

First B.P.T.H. (2012) Examination, Winter 2018
FUNDAMENTALS OF ELECTROTHERAPY

Total Duration : Section A + B = 3 Hours

Total Marks : 80

SECTION – A and SECTION – B

- Instructions :**
- 1) Use **blue/black** ball point pen only.
 - 2) **Do not** write anything on the **blank portion of the question paper.** If written anything, such type of act will be considered as an attempt to resort to unfair means.
 - 3) **All** questions are **compulsory.**
 - 4) The number to the **right** indicates **full** marks.
 - 5) Draw diagrams **wherever** necessary.
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 - 7) **Use** a common answer book for **all** Sections.

SECTION "A" (SAQ) (50 Marks)

1. Short answer question (any five out of six) :

(5×3=15)

- a) Describe modes of heat transfer.
- b) What is Latent heat?
- c) State Inverse square law with application.
- d) Describe Action potential.
- e) Discuss the properties of LASER.
- f) Define Faradic and Galvanic current.

2. Short answer question (any five out of six) :

(5×7=35)

- a) Describe various generators of Infra Red radiation.
- b) Describe Contrast bath and its application.
- c) Describe working and importance of Kromayer Lamp.
- d) Production of He-Ne Laser.
- e) Short answer on Hydrocollator hot packs and its application.
- f) Describe production of therapeutic Ultrasound.



SECTION "B" (LAQ) (30 Marks)

3. Long answer question (**any one** out of two) : (1×15=15)
- a) Discuss in detail physiological effects and therapeutic effects of heat therapy. Add a note on various methods of application of Paraffin wax bath. (9+6)
- b) Define Short Wave Diathermy (S.W.D). Discuss in detail about valve circuit diagram for production of S.W.D along with different types of electrodes used. (2+9+4)
4. Long answer question (**any one** out of two) : (1×15=15)
- a) What is Cryotherapy ? Write down the physiological and therapeutic effects of cryotherapy. Add a note on various methods of application of cryotherapy. (1+9+5)
- b) Classify currents based on frequency with examples. Add a note on pain modulation theories. Discuss about various modes of TENS. (6+4+5)
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First B.P.Th. (2012) Examination, Summer 2018
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SECTION – A (50 Marks)
(SAQ)

1. Short answer question (**any five** out of six) : (5×3=15)
- a) Describe methods to reduce skin resistance.
 - b) Eddy currents.
 - c) Ohms law.
 - d) What is earthing ? Explain its importance.
 - e) Write construction of Whirl Pool bath.
 - f) Write three uses of rheostat in electrotherapy equipment.

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2. Short answer question (**any five** out of six) :

(5×7=35)

- a) Define electric shock. Write in details about precautions and treatment following shock.
- b) Describe physiological effects of Cryotherapy with uses.
- c) Draw panel diagram and write testing of Electrical Muscle Stimulator.
- d) Describe production of Interferential (IF) current. Draw a neat labelled panel diagram of the IFT unit.
- e) Explain luminous and non-luminous IR generators.
- f) Describe laws governing radiation.

SECTION – B (30 Marks)
(LAQ)

3. Long answer question (**any one** out of two) :

(1×15=15)

- a) Describe contrast bath and explain its physiological and therapeutic effects. Write a note on technique of application. (10+5)
- b) Describe production of Short Wave Diathermy (SWD). Draw panel diagram of SWD and describe testing of SWD. (7+5+3)

4. Long answer question (**any one** out of two) :

(1×15=15)

- a) Describe the construction of UVR lamp. Describe the production of UVR. Add a note on Tridymite formation. (5+7+3)
- b) Describe the construction, working and functions of transformer. (5+5+5)



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SECTION – A SAQ (50 Marks)

1. Short answer question (**any five** out of six) : **(5×3=15)**
 - a) Define cosine law and grothus law.
 - b) Define electric shock.
 - c) Write a note on coupling media used for delivering Ultrasound.
 - d) Explain the use of cartridge fuse.
 - e) Define capacitance and state its unit.
 - f) Write the types of Infrared Lamps with their corresponding wave lengths.

2. Short answer question (**any five** out of six) : **(5×7=35)**
 - a) Explain the laws governing electromagnetic radiation.
 - b) Differentiate between faradic and galvanic current.
 - c) Write the production of ultraviolet radiations in kromayers lamp.
 - d) Explain the principle and production of interferential therapy.
 - e) Write the full form of LASER and write the properties of laser.
 - f) Explain the construction of hydrocolator packs.

