

[LH 0815]

AUGUST 2015

Sub.Code :2522

B.Sc. NEURO ELECTRO PHYSIOLOGY

THIRD YEAR

**PAPER II – POLYSOMNOGRAPHY, TRANSCRANIAL
MAGNETIC STIMULATION, AUTONOMIC LAB,
INTRAOPERATIVE MONITORING**

Q.P. Code : 802522

Time: Three Hours

Maximum : 100 Marks

Answer All questions

I. Elaborate on:

(3 x 10 = 30)

1. Describe the organisation of normal sleep.
2. Intraoperative monitoring of acoustic nerve and brainstem auditory pathways.
3. Indications of intraoperative electrophysiological monitoring.

II. Write notes on:

(8 x 5 = 40)

1. Indications of autonomic nervous system testing.
2. Role of transcranial magnetic stimulation in stroke rehabilitation.
3. Effects of anaesthetics on evoked potentials and EEG.
4. Stimulation Protocols in transcranial magnetic stimulation.
5. Patient preparation before autonomic nervous system testing.
6. Advantages, limitations, and complications of Electrocardiography.
7. Write about the techniques and uses of sympathetic skin response.
8. Write about obstructive sleep apnea.

III. Short Answers on:

(10 x 3 = 30)

1. Effect of aging on sleep architecture.
2. Write in brief about maintenance of wakefulness test.
3. Intra operative spinal root monitoring.
4. Write in brief about transcranial direct current stimulation.
5. Write about parasomnias.
6. Postural Orthostatic Tachycardia Syndrome.
7. Utility of transcranial magnetic stimulation in chronic pain.
8. HR Variability with Respiration.
9. Write about Insomnia.
10. Blood pressure variation with changes in posture.

B.Sc. NEURO ELECTRO PHYSIOLOGY
THIRD YEAR
PAPER II – POLYSOMNOGRAPHY, TRANSCRANIAL MAGNETIC
STIMULATION, AUTONOMIC LAB, INTRAOPERATIVE MONITORING

Q.P. Code: 802522

Time: Three Hours

Maximum : 100 Marks

Answer All questions

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

1. Describe the basis of obstructive sleep apnoea and how polysomnography is used for its diagnosis.
2. Cardiac parasympathetic function tests and mention neurological diseases in which there can be autonomic dysfunction?
3. Mention the various Neurosurgical procedures in which Intraoperative monitoring can be used and describe the procedure for monitoring a Cerebello pontine angle tumour surgery?

II. Write notes on: **(8 x 5 = 40)**

1. Parasomnias.
2. REM Sleep disorders.
3. Techniques of measuring central motor conduction time.
4. Motor evoked potential.
5. Mention disorders where Transcranial Magnetic stimulation can be helpful.
6. What D Waves in Transcranial Magnetic stimulation?
7. Central sleep apnoea.
8. Brain mapping.

III. Short answers on: **(10 x 3 = 30)**

1. Phases in the valsalva response.
2. Beat to beat variability.
3. Motor threshold in Transcranial Magnetic stimulation.
4. Neurotonic discharge in Intraoperative monitoring.
5. Tilt table test.
6. Narcolepsy.
7. Sympathetic skin response.
8. Daytime somnolence.
9. Stages of sleep.
10. Coils used in Transcranial Magnetic stimulation.

**B.Sc. NEURO ELECTRO PHYSIOLOGY
THIRD YEAR
PAPER II – POLYSOMNOGRAPHY, TRANSCRANIAL MAGNETIC
STIMULATION, AUTONOMIC LAB, INTRAOPERATIVE MONITORING**

Q.P. Code: 802522

Time: Three Hours

Maximum : 100 Marks

Answer All questions

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

1. Mention the common neurological disorders in which polysomnography is used and describe how polysomnography is done?
2. Mention the various Neurosurgical procedures in which Intraoperative monitoring can be used and describe the procedure for monitoring a conus medullary lesion Central sleep apnoea surgery.
3. Utility of Transcranial Magnetic stimulation in neurological disorders.

