.
- II. Radioactivity
- Curie, Half-life, decay factor. Details about radium, cobalt and caesium.
- Doses—dose and dose rate, exposure dose, exit dose, surface dose, depth dose, isodose charts and their uses.
- Radiation Hazards, Protection against it, film badge, pocket ionization chamber, maximum permissible dose.
- High-tension control equipment – Diagnostic H.T. circuits, high tension generators, half wave full wave three phase, condensers discharge, contact voltage high tension switches, control and establishing equipment, tube filament supply, mains compensator mains resistance compensator. X-ray tubes – design, rating and care of X-ray tubes, practical considerations in choice of focus, inherent filtration. MAS meter elementary principles and construction, importance as check on. Radiographic results.
- Apparatus behaviour and additive tube loading, exposure timers – spring activated, synchronous motor, value (Low-tension ionization testing timer accuracy). Interlocks and safety devices. Circuits – Simple circuit diagram and illustration of sequence from mains supply to control X-ray exposure beam. Centering devices – mechanical and optical, interaction of X-rays and the body transmission in body tissues. Scattered radiation – control of scattered radiation, cones, diaphragm, single and multiple filters grid ratio in relation to KV, construction and operation, focused and non – focused, single stroke reciprocating and oscillating potter – bucky, diaphragms, cross cross grids, stationary grids, use etc.
- Production of X-ray tubes and high tension circuits for the production of control panel and control safety device and interlocks, basic principles of mega voltage X-ray machines.
- Fluoroscopy – Tube filtration, diaphragm, tilting couch screen grid and exploratory and control safety devices, compressors, protection, electrical radiographic and mechanical control, use and care of couch accessory fittings. Special equipment – body section radiography, apparatus and controls simultaneous multi section accessories specialized couches, skull table, mobile units. Image intensifiers, principles, optical systems, for viewing and recording final image electrical and x-ray supply protection, applications, including cine radiography, mass miniature radiography, special radiography, equipment for high speed serial techniques (etc.) rapid cassette changer rapid films changer, roll films, full size and miniature, biplane equipment, grids, protection, problems of processing and presentation, care and maintenance – general principle and routine use of charts supplied by manufactures, radiographic calibration procedure.
- Hospital staffing and organisation, records relating to patients and departmental statistics, professional attitude of the radiographer to patients and other members of the staff, medico legal aspects, minimising waiting time, appointments organisation stock taking and stock keeping.
- Care of patient: - first contact with patient in the department handling of chair and stretcher patients, lifting of ill and injured patients, elementary hygiene, personal cleanliness, hygiene in relation to patients. E.g. clean linen and receptive nursing care, temperature. First Aid: - Shock, asphyxia, convulsions, artificial respiration, electric shock, burns, scalds,
- Haemorrhage, pressure point, tourniquet, fractures, splints, bandaging, foreign bodies, poisons, drug, reactions, administration of oxygen.
- Preparation of a patient for general X-ray examinations. Departmental instruction to out patients or ward staff, use of aperients, enema and colonic irrigation, flatulence and flatus causes and methods of relief, principles of catheterization and intubations, premeditation, its uses and methods, anaesthetised patients, nursing care before and after special X-ray examinations e.g. in neurological, vascular and respiratory conditions diabetic patients, special attention to food, trauma hazards.
- Preparation of patients for special x-ray examinations barium enema, barium meal, intravenous pyelography cholecystography etc. and their administration.
- Principles and aspects: - Methods of sterilization, care and identification of instruments and surgical dressings in common use, setting of trays and trolleys for various examinations etc.
- Intravenous pyelography, biopsy, elementary operating theatre produce. Drugs in department-storage, labelling checking, regulations regarding



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- Contrast media- barium preparations, iodine
- Radiographic Photography:
- Photographic aspects of radiography- the fundamentals of the photographic process, light sensitive salts of silver, the photographic emulsion gelatin as suspension medium, size and frequency of the silver halide grain in relation to sensitivity and contrast, formation of the latent image, chemical development, construction of x-ray film base material, substratum coating, emulsion, coating anti-abrasive super coating sensitivity, storage of unexposed film.
- X-ray materials: - Type of emulsion, characteristics and control screen films, non-screen films, dental films, comparative speed and contrast to light and x-rays.
- Characteristics of x-ray emulsions, characteristics curves of x-ray film assessment of the results of correct exposure under & over exposure, density (D max) speed, contrast
- (Gamma infinity) graduation, fog, grain, exposure, kilovoltage and developing latitude. Intensifying screens
- fluorescence application of fluorescence in radiography, construction of an intensifying screen, types of emulsion in relation to type of salt, size of grain, coating, weight, kilovoltage, mounting and general care of screens, after glow test for reciprocal failure, intermittency effect. X-ray, testing a cassette for proving good screen contact, general case of cassettes. X-ray developers –
- Characteristics and detail freedom from chemical fog and staining, long life possibility of degeneration.
- Standardization of quality of developers and development – function and constituents of an x-ray developer, standardization by time and temperature development latitude, exhaustion of a developer, replenishment of developers, ultra rapid developers, combined developer and fixer, fixers and fixing, hardening agent, time of fixation, exhaustion of a fixer, electrolytic silver recovery and fixer regeneration, rapid fixers, separate hardening. Rinsing, washing and drying – objects of rinsing and washing, methods, employed, methods of drying films, processing – preparation of solutions, available water supply, nature of mixing, vessels, order of mixing solutions, filtration, making stock solutions, storage of dry chemicals, storage of solutions, processing units, hangers, care of hangers, control of temperature by heating elements and thermostat, water mixer, by refrigeration, use of ice – film quality, ultra rapid processing, tank or dish units, stop bath rinse, wetting agents, after treatment of films. Automatic processing principles, procedure and regeneration of solutions. Knowledge of Atomic Energy
- Regulatory Board (AERB) regulations and rules.

K. Specialized investigations (10 Marks):

- Computed Tomography
- Principles of CT – Basic Physics
- Recent developments, applications etc.
- Positioning in CT
- Different types of contrast materials.
- Emergency treatment.
- Radiation hazards
- Disposal of unused matter. Magnetic Resonance Imaging Principle – Physics – Techniques –
- Types of coils – Basic term used in MRI Operations, Applications, etc.
- Positioning in MRI.
- Different types of contrast materials.
- Emergency treatment.
- MRI hazards.
- Factors affecting quality of imaging. Ultrasound
- Physics – Types of ultrasound – Techniques of ultrasound scanning in different parts – positioning and filming – Principles of Doppler effect and colour Doppler.



Dr. Anmol
10.07.23
Faculty Incharge (Recruitment)