[LJ 0816] AUGUST 2016 **Sub. Code: 2411**

DIPLOMA IN CARDIAC NON-INVASIVE TECHNOLOGY

SECOND YEAR

PAPER I – BASIC CARDIOVASCULAR INVESTIGATIONS

Q.P. Code : 842411

Time : Three Hours **Maximum : 100 Marks**

Answer all questions

I. Elaborate on: **(3 x 10 = 30)**

1. Discuss the ECG abnormalities in various faulty lead placements.
2. Non ECG changes during a positive Treadmill exercise stress testing.
3. Discuss the precaution and procedure of Holter monitor connection.

II. Write Notes on: **(10 x 5 = 50)**

1. Discuss the blood pressure changes that occur during a TMT test.
2. Discuss the various parts of a TMT equipment.
3. Describe the ECG findings in pericardial disorders.
4. Discuss the analysis of ischemic findings during Holter monitor recordings.
5. Discuss about heart rate variability.
6. Discuss the ECG changes in complete heart block?
7. Discuss the baseline parameters of a normal ECG graph.
8. Discuss the ECG recording procedure in amputated patients (both side below knee level).
9. Discuss the heart rate changes that occur in a TMT test.
10. Discuss the arrhythmias that occur during a TMT.

III. Short answers on: **(10 x 2 = 20)**

1. How will you calculate corrected QT interval?
2. What are the causes for right axis deviation in ECG?
3. Describe the features of a normal P wave in leads 2 and VI.
4. Describe the morphology of a premature atrial beat.
5. Define ventricular tachycardia and ventricular fibrillation.
6. What is a sinus pause and what is its significance?
7. Causes for ventricular premature beat.
8. What is sub maximal work load in TMT?
9. Mention two uses of TMT in post myocardial infarction patient.
10. What are the symptoms that can develop in a patient during TMT?

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[LL 0817] AUGUST 2017 **Sub. Code: 2411**

DIPLOMA IN CARDIAC NON-INVASIVE TECHNOLOGY

SECOND YEAR

PAPER I – BASIC CARDIOVASCULAR INVESTIGATIONS

Q.P. Code : 842411

Time : Three Hours **Maximum : 100 Marks**

Answer all questions

I. Elaborate on: **(3 x 10 = 30)**

1. Draw the hexaxial reference frame and discuss its applications.
2. Discuss the absolute indications for stopping the TMT test.
3. What are the indications for Holter monitoring?

II. Write Notes on: **(10 x 5 = 50)**

1. Discuss the possible artefacts in ECG tracing.
2. Discuss the ECG findings in acute myocardial infarction.
3. Discuss the various types of ventricular arrhythmias.
4. Discuss the ECG findings in hyper and hypokalemia.
5. Describe the ECG findings in complete heart block.
6. Discuss the various exercise protocols for TMT.
7. What are the emergencies during TMT?
8. Discuss the outcomes of a TMT test.
9. Discuss the arrhythmia analysis during Holter monitor testing.
10. Discuss the conduction disturbances analysis during Holter monitor testing.

III. Short answers on: **(10 x 2 = 20)**

1. What are the methods to calculate heart rate from a ECG tracing?
2. What are the ECG findings in atrial fibrillation?
3. Define sinus tachycardia / bradycardia and sinus arrhythmia.
4. Define sinus rhythm.
5. Mention two uses of ambulatory electrocardiography.
6. What is a fusion beat and what are the causes?
7. Describe the morphology of a ventricular premature beat.
8. Give two examples for False positivity and negativity in TMT.
9. Duke treadmill Score.
10. What is modified Bruce protocol?

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[LM 0218] FEBRUARY 2018 **Sub. Code: 2411**

DIPLOMA IN CARDIAC NON-INVASIVE TECHNOLOGY

SECOND YEAR

PAPER I – BASIC CARDIOVASCULAR INVESTIGATIONS

Q.P. Code : 842411

Time : Three Hours **Maximum : 100 Marks**

Answer all questions

I. Elaborate on: **(3 x 10 = 30)**

1. Discuss the ECG abnormalities in different types of atrio ventricular, bundle branch and fascicular blocks.
2. Contraindications for treadmill exercise stress testing.
3. How will you analyze the Holter monitor recording?