II. Write notes on: **(8 x 5 = 40)**

1. Neurological diseases in which autonomic dysfunction are commonly seen.
2. Sympathetic skin response.
3. Postural Tachycardia syndrome (POTS).
4. Central conduction time in Transcranial Magnetic stimulation.
5. Motor threshold in Transcranial Magnetic stimulation.
6. Bedside autonomic function testing.
7. Obstructive sleep apnoea.
8. Phases in the valsalva response.

III. Short answers on: **(10 x 3 = 30)**

1. Circadian rhythm.
2. Neurotonic discharge Intraoperative monitoring.
3. Beat to beat variability.
4. Brain mapping.
5. D Waves in Transcranial Magnetic stimulation.
6. Intraoperative monitoring in aneurysm surgeries.
7. Actigraphy.
8. Jet lag.
9. Somnambulism.
10. Motor evoked potential.

**B.Sc. NEURO ELECTRO PHYSIOLOGY
THIRD YEAR**

**PAPER II – POLYSOMNOGRAPHY, TRANSCRANIAL MAGNETIC
STIMULATION, AUTONOMIC LAB, INTRAOPERATIVE MONITORING**

Q.P. Code: 802522

Time: Three Hours

Maximum : 100 Marks

Answer All questions

I. Elaborate on:

(3 x 10 = 30)

1. Mention disorders where Transcranial Magnetic stimulation can be helpful. What is the principals and physiological basis of this treatment?
2. Mention the various Neurosurgical procedures in which Intraoperative monitoring can be used. Describe the procedure for the Intraoperative monitoring of a spinal cord tumour surgery?
3. Mention neurological diseases in which there can be autonomic dysfunction and describe the bedside autonomic function tests?

II. Write notes on:

(8 x 5 = 40)

1. Narcolepsy.
2. Median sleep latency test.
3. Utility of Transcranial Magnetic stimulation in pain syndromes.
4. Different coils used in Transcranial Magnetic stimulation.
5. The valsalva maneuver in the evaluation of autonomic functions.
6. Orthostatic hypotension.
7. Intraoperative monitoring in Cerebello pontine angle tumour surgery.
8. Central conduction time in Transcranial Magnetic stimulation.

III. Short answers on:

(10 x 3 = 30)

1. Components of polysomnography.
2. Common sleep disorders in the elderly.
3. Insomnia.
4. Central sleep apnoea.
5. Contraindications for the use of Transcranial Magnetic stimulation.
6. Sympathetic skin response.
7. Phases in the valsalva response.
8. Neurological disorders in which polysomnography can be useful.
9. Sympathetic skin response.
10. What are D Waves in Transcranial Magnetic stimulation?

B.Sc. NEURO ELECTRO PHYSIOLOGY

THIRD YEAR

**PAPER II – POLYSOMNOGRAPHY, TRANSCRANIAL MAGNETIC
STIMULATION, AUTONOMIC LAB, INTRAOPERATIVE MONITORING**

Q.P. Code: 802522

Time: Three Hours

Maximum : 100 Marks

Answer All questions

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

1. Anatomy and disorders of sleep.
2. Polysomnography, actigraphy and MSLT.
3. Intra-operative monitoring, instrumentation, techniques and preparation.

II. Write notes on: **(8 x 5 = 40)**

1. Motor evoked potentials application and its uses.
2. Parasomnias.
3. Levels of sleep structure.
4. Sleep disorders in dementia and movement disorders.
5. Precautions to be taken during IOM.
6. Central and obstructive sleep apnoea.
7. Stages of sleep.
8. Sleep disorders in elderly.

III. Short answers on: **(10 x 3 = 30)**

1. Effect of aging on sleep architecture.
2. Write in brief about maintenance of wakefulness test (MWT).
3. Intra operative spinal root monitoring.
4. Write in brief about transcranial direct current stimulation.
5. Narcolepsy.
6. Restless leg syndrome.
7. Utility of actigraphy.
8. HR Variability with Respiration.
9. Write about titration.
10. Bipap/Cpap.

