J-9537 Seat No. _____

Third Year B. P. T. Examination

July – 2019

Electrotherapy - II

Time : **3** Hours] [Total Marks : **100**

Instructions :

(1) Write legibly and to the point.

(2) Draw diagrams where **necessary**.

SECTION - I

1 Long answer question : (2 out of 3) **20**

(1) Write in detail about the parameters of electrical stimulation.

(2) Write in detail about the Faradism under pressure technique for edema reduction in upper limb and lower limb.

(3) Write about the mechanism of iontophoresis and drugs used in iontophoresis.

2 Short answer question : (2 out of 3) **10**

(1) Types of diadynamic currents.

(2) Types of elecrodes used in electrotherapy.

(3) Faradic re-education after tendon transfer surgery.

3 Very short answer question : (5 out of 6) **10**

(1) Define chronaxie and rheobase.

(2) Parameters of Russian current.

(3) Motor points in muscles supplied by deep peroneal nerve.

(4) Faradic galvanic test.

(5) Classification of therapeutic currents.

(6) Amplitude modulation frequency.

4 MCQ : **10**

(1) Transcutaneous electrical nerve stimulation is one of the most commonly used forms of electroanalgesia. Which of the following methods of tens is the most recommended for acupuncture-like settings ?

(a) High-stimulation frequency and low-intensity, just above the threshold; current is set between 10 and 30 mA.

(b) Low-stimulation frequency and high-stimulus intensity, resulting in visible muscle contraction.

(c) Low-intensity stimuli firing in high-frequency bursts.

(d) Frequency of each burst is 1 to 2 Hz and the frequency of impulses with each burst is 100 Hz.

(2) A physical therapist includes transcutaneous electrical nerve stimulation application as one of the modalities of treatment for a patient complaining of pain after a spinal cord injury. The physical therapist is applying the tens machine correctly by demonstrating which of the following actions ?

(a) The machine is switched on before placing the electrode pads on the skin.

(b) The therapist places self-adhesive pads within an inch of each other.

(c) The pulse rate is set before switching on the machine.

(d) The pads are placed over the area of sensory impairment.

(3) The healing process is subtly or significantly influenced by external factors, which include various treatment modalities. The application of electrical stimulation has the following effects during rehabilitation except -

(a) Reduced tissue viscosity

(b) Enhanced protein synthesis

(c) Relaxed muscle spasm

(d) Re-established lymphatic flow

(4) Electrolytic burns occur when -

(a) Sensory nerves are suddenly stimulated by a spurt of impulses

(b) Motor nerves are overstimulated and causes accommodation

(c) Chemicals are deposited at the skin electrode interface

(d) Muscles are fatigued after prolonged stimulation

(5) The electrode which is used to filter out external and internal disturbances in electromyography is called -

(a) Ground electrode (b) Reference electrode

(c) Active electrode (d) Ring electrode

(6) Junction between two adjacent neurons is known as -

(a) Axon

(b) Synapse

(c) Neuromuscular junction

(d) Myoneural junction

(7) The frequency of acupuncture like TENS is -

(a) 1-5 Hz (b) 50-60 Hz

(c) 10-50 Hz (d) 100-120 Hz

(8) Electrical silence at rest in electromyography is suggestive of -

(a) Cramp (b) Denervation

(c) Myositis (d) Normal

(9) High intensity Low frequency TENS is also called -

(a) Burst TENS

(b) Hi TENS

(c) Acupuncture like TENS

(d) Modulated TENS

(10) A female patient with musculoskeletal pain is referred to the clinic for physical therapy. The therapist plans to include transcutaneous electrical nerve stimulation application as one of the modalities for the patient. Which of the following details of information in the patient record makes tens a contraindicated modality to the patient ?

(a) A diagnosis of diabetes neuropathy

(b) A diagnosis of spinal cord injury

(c) A history of angina pectoris

(d) Use of a demand-type of pacemaker.

SECTION - II

5 Long answer question : (2 out of 3) **20**

(1) Write in detail about the technique of strength duration curve.

(2) Write the types of TENS. Write about the indications and contraindications of TENS.

(3) Write in detail about use of EMG biofeedback in physiotherapy.

6 Short answer question : (2 out of 3) **10**

(1) Motor unit action potential.

(2) Electrodes used in electrodiagnosis.

(3) Late responses in nerve conduction velocity study.

7 Very short answer question : (5 out of 6) **10**

(1) Fibrillation potential.

(2) Normal values of nerve conduction velocity in upper limb nerves.

(3) Parameters of acupuncture like TENS.

(4) Constructive interference.

(5) Define antidromic and orthodromic directions in nerve conduction velocity study.

(6) Parameters of HVPS.

8 MCQ : **10**

(1) Denervated muscles can be stimulated with -

(a) Long duration sudden rising pulses

(b) Short duration slow rising pulse

(c) Long duration slow rising pulses

(d) Short duration sudden rising pulse

(2) Propagation of an action potential in myelinated nerve fibre occurs in form of -

(a) Active transport

(b) Passive transport

(c) Synaptic Transmission

(d) Saltatory Conduction

(3) As the current intensity is progressively increased, the first fibres to be stimulated are -

(a) C (b) A delta

(c) A alpha (d) A beta

(4) Which of the following is not a component of the motor unit -

(a) Motor axon (b) Peripheral nerve receptor

(c) Anterior horn cell (d) Muscle fibres

(5) Which of the following ions are indicated for reduction of edema?

(a) Salicylate (b) Hyaluronidase

(c) Acetate (d) Copper

(6) Nerve accommodation to electrical stimulation can be avoided by -

(a) Surging of the current

(b) Use of rectangular pulses

(c) Using higher intensity current

(d) Use of low intensity current

(7) Treatment of choice for stress urinary incontinence is -

(a) TENS

(b) Microcurrent

(c) Surged faradic current

(d) Galvanic current

(8) Facial nerve is a -

(a) Pure sensory nerve

(b) Pure motor nerve

(c) Mixed nerve

(d) Pure sympathetic nerve

(9) Resistance at skin electrode interface can be reduced by -

(a) Warming the part to be treated

(b) Wetting the skin

(c) Removing hair from hairy surface

(d) All of the above

(10) Chronaxie for denervated muscles is -

(a) Between 1 millisecond and 1 microsecond

(b) <1 microsecond

(c) Between 100 microsecond and 1 millisecond

(d) >1 millisecond.