II. Write Notes on: **(10 x 5 = 50)**

1. Discuss the importance of QT interval.
2. Normal and abnormal repolarization ECG changes.
3. Right and posterior leads placement.
4. Discuss the various types of atrial arrhythmias.
5. Discuss the procedures of Holter monitor connection.
6. Describe the ECG findings in atrial abnormalities.
7. Discuss the ECG findings in pre-excitation.
8. Procedures to be followed while preparing a patient for TMT.
9. Discuss the abnormal and normal ST segment changes in TMT.
10. What are the indications for a TMT testing?

III. Short answers on: **(10 x 2 = 20)**

1. What are the causes for left axis deviation in ECG?
2. What is a rhythm strip and why is it important?
3. What is sick sinus syndrome?
4. Causes for artefacts in Holter recording.
5. Indications for Holter reading for more than 24 hours.
6. What is the influence of beta blockers on TMT?
7. What is modified Bruce protocol?
8. What are the contraindications for TMT?
9. What is chronotropic incompetence?
10. What are the ischemic changes expected during TMT and what are the leads that are more sensitive to ischemia during TMT?

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[LN 0818] AUGUST 2018 **Sub. Code: 2411**

DIPLOMA IN CARDIAC NON-INVASIVE TECHNOLOGY

SECOND YEAR

PAPER I – BASIC CARDIOVASCULAR INVESTIGATIONS

Q.P. Code : 842411

Time : Three Hours **Maximum : 100 Marks**

Answer all questions

I. Elaborate on: **(3 x 10 = 30)**

1. Discuss in detail about the ECG features of myocardial ischemia and myocardial infarction.
2. Discuss in detail about the protocols, procedure, indications and absolute indicators to discontinue the test in tread mill exercise testing.
3. Define an ECG, state the fundamental principles of electrocardiography.

II. Write Notes on: **(10 x 5 = 50)**

1. Write in detail on exercise protocols of TMT.
2. Explain the ECG features in left bundle branch block.
3. Write about Einthoven's triangle.
4. Discuss the ECG changes in complete heart block.
5. Write about indications and contraindications of TMT.
6. Discuss about standardization and its errors.
7. Discuss the causes and ECG features of atrial fibrillation and atrial flutter.
8. Explain about torsade’s de pointes.
9. How you will maintain and care the ECG machine?
10. Right and posterior leads placement.

III. Short answers on: **(10 x 2 = 20)**

1. Mention two uses of ambulatory electrocardiography.
2. What is metabolic equivalents?
3. What is Bazett’s formula and its implications?
4. Describe the morphology of ventricular premature beat.
5. What is a fusion beat and what are the causes?
6. What is the normal PR interval and QT interval?
7. What is junctional rhythm?
8. What is sick sinus syndrome?
9. Duke treadmill Score.
10. Define ventricular flutter.

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[LP 0819] AUGUST 2019 **Sub. Code: 2411**

DIPLOMA IN CARDIAC NON-INVASIVE TECHNOLOGY

SECOND YEAR

PAPER I – BASIC CARDIOVASCULAR INVESTIGATIONS

Q.P. Code: 842411

Time : Three Hours **Maximum : 100 Marks**

Answer all questions

I. Elaborate on: **(3 x 10 = 30)**

1. Discuss in detail about the causes, types, morphology and ECG features of atrio ventricular block.
2. Draw the hexaxial reference frame and discuss its applications.
3. Discuss the absolute indications for stopping the TMT test.

II. Write Notes on: **(10 x 5 = 50)**

1. Write about Wilson central terminal.
2. Explain the causes of false positive, false negative and positive treadmill test.
3. What are the ECG changes in left anterior and left posterior fascicular block?
4. Discuss the importance of QT interval.
5. Explain about the various methods of calculating heart rate in an ECG.
6. Discuss about the primary and secondary T wave changes.
7. Discuss about standardization and its errors.
8. How will you record a 12 lead ECG and a rhythm strip?
9. Explain the ECG changes in hyperacute phase of myocardial infarction.
10. Discuss the arrhythmias that occur during tread mill test.