B.Sc. NEURO ELECTRO PHYSIOLOGY

THIRD YEAR

**PAPER II – POLYSOMNOGRAPHY, TRANSCRANIAL MAGNETIC
STIMULATION, AUTONOMIC LAB, INTRAOPERATIVE MONITORING**

Q.P. Code: 802522

Time: Three Hours

Maximum : 100 Marks

Answer All questions

I. Elaborate on:

(3 x 10 = 30)

1. Describe the organisation of normal sleep.
2. Mention the common neurological disorders in which polysomnography is used and describe how polysomnography is done?
3. Mention disorders where Transcranial Magnetic stimulation can be helpful. What is the principals and physiological basis of this treatment?

II. Write notes on:

(8 x 5 = 40)

1. Effects of anaesthetics on evoked potentials and EEG.
2. Advantages, limitations and complications of Electrocorticography.
3. Levels of sleep structure.
4. Precautions to be taken during IOM.
5. Narcolepsy.
6. Intraoperative monitoring in Cerebello pontine angle tumour surgery.
7. Brain mapping.
8. Phases in the valsalva response.

III. Short answers on:

(10 x 3 = 30)

1. Beat to beat variability.
2. Blood pressure variation with changes in posture.
3. Daytime somnolence.
4. Stages of sleep.
5. Circadian rhythm.
6. Jet lag.
7. Central sleep apnoea.
8. Sympathetic skin response.
9. Effect of aging on sleep architecture.
10. Median sleep latency test.

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

[LR 1220]

**DECEMBER 2020
(AUGUST 2020 EXAM SESSION)**

Sub. Code: 2522

**BACHELOR IN NEURO ELECTRO PHYSIOLOGY
THIRD YEAR – (Regulation from 2012-2013)
PAPER II – POLYSOMNOGRAPHY, TRANSCRANIAL MAGNETIC
STIMULATION, AUTONOMIC LAB, INTRAOPERATIVE MONITORING
Q.P. Code: 802522**

Time: Three Hours

Answer ALL Questions

Maximum: 100 Marks

I. Elaborate on:

(3 x 10 = 30)

1. Describe the Organisation of Normal Sleep.
2. Describe the basis of obstructive Sleep Apnoea and how Polysomnography is used for it's diagnosis.
3. Mention the various Neurosurgical procedures in which Intraoperative monitoring can be used and describe the procedure for monitoring a Conus Medullary lesion Central Sleep Apnoea surgery.

II. Write notes on:

(8 x 5 = 40)

1. Patient preparation before Autonomic Nervous System testing.
2. HR Variability with Respiration.
3. Restless leg syndrome.
4. Median sleep latency test.
5. Different coils used in Transcranial Magnetic stimulation.
6. Bedside autonomic function testing.
7. Central conduction time in Transcranial Magnetic stimulation.
8. Brain mapping.

III. Short answers on:

(10 x 3 = 30)

1. Write about Insomnia.
2. Postural Orthostatic Tachycardia Syndrome.
3. Narcolepsy.
4. Beat to beat variability.
5. Circadian rhythm.
6. Intraoperative monitoring in aneurysm surgeries.
7. Sympathetic skin response.
8. What are D Waves in Transcranial Magnetic stimulation?
9. Bipap/Cpap.
10. Intra operative Spinal Root Monitoring.

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

[AHS 0122]

JANUARY 2022

Sub. Code: 2522

(FEBRUARY 2021 & AUGUST 2021 EXAM SESSION)

B.Sc. NEURO ELECTRO PHYSIOLOGY

THIRD YEAR – (Regulations from 2012-2013 and 2018-2019)

**PAPER II – POLYSOMNOGRAPHY, TRANSCRANIAL MAGNETIC
STIMULATION, AUTONOMIC LAB, INTRAOPERATIVE MONITORING
Q.P. Code: 802522**

Time: Three Hours

Answer ALL Questions

Maximum: 100 Marks

I. Elaborate on:

(3 x 10 = 30)

1. Tests used for evaluation of autonomic nervous system function.
2. Describe the organization of normal sleep and notes on parasomnias.
3. Transcranial magnetic stimulation and its uses in neurological disorders.

