

UP STATE PARAMEDICAL FACULTY



DIPLOMA IN ELECTRO-CARDIOGRAPHY TECHNICIAN--117

Duration : 2years +6 month internship

Eligibility

* Interested candidate must have passed 10+2 with physics chemistry biology or math with 40% marks by state board or any recognized board/ university.

Syllabus FIRST YEAR

PAPER – I -- 1- Anatomy, Physiology

PAPER – I -- 2-Elementary Physics in relation to ECG Technique

Syllabus SECOND YEAR

Paper – I - Cardiology

Paper – II --Electrocardiograph, Maintenance of ECG Machine, etc., First Aid Management of Cardiac Emergencies

Model paper - FIRST YEAR

PAPER – I -- Anatomy, Physiology

Time : 3 Hours Full Marks : 80

Question 1 is Compulsory. Answer any Two from Question No. 2 to 5 and any Four from Question No. 6

Q-1) State TRUE/FALSE as applicable:- 10x1 = 10

- i) There are eight cervical vertebrae.
- ii) Left Anterior Descending artery is a branch of Left Main Coronary

Arteries.

- iii) The Circle of Willis is formed by Anterior, Middle and Posterior Cerebral arteries.
- iv) Liver is a paired organ.
- v) Central Nervous System consists of the Cranial Nerves and the Spinal Nerves.
- vi) Diastole is longer than Systole.

- vii) SA node is located at the junction of Superior Vena Cava and Right Atrium.
- viii) P Wave stands for Ventricular Depolarisation.
- ix) Adrenaline acts on both on Alpha and Beta Receptors.
- x) Adrenaline causes broncho-constriction.

Answer any Two from Question No. 2 to 5 and any Four from Question No. 6

2x20 = 40

- Q2. Describe the normal coronary arterial circulation with diagram
15+5 = 20
- Q3. Describe the normal Conduction System and Pacing of the heart with diagram.
15+5 = 20
- Q4. Describe the different mechanisms of Transport across cell membrane.
20
- Q5. What is Blood Pressure? How to measure BP? Which physiological mechanisms do regulate the BP in human?
5+5+10 = 20
- Q6. Write short notes on (**Any Four**) of the five topics stated below:-
4 x 7½ = 30

- a) Action Potential.
- b) Coagulation Cascade.
- c) Muscle contraction.
- d) Cardiac Cycle.
- e) Atherosclerosis.

Paper – II
Elementary Physics in relation to ECG Technique

Time – 3 hours

Full Marks – 80

Question 1 is Compulsory.

Answer any Two from Question No. 2 to 5 and any Four from Question No. 6

- Q-1) State **TRUE/FALSE** as applicable:- **10x1 = 10**
- i) Current is the ratio of Voltage and Resistance.
- ii) Superior Axis is located in North West quadrant.
- iii) AV nodal delay is reflected in PR interval.
- iv) QRS complex stands for ventricular repolarisation.
- v) Slow fast AVNRT is the commonest variety of all the types of AVNRT encountered.
- vi) Full form of WPW syndrome is Wolf Parkinson White Syndrome.
- vii) Fusion beat is exemplified by Pre-excitation.

viii) Sinus Bradycardia is associated with heart rate lower than sixty per minute and sequential relationship of P, QRS and T.

ix) Wide QRS is defined as QRS width greater than equal to 120 msec.

x) ST elevation or depression is measured with respect to PR segment or TP segment.

Answer any Two from Question No. 2 to 5 and any Four from

Question no. 6.

2x20= 40

Q2. Describe principle of Tread Mill Test. Describe Bruce Protocol and Modified Bruce Protocol of Tread Mill Test. State five contraindications of TMT.

5+5+5+5 = 20

Q3. Describe the structure of ECG machine with sketch diagram and enumerate the principle of its functioning.

10+10 = 20

Q4. What is Defibrillation? Describe the steps of electrical energy delivery. What is the difference between defibrillation and DC Cardioversion?

5+10+5 = 20

Q5. What is Holter Monitoring (ambulatory ECG)? How does it help in diagnosis of (a) Sick Sinus Syndrom (b) AV Blocks and (c) Ventricular premature beats & ventricular Tachycardia?

5+5+5+5 = 20

Q6. Write short notes on (**Any Four**) of the five topics stated below:-

4 x 7½ = 30

- ECG during Carotid Sinus Massage.
- ECG during Head Up Tilt Table Test.
- ECG monitoring in ICCU patients.
- Basic Life Support in Cardio-Pulmonary Resuscitation.
- ECG manifestations in patients in the Cath Lab.