III. Short answers on: **(10 x 2 = 20)**

1. What is sinus pause and sinus arrhythmia?
2. What is over damping ECG?
3. What are the leads associated with inferior and posterior segments of left ventricle?
4. Describe the morphology of atrial premature beat.
5. What is modified Bruce protocol?
6. What is the normal P wave duration and amplitude in II and V1?
7. What are the causes for ventricular tachycardia?
8. Causes for artefacts in Holter recording.
9. Emergency drugs used in cardiac arrest.
10. What are the ECG changes in Hypothermia?

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[LQ 0220] FEBRUARY 2020 **Sub. Code: 2411**

DIPLOMA IN CARDIAC NON-INVASIVE TECHNOLOGY

SECOND YEAR

PAPER I – BASIC CARDIOVASCULAR INVESTIGATIONS

Q.P. Code: 842411

Time : Three Hours **Maximum : 100 Marks**

Answer all questions

I. Elaborate on: **(3 x 10 = 30)**

1. Discuss the ECG abnormalities in various faulty lead placements.
2. Discuss in detail about the principles, indications and precautions to be taken during holter testing.
3. Discuss in detail about the causes, mechanism and ECG features of left bundle branch block and right bundle branch block.

II. Write Notes on: **(10 x 5 = 50)**

1. Explain the steps in interpretation of ECG.
2. Explain the causes of ventricular arrhythmias and atrial arrhythmias.
3. What are the causes and ECG changes in right axis deviation?
4. Explain the types of ST Depression.
5. Explain about normal Q wave morphology and pathological Q waves.
6. Torsedes de pointes.
7. Describe the ECG findings in pericardial disorders.
8. Write about Einthoven's triangle.
9. Explain the ECG changes in left ventricular hypertrophy.
10. Electrolyte and metabolic ECG abnormalities.

III. Short answers on: **(10 x 2 = 20)**

1. What is normal sinus rhythm?
2. What is the influence of beta blockers on TMT?
3. What is the significance of osborn wave?
4. Where will you see the U wave prominently in ECG? Does it have any significance?
5. What are the causes of myocardial ischemia?
6. What is submaximal work load in tread mill test?
7. What are the ECG changes in atrial fibrillation?
8. What are the parts in tread mill testing equipment?
9. What is a rhythm strip and why is it important?
10. Write about wiring diagram of heart.

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THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

[LR 1220] DECEMBER 2020 Sub. Code: 2411

(AUGUST 2020 EXAM SESSION)

DIPLOMA IN CARDIAC NON-INVASIVE TECHNOLOGY

SECOND YEAR – (Regulation from 2014 -2015 & 2018-2019)

PAPER I – BASIC CARDIOVASCULAR INVESTIGATIONS

Q.P. Code: 842411

Time : Three Hours **Maximum : 100 Marks**

Answer all Questions

I. Elaborate on: **(3 x 10 = 30)**

1. Discuss the ECG abnormalities in various faulty Lead placements.
2. Discuss in detail about the principles, indications and precautions to be taken during Holter Testing.
3. Discuss in detail about the causes, mechanism and ECG features of Left Bundle branch Block and Right Bundle branch Block.

II. Write Notes on: **(10 x 5 = 50)**

1. Explain the steps in interpretation of ECG.
2. Explain the causes of Ventricular Arrhythmias and Atrial Arrhythmias.
3. What are the causes and ECG changes in Right Axis Deviation?
4. Explain the types of ST Depression.
5. Explain about normal Q wave morphology and pathological Q waves.
6. Torsedes de pointes.
7. Describe the ECG findings in Pericardial disorders.
8. Write about Einthoven's triangle.
9. Explain the ECG changes in Left Ventricular Hypertrophy.
10. Electrolyte and Metabolic ECG abnormalities.

