PARAMEDICAL COUNCIL OF INDIA

DIPLOMA IN ECG TECHNICIAN

SYLLABUS

Ch. No.157/1, Near Laxmi Nagar,Metro Station Gate No 1,Vikas Marg,Delhi-92

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COURSE DURATION:-

- It is 2 years + 6 months full time Diploma Course.

ELIGIBITY:-

- Candidate must have passed 12th with Physics, Chemistry, Biology or Physics, Chemistry, Math's with 35% marks in Intermediate exams. (FromUP board or any other recognized board).

- Candidate must have completed age of 17 years of age as on 31st December of admission year. There is no maximum age limit for the admission.

FIRST YEAR

1) E C G TECHNIQUE
2) ECG , DEFIBRILLATION
3) ELECTRICAL PHYSICS (INCLUDING GEN. PHYSICS)
4) ANATOMY & PHYSIOLOGY

SECOND YEAR

1) PHARMACOLOGY
2) BASIC OF CARDIAC TECHNOLOGY ECG
3) ELECTRICITY & ELECTROCARDIOSRAM
4) GENERAL PRINCIPAL OF HOSPITAL PRACTICE AND PATIENT CARE

FIRST PAPER: SYLLABUS COVERS

1. E C G TECHNIQUE

1. The abnormal electrocardiogram, Left atrial abnormality, Right atrial abnormality.
2. Left ventricular hypertrophy and enlargement, Right ventricular hypertrophy and enlargement.
3. Intraventricular conduction delays.
4. Left anterior fascicular block, Left posterior fascicular block.
5. Left bundle branch block, Right bundle branch block.

6. Myocardial ischemia and infarction, Repolarization (ST-T weve) abnormalities, QRS changes.

7. ECG in patients with pacemakers and other device.

8. Pacemaker programming.

9. Traditional and Advance Instruments used for Blood pressure recording, Pressure transducers, Defibrillators, Cathode ray tubes and physiological monitors plethysmography Pluse oximetry etc.

2. ECG, DEFIBRILLATION

1. An electrocardiogram (ECG or EKG) is a recording of the heart's electrical activity, while defibrillation is a procedure that uses an electrical shock to treat life-threatening cardiac arrhythmias.

2. An ECG is a basic tool for screening for heart disease. It can be used to evaluate a patient suspected of having a cardiac-related problem.

3. Defibrillation is a procedure that uses an electrical shock to treat life-threatening cardiac arrhythmias, such as ventricular fibrillation (V-Fib) and non-perusing ventricular tachycardia (V-Tach).

4. During defibrillation, a defibrillator delivers a shock to the heart to depolarize a large amount of the heart muscle, ending the arrhythmia.

5. Defibrillators can be external, Trans venous, or implanted.

6. External defibrillators, also known as automated external defibrillators (AEDs), can be used by lay responders or bystanders with little or no training.

7. During defibrillation, the patient's ECG is displayed on the defibrillator to help identify the rhythm.

8. The ECG can be displayed from the external pads, the patient's bedside monitor, or by connecting ECG leads to the patient.

9. A healthcare team may suggest wearing an ECG monitor at home if symptoms tend to come and go.

10. There are several types of portable ECGs, including Holter monitors and event monitors.

3. ELECTRICAL PHYSICS (INCLUDING GEN. PHYSICS)

1. Electricity is a secondary energy source that is produced by converting primary energy sources like coal, natural gas, solar energy, and wind energy into electrical power. A turbine generator converts the mechanical energy of a rotor into electrical energy.

2. Electric potential is the potential energy per unit charge. It's also the amount of energy that a unit of charge would release if it moved from its current position to the ground.

3. Capacitance is the ratio of charge on the conductors to the potential difference. Parallel plate capacitors store charge on their plates when connected to a voltage source.
4. The resistance of a wire is proportional to the resistivity of the material the wire is made of.
5. Clean air and water: Clean air and water, sanitation, and safe places for play and recreation are important for young children.
6. Electric potential energy is related to electric potential and work.
7. A document on general physics electricity that covers topics like electric potential, capacitance, and dielectrics.
8. Electricity: Electric charges, electric current, electric circuits, resistance, and Ohm's Law.
9. Measurement skills: Basic measurement skills and problem solving.
10. Electricity is the set of physical phenomena associated with the presence and motion of matter possessing an electric charge.

4. ANATOMY & PHYSIOLOGY

1. Basic cell of tissues.
2. Heart.
3. Circulation.
4. Lungs.
5. Diaphragm.
6. Liver.
7. Bran.
8. Spleen, kidney.
9. Circulatory systems.
10. Cardio vascular system.
11. Autonomic nervous system.
12. Action potential muscles contraction.
13. Gas exchange.
14. Thrombosis, platelet function.
15. Rennin angiotensin system.

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SECOND PAPER: SYLLABUS COVERS

1. PHARMACOLOGY

1.General pharmacology.

2. Drugs used for heart disease.

3. Effect of drugs and ECG changes.

4. Toxicity of drugs and ECG changes.

5. Epidemiology of CVD in India.

6. Hematology.

7. Anemia.

8. Bleeding disorders.

9. Laboratory tests used to diagnose bleeding disorders.

10. Respiratory System.

11. CNS.

12. Automatic nervous system.

13. Diabetes Mellitus.

14. Obesity.

2. BASIC OF CARDIAC TECHNOLOGY ECG

1. The ECG machine is designed to recognize and record any electrical activity within the heart.

2. It provides information about the function of the intracardiac conducting tissue of the heart and reflects the presence of cardiac disease through its electrical properties.

3. An ECG, or EKG, is a non-invasive test that measures the electrical activity of the heart. It's one of the simplest and fastest ways to evaluate the heart.

