



**BCL-9537**

Seat No. \_\_\_\_\_

**Third Year B. P. T. Examination**

**January - 2016**

**Electrotherapy - II**

Time : 3 Hours]

[Total Marks : 100

**SECTION - I**

- 1 Answer any two : **10×2=20**
- (a) Discuss the physiological effects of electric current on nerve and muscle.
  - (b) What are different types of TENS ?
  - (c) Describe various therapeutic uses of faradic stimulation.
- 2 Answer any two : **5×2=10**
- (a) Russian current
  - (b) Uses of biofeedback
  - (c) Iontophoresis for hyperhidrosis (excessive sweating).
- 3 Answer any five : **2×5=10**
- (a) Define low frequency current.
  - (b) Name and arrange the muscles supplied by radial nerve in order from first to last.
  - (c) Electrode placement for faradism under pressure for U.L.
  - (d) Use of faradic-galvanic test.
  - (e) Contraindications to electric current therapy.
- 4 Multiple choice question : **10×1=10**
- (a) A direct connection between live wire of the main and earth would result in :
    - (i) Electric shock
    - (ii) Earth shock
    - (iii) Short circuit
    - (iv) Sparking
  - (b) When electrotherapy is given in baths :
    - (i) Care should be taken to see that the bath should not be leaking
    - (ii) The bath should be of insulating material
    - (iii) Water should not be added during treatment
    - (iv) All of the above

- (c) When a motor nerve is stimulated :
  - (i) The orthodromic impulse reaches the higher centers
  - (ii) The antidromic impulses reaches the concerned muscles
  - (iii) The orthodromic impulses reaches the concerned muscles
  - (iv) None of the above
- (d) A complete smooth tetanic contraction is first elicited at :
  - (i) 1-2pps                      (ii) 5-15pps
  - (iii) 35-50pps                (iv) 250-300pps
- (e) In a constant-voltage stimulator :
  - (i) The voltage output level set by the therapist will remain the same
  - (ii) The current intensity remains constant throughout
  - (iii) The voltage level keeps changing when the impedance at the tissue electrode interface is changed
  - (iv) None of the above
- (f) Electrical stimulation of innervated muscles causes :
  - (i) Initially activates the slow twitch muscle fibers
  - (ii) Initially activates the fast twitch muscle fibers
  - (iii) Activates both slow and fast twitch muscle fibers
  - (iv) All of the above
- (g) Ramping means :
  - (i) To gradually increase the intensity of impulses and reduce suddenly or gradually with adequate rest periods
  - (ii) To use an unvarying current with periodic interruptions
  - (iii) To use a constant varying current
  - (iv) To use depolarizing impulse
- (h) Chances of chemical burns are greatest in the use of :
  - (i) Sinusoidal currents
  - (ii) Constant direct current
  - (iii) Interrupted galvanic current
  - (iv) Surged faradic current
- (i) For stimulation of denervated muscles the electrical impulse :
  - (i) Must be of longer duration and less intensity
  - (ii) Shorter duration and high intensity
  - (iii) Long duration and high intensity
  - (iv) Short duration and low intensity
- (j) Alteration in the conductivity of the nerves under the influence of constant direct current is called :
  - (i) Electrophoresis            (ii) Phonophoresis
  - (iii) Electrotonus              (iv) Accommodation

## SECTION - II

- 5 Answer any two : **10×2=20**
- (a) Discuss the application, uses and benefits of using medium frequency currents.
  - (b) Describe various causes of electric shock and methods of prevention.
  - (c) Enumerate the theories of pain modulation and describe in detail any one theory.
- 6 Answer any two : **5×2=10**
- (a) Action potential
  - (b) TENS during labour pain
  - (c) Uses of biofeedback.
- 7 Answer any five : **2×5=10**
- (a) Electrode placement for nerve conduction velocity test of ulnar nerve.
  - (b) Treatment of incisional pain
  - (c) Uses of sinusoidal current
  - (d) Electrode placement for electrical stimulation of pelvic floor muscles.
  - (e) What is beat frequency ?
- 8 Multiple choice questions : **1×10=10**
- (a) For relief of acute pain and muscle spasm as in case of recent injuries or inflammation :
    - (i) Cathodal galvanism is effective
    - (ii) Iontophoresis is effective
    - (iii) Anodal galvanism
    - (iv) All of the above
  - (b) Electrolytic burns occur when :
    - (i) The sensory nerves are suddenly stimulated by a spurt of impulses
    - (ii) The motor nerves are over stimulated so as to cause accommodation
    - (iii) The muscles after prolonged stimulation goes into a state of fatigue
    - (iv) The chemicals deposited at the electrodes comes indirect contact with the tissues
  - (c) Which of the following ions is used for oedema reduction using iontophoresis ?
    - (i) Acetate
    - (ii) Copper
    - (iii) Salicylate
    - (iv) Hyaluronidase

- (d) Chronaxie of :
- (i) Innervated muscles is of very long pulse duration
  - (ii) Denervated muscle is less than that of innervated
  - (iii) Denervated muscle is more than that of innervated
  - (iv) (i) and (ii)
- (e) The electrode used to filter out external and internal disturbances in electromyography is called :
- (i) ground electrode (ii) active electrode
  - (iii) reference electrode (iv) all of the above
- (f) A full interference pattern during maximal effort contraction on EMG is :
- (i) abnormal
  - (ii) normal
  - (iii) seen in denervation of muscles
  - (iv) seen in myositis
- (g) TENS is contraindicated in the region of :
- (i) Cardiac pacemaker (ii) Carotid sinus
  - (iii) Hearing aids (iv) All of the above
- (h) The frequency range of high TENS :
- (i) 1-5 Hz (ii) 50-60 Hz
  - (iii) 1-60 Hz (iv) 100-150 Hz
- (i) Medium frequency currents are those whose frequency ranges from :
- (i) 1-100 MHz (ii) 1Hz-1 MHz
  - (iii) >1 MHz (iv) 4000-5000 Hz
- (j) Following are the types of medium frequency currents except :
- (i) Rebox current (ii) Russian current
  - (iii) Sinusoidal current (iv) Interferential current
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