III. Short answers on: **(10 x 2 = 20)**

1. What is normal Sinus rhythm?
2. What is the influence of Beta blockers on TMT?
3. What is the significance of Osborn wave?
4. Where will you see the U wave prominently in ECG? Does it have any significance?
5. What are the causes of Myocardial Ischemia?
6. What is Sub maximal work load in Tread mill test?
7. What are the ECG changes in Atrial Fibrillation?
8. What are the parts in Tread mill testing Equipment?
9. What is a Rhythm Strip and why is it important?
10. Write about Wiring diagram of Heart.

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THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

[AHS 0122] JANUARY 2022 Sub. Code: 2411
(FEBRUARY 2021 & AUGUST 2021 EXAM SESSION)

DIPLOMA IN CARDIAC NON-INVASIVE TECHNOLOGY
SECOND YEAR – (Regulation from 2014 -2015 & 2018-2019)
PAPER I – BASIC CARDIOVASCULAR INVESTIGATIONS
Q.P. Code: 842411

Time: Three hours **Answer ALL Questions** **Maximum: 100 Marks**

I. Elaborate on: **(3 x 10 = 30)**

1. Discuss the absolute indications for stopping the TMT test.
2. Discuss the ECG abnormalities in different types of atrioventricular, bundle branch and fascicular blocks.
3. Contraindications for Treadmill exercise Stress testing

II. Write Notes on: **(10 x 5 = 50)**

1. Discuss the blood pressure changes that occur during a TMT test.
2. What are the emergencies during TMT?
3. Discuss the outcomes of a TMT test.
4. Discuss the ECG findings in hyper and Hypokalemia.
5. Discuss the procedures of Holter monitor connection.
6. How will you record a 12 lead ECG and a rhythm strip?
7. Describe the ECG findings in Pericardial disorders.
8. Write about Einthoven's triangle.
9. Discuss the Arrhythmias that occur during Treadmill test.
10. Describe the ECG findings in complete Heart block.

III. Short answers on: **(10 x 2 = 20)**

1. How will you calculate corrected Q Tinterval?
2. What are the causes for right axis deviation in ECG?
3. What is sub maximal workload in TMT?
4. Mention two uses of TMT in post myocardial infarction patient.
5. What are the symptoms that can develop in a patient during TMT?
6. Duke treadmill Score.
7. What is over damping ECG?
8. Define Ventricular flutter.
9. What is Submaximal workload in Treadmill test?
10. What is normal Sinus Rhythm?

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THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

[AHS 0922] SEPTEMBER 2022 Sub. Code: 2411
(FEBRUARY 2022 & AUGUST 2022 EXAM SESSIONS)

DIPLOMA IN CARDIAC NON-INVASIVE TECHNOLOGY
SECOND YEAR (Regulations from 2014-2015 & 2018-2019)
PAPER I – BASIC CARDIOVASCULAR INVESTIGATIONS
Q. P. Code: 842411

Time: Three hours **Maximum : 100 Marks**

Answer ALL Questions

I. Elaborate on: **(3 x 10 = 30)**

1. Discuss the absolute indications for stopping the TMT test. How will you manage complications during Treadmill testing?
2. Discuss the procedures and precautions of Holter monitor connection.
3. Discuss in detail about the ECG features of myocardial infarction and myocardial ischemia.

II. Write notes on: **(10×5=50)**

1. Write about exercise protocols of TMT.
2. Maintenance and care of ECG machine.
3. Right and posterior leads placement. Significance in clinical practice
4. ECG finding in atrial abnormalities.
5. ECG features of AV block.
6. Write about contraindication of TMT.
7. Write about the primary and secondary T Wave changes.
8. Discuss in detail about the ECG features of left bundle branch block.
9. How will you record a 12 lead ECG and a rhythm strip?
10. Discuss outcomes of treadmill test.

III. Short answers on: **(10×2=20)**

1. Morphology of ventricular premature beat.
2. Duke treadmill score.
3. Two uses of ambulatory electrocardiography.
4. What is fusion beat and what are the causes?
5. Sub maximal work load in TMT.
6. Rhythm strip and why is it important?
7. Calculate corrected QT interval.
8. What are the causes of ventricular arrhythmias?
9. What is sinus pause and sinus arrhythmia?
10. What is the influence of beta blockers on TMT?

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