

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

[LN 6275]

AUGUST 2018

Sub. Code: 6275

BPT DEGREE EXAMINATION

FIRST YEAR

(Regulations for the candidates admitted from 2017-2018 onwards)

**PAPER IV – BASIC AND APPLIED PHYSICS FOR
PHYSIOTHERAPY**

Q.P. Code : 746275

Time: Three hours

Maximum: 100 Marks

I. Elaborate on:

(2 x 20 = 40)

1. Explain in detail about the Newton's laws and application of its principles in exercise therapy.
2. Define electric current. Explain the thermal, chemical and magnetic effects of an electric current.

II. Write notes on:

(8 x 5 = 40)

1. Extrinsic semiconductor.
2. Physical effects of heat.
3. Resistance in series and parallel.
4. Voltmeter.
5. Types of motion.
6. Movable pulley.
7. Molecular theory of magnet.
8. Application of momentum principle in physiotherapy.

III. Short answers on:

(10 x 2 = 20)

1. Work.
2. Inductor.
3. Whetstone bridge.
4. Cryotherapy.
5. Torque.
6. Capacitance.
7. Transistor.
8. Lenz's law.
9. Elastic materials used in physiotherapy.
10. Stability versus mobility.

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

[LO 6275]

FEBRUARY 2019

Sub. Code: 6275

BPT DEGREE EXAMINATION

FIRST YEAR

(Regulations for the candidates admitted from 2017-2018 onwards)

**PAPER IV – BASIC AND APPLIED PHYSICS FOR
PHYSIOTHERAPY**

Q.P. Code : 746275

Time: Three hours

Maximum: 100 Marks

I. Elaborate on: (2 x 15 = 30)

1. Describe in detail about the various laws governing radiations.
2. Define Pulley. Explain the system, types and application of pulleys in Physiotherapy.

II. Write notes on: (10 x 5 = 50)

1. Triode valve.
2. Elasticity.
3. Types of capacitor.
4. Ammeter.
5. Line of gravity and base of support.
6. Properties of magnet.
7. Angle of pull of a muscle.
8. Static electric charge.
9. Types of Levers.
10. Light Emitting Diodes (LED).

III. Short answers on: (10 x 2 = 20)

1. Energy.
2. Medium frequency currents.
3. Hooke's law.
4. Phototherapy.
5. Farad.
6. Biomechanics.
7. Fuse.
8. Electron.
9. Therapeutic current.
10. Ferro magnet.

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[LP 6275]

AUGUST 2019

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FIRST YEAR

(Regulations for the candidates admitted from 2017-2018 onwards)

**PAPER IV – BASIC AND APPLIED PHYSICS FOR
PHYSIOTHERAPY**

Q.P. Code : 746275

Time: Three hours

Maximum: 100 Marks

I. Elaborate on:

(2 x 15 = 30)

1. Define Electric Shock. Describe the causes, treatment and prevention of electric shock.
2. Define Lever. Describe the types, functions and application of lever principles in exercise therapy.

II. Write notes on:

(10 x 5 = 50)

1. Oscillator.
2. Electromagnetic induction.
3. Concurrent force system.
4. Types of springs.
5. Grotthus law and its application.
6. Physiological effects of heat.
7. Wheatstone bridge.
8. Friction.
9. Semi conductors.
10. Types of pulley.

III. Short answers on:

(10 x 2 = 20)

1. Rheostat.
2. Force.
3. Amplitude.
4. Power.
5. Electromagnetic wave.
6. Speed.
7. Molecular magnet.
8. Inverse square law.
9. Center of gravity.
10. Young's modulus.

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

[LQ 6275]

FEBRUARY 2020

Sub. Code: 6275

BPT DEGREE EXAMINATION

FIRST YEAR

(Regulations for the candidates admitted from 2017-2018 onwards)

**PAPER IV – BASIC AND APPLIED PHYSICS FOR
PHYSIOTHERAPY**

Q.P. Code : 746275

Time: Three hours

Maximum: 100 Marks

I. Elaborate on: (2 x 15 = 30)

1. Define Equilibrium. Explain about the types and equilibrium in static and dynamic state.
2. Definition, description, physiological effects, pathological effects and dangers of Thermal, Electrical, Electromagnetic Therapeutic Energies.