4. Electrodes are attached to the chest, arms, and legs, and connected to an ECG machine. The machine records the electrical activity of the heart and displays it as a tracing on graph paper.

5. An ECG can show how fast the heart is beating, the rhythm of the heartbeats, and the timing of electrical impulses.

6. An ECG can help diagnose a number of conditions, including arrhythmias, heart attack, chest pain, and more. It can also be used to assess how well a pacemaker or heart disease treatments are working.

7. Anyone who has chest pain, dizziness, lightheadedness, confusion, a pounding heartbeat, shortness of breath, or weakness might need an ECG. People with a family history of heart disease may also need an ECG, even if they don't have symptoms.

8. Dutch physician Willem Einthoven invented the ECG in 1902. He was awarded the Nobel Prize in Medicine in 1924 for his work.

9. Basics of electricity of functioning of electro medical equipments, earthing & care of apparatus, static electricity.

10. Intensive coronary unit & recovery room concepts.

11. Cardiac life support.

12. Management of cardiac arrest – definition, causes, external cardiac message, artificial.

13. Cardiac monitoring – definition, purpose of cardiac monitoring, how to recognize various.

3. ELECTRICITY & ELECTROCARDIOGRAM

1. An electrocardiogram (ECG or EKG) is a test that measures the electrical activity of the heart by recording the electrical impulses that coordinate the heart's contractions.

2. The test uses electrodes, which are small plastic patches that stick to the skin, to detect these electrical changes. The electrodes are then connected to an ECG machine, which translates the electrical signals into a graph of voltage versus time.

3. Electrodes are placed on the chest, arms, and sometimes legs, and connected to an ECG machine by lead wires.

4. An ECG can show how fast the heart is beating, the rhythm of the heartbeats, and the timing of the electrical impulses.

5. An ECG can help identify irregular heartbeats, evaluate problems related to the heart, and look for the cause of chest pain. It can also provide evidence of cardiovascular disease in people who don't have symptoms.

6. There are few risks associated with an ECG, but some people may experience a skin rash where the electrodes were placed.

7. The Dutch physician Einthoven invented the ECG in 1902.

8. An electrocardiogram (ECG or EKG) is a test to record the electrical signals in the heart.

9. It shows how the heart is beating.

10. Sticky patches called electrodes are placed on the chest and sometimes on the arms or legs. Wires connect the patches to a computer, which prints or displays results.

4. GENERAL PRINCIPAL OF HOSPITAL PRACTICE AND PATIENT CARE

1. At every beat, the heart is depolarized to trigger its contraction. This electrical activity is transmitted throughout the body and can be picked up on the skin.

2. This is the principle behind the ECG. An ECG machine records this activity via electrodes on the skin and displays it graphically.

3. Principles of 'asepsis sterilization methods of sterilization use of central sterile supply Departrnent care of identification of instruments surgical dressings in common use Including filament swabs, elementary operating theatric procedure setting of trays and Trolleys in the radiotherapy department.

4. Department all procedures-Department staffing and organization patients and departmental statistic professional attitude of the technologist to patient and other members of the staff medico legal aspects accident in the department appointment organization minimizing waiting time out patient and follow up clinic stock taking and stock keeping.

5. Drugs m the department - Storage classification labeling and checking regulations Regarding dangerous and other drugs of units of measurement special drugs ant Depressive antihypertensive etc.

6. A core value of general practice that involves providing care that responds to a patient's needs, preferences, and values. This includes ensuring that patient values guide all clinical decisions.

7. An important principle of primary care that includes approachability, acceptability, availability, affordability, and appropriateness.

8. A vital consideration for any hospital, as both patients and staff need a clean and safe facility.
9. An important consideration for medical care and central to evaluating the quality of care.

PRACTICAL

1. ECG Recording pediatrics/ Adult patient.
2. Operations, calibration and servicing of ECG.
3. Recording of Holter / stress ECG.
4. ECG Monitoring of patients in ICCU.
5. Ambulatory B.P. Monitoring.
6. Operations of 2-D Echo/M. Mode Doppler and CFM system its maintenance.
7. Operation of TEE and its maintenance.
8. Operations and control of recording system in cath. Lab.
9. Operation of Blood Ox meter, Ventilator and ABC Machine.
10. Operation of Tagarno and its maintenance.
11. ICCU Monitoring.
12. Control of film processing and developing.
13. Other practical in assisting in temporary – Pace – Maker/ Permanent Pace maker etc.

BOOK

1. **LAB TECH ANATOMY AND PHYSIOLOGY –** BY DR. N. MURGESH
2. **LAB TECH COMMUNITY HEALTH –** BY DR. N. MURGESH
3. **LAB TECH GENERAL BIOCHEMISTRY –** BY DR. DINESH KUMAR SHUKLA, DR. N. MURGESH
4. **LAB TECH CLINICAL BIOCHEMISTRY -** BY DR. DINESH KUMAR SHUKLA, DR. N. MURGESH
5. **LAB TECH CLINICAL PATHOLOGY -** BY DR. N. MURGESH

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6. **LAB TECH HISTOPATHOLOGY & CYTOPATHOLOGY –**

   BY DR. DINESH KUMAR SHUKLA, DR. N. MURGESH

7. **LAB TECH HAEMATOLOGY -** BY DR. DINESH KUMAR SHUKLA, DR. N. MURGESH
8. **LAB TECH BLOOD BANKING -** BY DR. N. MURGESH
9. **LAB TECH MICROBIOLOGY I -** BY DR. DINESH KUMAR SHUKLA, DR. N. MURGESH
10. **LAB TECH MICROBIOLOGY II -** BY DR. DINESH KUMAR SHUKLA, DR. N. MURGESH