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Candidate's Seat No : 327

First Year B. Physiotherapy Examination
Bio-Medical Physics

Date : 16-01-2023, Monday]

Time : 3 Hours]

[Max. Marks : 80

- Instructions :
- (1) Answer to the point.
 - (2) Figure to the right indicate marks.
 - (3) Write legibly.
 - (4) Draw diagrams wherever necessary.
 - (5) Use separate answer books for each section.

SECTION -I

Q1. Explain the production of SWD, its testing and principles on which it works. 15

OR

Q1. What is electric shock, explain its types, causes, effect, precaution and treatment in detail. 15

Q2. Write short notes (any Three) 15

1. Types of capacitors
2. Difference between centripetal and centrifugal forces
3. What are transformers? Explain the working of static transformer.
4. Describe ohm's law and what are the limitation of ohm's law

Q3. Write short notes (any Two) 10

1. Explain the laws governing the effect of electromagnetic Radiation
2. Explain the importance of BOS in maintaining stability
3. Explain bio physics of contrast bath

SECTION -II

Q4. Explain in detail about the various types of electrodes used therapeutically. 15

OR

Q4. What is EM Spectrum. Explain law of Transmission 15

Q5. Write short notes (any Three) 15

1. Production of laser therapy
2. Thermionic valves
3. What are semiconductors, explain their types.
4. What is Eddy Current, explain their application.

10

Q6. Write short notes (any Two)

1. What are transistors, explain their uses.
2. What is Rheostat, explain its types.
3. Pulley and its principle.

First Year B. Physiotherapy Examination
Bio-Medical Physics

Date : 10-07-2023, Monday]

[Max. Marks : 80

Time : 3 Hours]

- Instructions :** (1) Answer to the point.
(2) Figure to the right indicates marks.
(3) Draw diagrams wherever necessary.
(4) Write legibly.
(5) Use separate answer books for each section.

*viishhwaa***SECTION - I (40 Marks)**

Q 1 Define Faradic current. Explain the therapeutic and physiological effects of Faradic Currents. **15 Marks**

OR

Q 1 Explain in brief the physiological effects of cryotherapy. Write a note on Lewis Hunting reaction. What are the contraindications for Cryotherapy? **15 Marks**

Q 2 Write short notes - Answer any 3 (5 marks each) **15 Marks**

- Describe "Beat frequency" and explain its significance in electrotherapy.
- Explain the causes and prevention of electric burns
- Describe Force and work in relation to human body biomechanics
- Describe the Laws of motion.

Q 3 Write short notes - Any 2 (5 marks each) **10 Marks**

- Describe the method of testing SWD equipment with a note on importance of tuning
- Explain skin tissue - electrode interface and add a note on techniques to reduce skin resistance
- Describe transformers.

SECTION - II (40 Marks)

Q 4. Define Action Potential. Explain the propagation of action potential and explain how it is different from the Transmission of electrical stimulus along a nerve fiber? **15 Marks**

OR

Q 4. Define UVR. Explain the types
Describe the methods of production of UVR

15 Marks

Q 5 Write short notes - Any 3 (5 marks each) **15 Marks**

- Differentiate between centripetal and centrifugal forces
- Write a note on Pain - gate theory
- Write a note on Fuse
- What are the 3 types of Levers? Give an example each for anatomical lever of I order, II order and III order

Q 6 Write short notes - Any 2 (5 marks each) **10 Marks**

- Describe the Law of Transmission and explain reflection, refraction and absorption.
- Describe thermionic valves and give an example of electrotherapeutic modality where these valves are used.
- Explain Magnetism and write a note on Lenz's law.

*classified**filament**Tertiary**Malignant**sectional**pole**Haemorrhage**Haemorrhage*

First Year B. Physiotherapy Examination**Bio-Medical Physics****Date : 20-12-2023, Wednesday]****[Max. Marks : 80****Time : 3 Hours]**

- Instructions :** (1) Answer to the point.
(2) Figure to the right indicate marks.
(3) Write legibly.
(4) Draw diagrams wherever necessary.
(5) Use separate answer books for each section.

Section -I

Q1. Explain the production of ultrasound with panel diagram along with physical principles associated with it. 15

OR

Describe the determinants of stability with emphasis on Base of support (BOS), Line of Gravity (LOG) and Centre of gravity (COG). 15

Q2. Write short notes (Any Three) 15

1. Production of short wave diathermy (SWD)
2. Grothus law
3. Capacitors
4. Third order lever

Q3. Write short notes (Any Two) 10

1. Curvilinear motion with example
2. Explain the biophysics and principles of contrast bath
3. Lenz's Law

Section -II

Q4. Explain the production of and physical principles of luminous Infra-red (IR) in detail. 15

OR

Explain the production of therapeutic interrupted direct currents and its various waveforms used in clinical practice. 15

Q5. Write short notes (Any three) 15

1. Effect of EM field on cellular physics
2. Duty cycle of ultrasound device
3. Tuning of SWD modality
4. Measures for preventing electric shock

Q6. Write short notes (Any two) 10

1. Beat frequency
 2. Principles of LASER Production
 3. Types of electrodes and their significance
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