II. Write notes on: (10 x 5 = 50)

1. Force – definition, classification and composition.
2. Capacitors.
3. Explain Static and Dynamic equilibrium.
4. Physical effect of heat & radiation.
5. Pendular movement.
6. Axes and planes.
7. Magnetic effects of electric current.
8. Thermionic emission.
9. Levers in Physiotherapy.
10. Cosine law and its implications.

III. Short answers on: (10 x 2 = 20)

1. Kinetic energy.
2. Biomechanics.
3. Thermotherapy.
4. Lenz's law.
5. Proton.
6. Latent heat of vaporization.
7. Fixation and Stabilisation.
8. Ionization.
9. Define choke coil.
10. Hooke's Law.

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

[LR 1220]

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

Sub. Code: 6275

**BPT DEGREE EXAMINATION
FIRST YEAR
(New regulations for the candidates admitted from 2017-2018 onwards)
PAPER IV – BASIC AND APPLIED PHYSICS FOR PHYSIOTHERAPY
Q.P. Code : 746275**

Time: Three hours

Answer ALL Questions

Maximum: 100 Marks

I. Elaborate on: (2 x 15 = 30)

1. Explain in detail about application of physical principles in Exercise therapy.
2. Explain in detail about the Newton's laws.

II. Write notes on: (10 x 5 = 50)

1. Define Biomechanics.
2. Differentiate between line of gravity and centre of gravity.
3. Explain Static and Dynamic equilibrium.
4. Friction.
5. Define frequency, wavelength, Amplitude and phase of a sine wave.
6. Resistances in series and parallel combination.
7. Magnetic effects of electric current.
8. Thermionic emission.
9. Intrinsic and extrinsic semiconductors.
10. Functions and applications of Ammeter, volt meters and Ohmmeters.

III. Short answers on: (10 x 2 = 20)

1. Direct currents.
2. Wheat stone bridge.
3. Concurrent forces.
4. Lenz's law.
5. Shunt Rheostat.
6. Ohm's law.
7. S-D Curve.
8. Electromagnetic spectrum.
9. Composition and resolution of forces.
10. HOOKE'S Law.

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

[BPT 0321]

**MARCH 2021
(AUGUST 2020 EXAM SESSION)**

Sub. Code: 6275

BPT DEGREE EXAMINATION

FIRST YEAR

(New Regulations for the candidates admitted from 2017-2018 onwards)

PAPER IV – BASIC AND APPLIED PHYSICS FOR PHYSIOTHERAPY

Q.P. Code : 746275

Time: Three hours

Answer ALL Questions

Maximum: 100 Marks

I. Elaborate on:

(2 x 15 = 30)

1. Explain in detail about the physical effects on heat of radiation and laws governing radiation.
2. Explain the principle, construction, working and uses of Transformer.

II. Write notes on:

(10 x 5 = 50)

1. Thermonic Valve.
2. Pendular Movement.
3. Electric shock and earth shock.
4. Cosine law and its implications.
5. Axes and planes.
6. Len's law.
7. Factors determining capacitance of condenser.
8. Define springs and its properties.
9. Springs in series and parallel.
10. Pulleys.

III. Short answers on:

(10 x 2 = 20)

1. Law of Grotthus.
2. Medium frequency currents.
3. Define velocity.
4. Proton.
5. EMF.
6. Concurrent forces.
7. Inductors.
8. Electric current.
9. Electric resistant.
10. Elasticity.

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

[BPT 0921]

**SEPTEMBER 2021
(FEBRUARY 2021 EXAM SESSION)**

Sub. Code: 6275

BPT DEGREE EXAMINATION

FIRST YEAR- (Regulations for the candidates admitted from 2017-2018 onwards)

PAPER IV – BASIC AND APPLIED PHYSICS FOR PHYSIOTHERAPY

Q.P. Code : 746275

Time: Three hours

Answer ALL Questions

Maximum: 100 Marks

I. Elaborate on:

(2 x 15 = 30)

1. Define levers, Explain the function, Classification and application of levers in physiotherapy & order of levers with example of levers in human body.
2. Explain the detail about AC and DC currents.