II. Write notes on:

(8 x 5 = 40)

1. Intraoperative monitoring in cerebello pontine angle tumour surgery.
2. Write about obstructive sleep apnea.
3. Components monitored in polysomnography.
4. REM sleep disorders.
5. Interpretation of polysomnography results.
6. Different coils used in transcranial magnetic stimulation.
7. EEG Channels in polysomnography.
8. Various modalities monitored in intraoperative monitoring.

III. Short answers on:

(10 x 3 = 30)

1. Central sleep apnoea.
2. AHI apnoea hypopnea index.
3. Somnambulism.
4. Indications of polysomnography.
5. Limitations of single night polysomnography.
6. What are D waves in transcranial magnetic stimulation?
7. Common sleep disorders in the elderly.
8. Write about the techniques and uses of sympathetic skin response.
9. Neurotonic discharge intraoperative monitoring.
10. Role of EMG channel in polysomnography.

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

[AHS 0922]

SEPTEMBER 2022

Sub. Code: 2522

(FEBRUARY 2022 & AUGUST 2022 EXAM SESSIONS)

B.Sc. NEURO ELECTRO PHYSIOLOGY

THIRD YEAR – (Regulations from 2012-2013 & 2018-2019)

**PAPER II – POLYSOMNOGRAPHY, TRANSCRANIAL MAGNETIC
STIMULATION, AUTONOMIC LAB, INTRAOPERATIVE MONITORING
Q.P. Code: 802522**

Time: Three Hours

Answer ALL Questions

Maximum: 100 Marks

I. Elaborate on:

(3 x 10 = 30)

1. What is polysomnography? Explain its procedure and uses.
2. Mention the anatomical basis, recording procedures and clinical applications of transcranial magnetic stimulations.
3. What is Heart Rate Variability (HRV)? Explain its procedure and clinical significance.

II. Write notes on:

(8 x 5 = 40)

1. Stages of sleep.
2. Sympathetic Skin Response (SSR).
3. Brain mapping.
4. Valsalva maneuver.
5. Electrocorticography.
6. Head-up tilt study.
7. Motor evoked potential.
8. Multiple sleep latency test.

III. Short answers on:

(10 x 3 = 30)

1. Insomnia.
2. Clinical goals for autonomic function test.
3. Orthostatic hypotension.
4. Precautions to be taken during IOM.
5. Circadian rhythm.
6. Actigraphy.
7. Indication for somatosensory evoked potential.
8. Sleep apnea.
9. Jet lag.
10. Narcolepsy.

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

[AHS 0423]

APRIL 2023

Sub. Code: 2522

**B.Sc. NEURO ELECTRO PHYSIOLOGY
THIRD YEAR – (Regulations 2012-2013 & 2018-2019 onwards)
PAPER II – POLYSOMNOGRAPHY, TRANSCRANIAL MAGNETIC
STIMULATION, AUTONOMIC LAB, INTRAOPERATIVE MONITORING
Q.P. Code: 802522**

Time: Three Hours

Answer ALL Questions

Maximum: 100 Marks

I. Elaborate on:

(3 x 10 = 30)

1. Basis of Obstructive Sleep Apnea Syndrome and how Polysomnography is used for its diagnosis.
2. Mention the various Neurosurgical procedures in which Intraoperative monitoring can be used and describe the procedure for monitoring a Cerebellopontine angle tumor surgery.
3. Cardiovascular Autonomic function tests and mention neurological diseases in which there can be Autonomic dysfunction.