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SECTION – B LAQ (30 Marks)

3. Long answer question (**any one** out of two) : (1×15=15)
- a) Define cryotherapy. Explain its physiological effects. Explain any three methods of application of cryotherapy. (2+7+6)
- b) What are superficial heating agents ? Add a note on its physiological effects. Explain in detail about paraffin wax bath therapy. (2+7+6)
4. Long answer question (**any one** out of two) : (1×15=15)
- a) Write the therapeutic frequencies of Ultrasound. Explain the production and draw the panel diagram. (2+7+6)
- b) Write the frequency and wave length of short wave diathermy. Write the production of SWD. Draw the panel diagram of the same. (2+8+5)
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SECTION – A SAQ (50 Marks)

1. Short answer question (**any five** out of six) : (5×3=15)
 - a) State Ohms Law.
 - b) Define capacitance and state its unit.
 - c) State Cosine law.
 - d) State construction of triode valves.
 - e) Define Resting membrane potential.
 - f) Write the production of luminous Infra-red Radiation lamp.
2. Short answer question (**any five** out of six) : (5×7=35)
 - a) State the importance of earthing. Add a note on earth shock.
 - b) State the factors affecting skin resistance. Describe methods to reduce skin resistance.
 - c) Differentiate between Faradic current and Galvanic current.
 - d) Enlist the functions of Transformers. Describe the types of Transformers.
 - e) Describe methods of applications of Paraffin Wax Bath.
 - f) Describe construction and working of High Pressure Mercury Vapor Burner lamp.



SECTION – B LAQ (30 Marks)

3. Long answer question (**any one** out of two) : (1×15=15)
- a) Define specific heat. Describe therapeutic effects of Cryotherapy. Describe various methods of applications of Cryotherapy. (2+6+7)
 - b) Describe various methods of heat transfer. Describe physiological effects of Hydrocolator pack. Describe the construction of Hydrocolator pack. (3+7+5)
4. Long answer question (**any one** out of two) : (1×15=15)
- a) Describe the production of Ultra Sound. Draw a panel diagram of Ultra Sound. (10+5)
 - b) State the therapeutic frequency and wave length of short wave diathermy. Describe the production of Short Wave Diathermy. Draw panel diagram of Short Wave Diathermy. (2+8+5)
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SECTION – A SAQ (50 Marks)

1. Short answer question (**any five** out of six) : (5×3=15)
 - a) State Ohms Law.
 - b) What is Electromagnetic Induction ?
 - c) Define Latent Heat and give example where concept of Latent Heat is used for practical application in physiotherapy.
 - d) What is a Fuse and how does it work ?
 - e) State contraindications for Hydrocollateral hot pack treatment.
 - f) State factors affecting skin resistance.
2. Short answer question (**any five** out of six) : (5×7=35)
 - a) Describe Earth Shock with example. What precautions can be taken against it ?
 - b) State and explain Laws of Reflection, Refraction and Absorption.



- c) Describe types of Infra-red Generators.
- d) What is LASER ? Describe its types and properties.
- e) Describe production of Ultrasound.
- f) Describe Ultraviolet Radiation production in High Pressure Mercury Vapor Burner.

SECTION – B LAQ (30 Marks)

3. Long answer question (**any one** out of two) : **(1×15=15)**
 - a) Describe physiological effects of Cryotherapy. Describe various methods of applying cryotherapy. **(7+8)**
 - b) Describe physiological effects of Superficial Heat. Describe various methods of applying Paraffin Wax Bath. **(7+8)**
4. Long answer question (**any one** out of two) : **(1×15=15)**
 - a) Classify Low Frequency Currents. Describe different wave forms of Faradic current. Draw and label a panel diagram of Diagnostic Electrical Stimulator. **(5+5+5)**
 - b) Describe construction and production of Short Wave Diathermy. Draw and label a panel diagram of Short Wave Diathermy. **(10+5)**

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SECTION – A SAQ (50 Marks)

1. Short answer question (any five out of six) :

(5×3=15)

- a) Cosine Law.
- b) Contrast Bath.
- c) Capacitance.
- d) Joule's Law.
- e) Amplitude modulation in interferential therapy.
- f) Precautions for application of thermotherapy.

2. Short answer question (any five out of six) :

(5×7=35)

- a) Classification of currents.
- b) Define TENS. Write down its types.
- c) Sources of infrared radiations.
- d) Modes of heat transfer.
- e) Whirlpool bath.
- f) What are the types of LASER ? Write its properties.

P.T.O.



SECTION - B LAQ (30 Marks)

SECTION - B LA

3. Long answer question (any one out of two) : (1×15=15)
- What is cryotherapy ? Write down various methods and the techniques of its application.
 - Explain the production of UVR with a labelled diagram. Add a note on tridymite formation.
4. Long answer question (any one out of two) : (1×15=15)
- Draw a panel diagram of therapeutic ultra sound and explain its production. Add a note on coupling media.
 - ✓ Draw a circuit diagram of Short Wave Diathermy. Write down the physiological effects and dangers of Short Wave Diathermy.

→ Correction in Q. No. 4(b) as under: →

4. b) Draw a circuit diagram of Short Wave Diathermy and explain its production.