Model paper -- SECOND YEAR

Paper – I Cardiology

Time : 3 Hours

Full Marks : 80

Question 1 is Compulsory.

**Answer any Two from Question No. 2 to 5 and
any Four from Question No. 6**

Q-1) State TRUE/FALSE as applicable:- 10x1 = 10

- Arthritis, Carditis, Chorea, Erythema Marginatum and Subcutaneous Nodules constitute the Jones minor criteria of the initial attack of Rheumatic

Fever.

- ii) Pericarditis is characterized by ST elevation with Concavity upwards.
- iii) First Degree AV Block is characterized by prolongation of PR interval.
- iv) Spike before QRS complex is present when ventricle is paced by artificial pacemaker.
- v) When magnet is placed over implanted pacemaker the sensing function is switched off.
- vi) Inferior Wall STEMI is characterized by ST elevation in V1 V3 leads.
- vii) Anterior Wall Ischaemia is characterized by ST depression in leads II, III and aVF.
- viii) Sinus Tachycardia is associated with heart rate lower than sixty per minute and sequential relationship of P, QRS and T.
- ix) Narrow QRS is defined as QRS width less than 100 msec.
- x) ST elevation in Pericarditis is measured with respect to either the PR segment or TP segmen

Answer any Two from Question No. 2 to 5 and any Four from Question No. 6

2x20 = 40

Q2. Describe the Major and minor criteria of Acute Rheumatic Fever.
Describe the ECG findings and Blood investigations of Rheumatic Fever.

5+5+5+5 = 20

Q3. Describe ECG pictures of STEMI and NSTEMI in different walls of the heart.

10+10 = 20

Q4. What is Heart failure? Describe the features of Heart failure. Mention five causes of Heart failure.

5+10+5 = 20

Q5. What is Infective Endocarditis? Describe the clinical features and outline of treatment of infective endocarditis. Describe five conditions that may cause infective endocarditis.

5+5+5+5 = 20

Q6. Write short notes on (Any Four) of the five topics stated below:-

4 x 7½ = 30

- a) Hypertrophic Obstructive Cardio Myopathy.
- b) Temporary cardiac pacing.
- c) Intubations of ICCU patients before Ventilation Support.
- d) Syncope.
- e) Pulse Oximeter.

Electrocardiograph, Maintenance of ECG Machine, etc., First Aid Management of Cardiac Emergencies

Time – 3 hours

Full Marks – 80

Question 1 is Compulsory. Answer any Two from Question No. 2 to 5 and any Four from Question No. 6

Q-1) State **TRUE/FALSE** as applicable:- **10x1 = 10**

- i) Acute Coronary Syndrome includes STEMI, NSTEMI and Unstable Angina.
- ii) Syncope and Seizure are synonymous.
- iii) Adenosine is the drug of first choice for treatment of PSVT.
- iv) Ventricular Tachycardia can cause Sudden Cardiac Death
- v) NT Pro-BNP test helps differentiation between respiratory distress of heart cause and lung cause.
- vi) Trop T test can be falsely positive in co-existing renal failure.
- vii) Technical dextrocardia is due to wrong placement of electrodes.
- viii) Deep inspiration may abolish T inversion in lead III.
- ix) Varying RR interval can occur in Atrial Fibrillation and Sinus Arrhythmia.
- x) Pericarditis shows ST elevation with convexity upwards.

Answer any Two from Question No. 2 to 5 and any Four from Question No. 6

2x20 = 40

Q2. Describe the different steps of maintenance of ECG, Holter and TMT machines.

10+5+5 = 20

Q3. Describe the steps of 12 Lead ECG recording. What are the pitfalls of ECG in diagnosing heart disease?

10+10 = 20

Q4. What is Sudden Cardiac Death? Describe the steps of basic life support. What are the common causes of SCD (Sudden Cardiac Death)?

5+10+5 = 20

Q5. What are the common causes of Acute Left Ventricular Failure? Mention five common conduction defects that cause Syncope. What are the ECG features of (a) Complete Heart Block, (b) 2nd degree AV Block.

5+5+5+5 = 20

Q6. Write short notes on (**Any Four**) of the five topics stated below:-

4 x 7½ = 30

- a) Cardiac Defibrillator.
- b) ECG picture in Atrial Fibrillation.
- c) ECG picture in Ventricular Tachycardia.
- d) Troponin T.
- e) Paroxysmal Supra Ventricular Tachycardia (PSVT).