II. Write notes on:

(8 x 5 = 40)

1. Role of Transcranial magnetic stimulation in Stroke Rehabilitation.
2. Stages of Sleep.
3. Motor evoked potentials.
4. Head-up Tilt table testing.
5. Preparation of patients before Transcranial magnetic stimulation.
6. In intraoperative monitoring, how anaesthetics affect on evoked potentials and EEG?
7. Brain mapping.
8. Narcolepsy.

III. Short answers on:

(10 x 3 = 30)

1. Effect of Aging on Sleep Architecture.
2. Phases in the Valsalva response.
3. Motor threshold in Transcranial magnetic stimulation.
4. Techniques of measuring Central Motor Conduction time.
5. Write about Insomnia.
6. Circadian rhythm and disorders.
7. Electrocorticography.
8. Types of Sleep Studies.
9. Somnambulism.
10. Side effects of Transcranial magnetic stimulation.

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

[AHS 0424]

APRIL 2024

Sub. Code: 2522

B.Sc. NEURO ELECTRO PHYSIOLOGY
THIRD YEAR – (Regulations 2012-2013 & 2018-2019 onwards)
PAPER II – POLYSOMNOGRAPHY, TRANSCRANIAL MAGNETIC
STIMULATION, AUTONOMIC LAB, INTRAOPERATIVE MONITORING
Q.P. Code: 802522

Time: Three Hours

Answer ALL Questions

Maximum: 100 Marks

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

1. Describe the procedure for monitoring Microvascular Decompression cases.
2. Explain the procedure for Transcranial Electrical Stimulation in Intradural Tumors.
3. What are Autonomic Function Test? Explain in detail about Cardiovascular Autonomic Function.

II. Write notes on: **(8 x 5 = 40)**

1. Narcolepsy.
2. Median Sleep Latency Test (MSLT).
3. Clinical application of Transcranial Magnetic Stimulation.
4. Effects of Anaesthetics on evoked potentials and EEG.
5. Brain mapping in ageing.
6. Phases in the Valsalva response.
7. Variations in Transcranial electrical stimulation.
8. EEG Channels in Polysomnography.

III. Short answers on: **(10 x 3 = 30)**

1. Daytime somnolence.
2. Beat to beat variability.
3. Stroke.
4. Cerebello-pontine angle tumors.
5. Precautions to be taken during IOM.
6. Causes of obstructive sleep apnoea.
7. Quantitative Sudomotor Axon Reflex Test (QSART).
8. Blood pressure variation with changes in posture.
9. Maintenance of Wakefulness Test (MWT).
10. Waves in Trans Magnetic Stimulation.

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

[AHS 0125]

JANUARY 2025

Sub. Code: 2522

B.Sc. NEURO ELECTRO PHYSIOLOGY
THIRD YEAR – (Regulations 2012-2013 & 2018-2019 onwards)
PAPER II – POLYSOMNOGRAPHY, TRANSCRANIAL MAGNETIC
STIMULATION, AUTONOMIC LAB, INTRAOPERATIVE MONITORING
Q.P. Code: 802522

Time: Three Hours

Answer ALL Questions

Maximum: 100 Marks

I. Elaborate on:

(3 x 10 = 30)

1. Mention the Common Neurological disorders in which Polysomnography are used and describe how Polysomnography is done?
2. Intraoperative monitoring of Acoustic Nerve and Brainstem Auditory Pathways.
3. Cardiovascular Autonomic function tests and mention Neurological diseases in which there can be autonomic dysfunction.

II. Write notes on:

(8 x 5 = 40)

1. Transcranial magnetic stimulation in stroke rehabilitation.
2. Multiple sleep latency Test.
3. Role of Somato Sensory Evoked Potentials (SSEP) in intraoperative monitoring.
4. Sleep Apnoea Syndromes - Central and Obstructive.
5. Advantages, Limitations, and Complications of Electrocorticography.
6. Actigraphy.
7. Narcolepsy.
8. Brain mapping.

III. Short answers on:

(10 x 3 = 30)

1. Effect of Aging on Sleep Architecture.
2. Patients who are contraindicated for the use of Transcranial Magnetic stimulation.
3. Stages of Sleep.
4. Neurotonic discharge in Intraoperative monitoring.
5. Apnea Hypopnea index (AHI).
6. Transcranial magnetic stimulation in chronic pain.
7. Jet lag.
8. Central motor conduction time in Transcranial Magnetic stimulation.
9. Surgeries beneficial with intraoperative monitoring.
10. Head - up tilt table test.

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

[AHS 0425]

APRIL 2025

Sub. Code: 2522

B.Sc. NEURO ELECTRO PHYSIOLOGY

THIRD YEAR – (Regulations 2012-2013 & 2018-2019 onwards)

**PAPER II – POLYSOMNOGRAPHY, TRANSCRANIAL MAGNETIC
STIMULATION, AUTONOMIC LAB, INTRAOPERATIVE MONITORING
Q.P. Code: 802522**

Time: Three Hours

Answer ALL Questions

Maximum: 100 Marks

I. Elaborate on:

(3 x 10 = 30)

1. Explain in detail about Intra operative Monitoring in Brian Stem Surgery.
2. Describe the characteristic features in different stages of Sleep. Add a note on Sleep disorders.
3. Name the types of Evoked Potential. Explain how Somatosensory Evoked Potentials is done in Spinal Cord Surgery?

II. Write notes on:

(8 x 5 = 40)

1. Electrocorticography in Epilepsy.
2. Motor evoked potentials in scoliosis.
3. Autonomic Nervous System Testing.
4. Stimulation Protocols in transcranial magnetic stimulation.
5. Common Autonomic dysfunction.
6. Bedside autonomic function testing.
7. Phases in the Valsalva response.
8. Intra operative Spinal Root Monitoring.

III. Short answers on:

(10 x 3 = 30)

1. Write in brief about transcranial direct current stimulation.
2. Effect of Aging on Sleep Architecture.
3. Neurotonic discharge in Intraoperative monitoring.
4. Tilt Table Test.
5. Sleep study.
6. Postural Tachycardia Syndrome (POTS).
7. Conus Medullary Lesion.
8. Preparation for Intra-operative monitoring.
9. Aneurysm.
10. Cranial nerves.

B.Sc. NEURO ELECTRO PHYSIOLOGY
THIRD YEAR – (Regulations 2012-2013 & 2018-2019 onwards)
PAPER II – POLYSOMNOGRAPHY, TRANSCRANIAL MAGNETIC
STIMULATION, AUTONOMIC LAB, INTRAOPERATIVE MONITORING
Q.P. Code: 802522

Time: Three Hours

Answer ALL Questions

Maximum: 100 Marks

I. Elaborate on:

(3 x 10 = 30)

1. Describe the laboratory methods for the assessment of sleep disorders.
2. Describe the indications for autonomic laboratory evaluation and describe the physiological basis and techniques of tests of adrenergic function.
3. Mention the various surgical procedures of the brainstem and cranial nerves in which Intraoperative monitoring can be used and describe the procedure for monitoring.

II. Write notes on:

(8 x 5 = 40)

1. Abnormal EMG patterns.
2. Paediatric nerve conduction study.
3. Valsalva maneuver in autonomic function testing.
4. Orthostatic hypotension and syncope.
5. Electrical stimulation mapping.
6. Somatosensory Evoked Potentials in Intraoperative Monitoring.
7. Instrumentation for Intraoperative Monitoring.
8. Lumbar plexus and branches.

III. Short answers on:

(10 x 3 = 30)

1. Apnoea-Hypopnoea Index (AHI).
2. Techniques of EMG.
3. Shift work disorder.
4. Head up tilt test.
5. Central Motor Conduction Measurements in transcranial magnetic stimulation.
6. Describe the clinical applications for diagnostic use of transcranial magnetic stimulation.
7. Artefacts in Nerve Conduction Study (NCS).
8. Quantitative sudomotor axon reflex test.
9. Precautions prior to Polysomnography.
10. Electrocorticography.