II. Write notes on:

(10 x 5 = 50)

1. Charging and discharging of capacitor.
2. Shunt Rheostat.
3. Semiconductors.
4. Wheatstone bridge.
5. Rectifiers.
6. Resistance in series and parallel.
7. Magnetic effects of electric current.
8. Coplanar and concurrent forces.
9. Cosine law.
10. Construction and uses of triode valve.

III. Short answers on:

(10 x 2 = 20)

1. Momentum.
2. Velocity.
3. Insulator.
4. Types of magnetism.
5. Ammeter.
6. Energy.
7. Free electrons.
8. Electric field.
9. Capacitors.
10. Low frequency currents.

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

[BPT 0122]

**JANUARY 2022
(AUGUST 2021 EXAM SESSION)**

Sub. Code: 6275

**BACHELOR OF PHYSIOTHERAPY DEGREE COURSE
FIRST YEAR- (Regulation from 2017-2018 onwards)
PAPER IV – BASIC AND APPLIED PHYSICS FOR PHYSIOTHERAPY
Q.P. Code : 746275**

Time: Three hours

Answer ALL Questions

Maximum: 100 Marks

I. Elaborate on: (2 x 15 = 30)

1. Define Electric current. Explain in detail about thermal, chemical and magnetic effects of electric current.
2. Define Equilibrium. Explain about types of Equilibrium and its application in physiotherapy.

II. Write notes on: (10 x 5 = 50)

1. Earth shock and its prevention.
2. Light Emitting Diodes.
3. Charging and discharging a capacitor.
4. Grotthus law and its implications.
5. Axes and planes.
6. Medium frequency currents.
7. Force.
8. Principle of momentum and its practical applications.
9. Define condenser and uses of condenser in electrotherapy.
10. Impedance.

III. Short answers on: (10 x 2 = 20)

1. Define Elasticity.
2. Resistance.
3. Vant's Hoof's law.
4. Inertia.
5. Causes of earth shock.
6. Uses of thermionic valve.
7. Define power.
8. Angle of pull of a muscle.
9. Mechanical advantage of pulleys.
10. Uses of condenser.

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

[BPT 0622]

**JUNE 2022
(FEBRUARY 2022 EXAM SESSION)**

Sub. Code: 6275

**BACHELOR OF PHYSIOTHERAPY DEGREE COURSE
FIRST YEAR- (Regulation from 2017-2018 onwards)
PAPER IV – BASIC AND APPLIED PHYSICS FOR PHYSIOTHERAPY
Q.P. Code : 746275**

Time: Three hours

Answer ALL Questions

Maximum: 100 Marks

I. Elaborate on:

(2 x 15 = 30)

1. Explain in detail about the principles types construction working and uses of Transformers.
2. Define levers. Describe different classes of levers, its functions examples and application of levers in physiotherapy.

II. Write notes on:

(10 x 5 = 50)

1. Laws governing radiations.
2. Choke Coil.
3. Thermionic valve.
4. Ammeter.
5. Capacitors.
6. Types of Equilibrium.
7. Pulleys and its types.
8. Differentiate between Electric and Earth Shock.
9. Oscillators.
10. LED – Light Emitting Diodes.

III. Short answers on:

(10 x 2 = 20)

1. Ohm's Law.
2. Concurrent force.
3. Inertia.
4. Latent heat of vaporization.
5. Power.
6. Electromotive force.
7. Shunt Rheostat.
8. Lenz's Law.
9. Eddy Current.
10. Proton.

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

[BPT 1022]

**OCTOBER 2022
(AUGUST 2022 EXAM SESSION)**

Sub. Code: 6275

**BACHELOR OF PHYSIOTHERAPY DEGREE COURSE
FIRST YEAR- (Regulation from 2017-2018 onwards)
PAPER IV – BASIC AND APPLIED PHYSICS FOR PHYSIOTHERAPY
Q.P. Code : 746275**

Time: Three hours

Answer ALL Questions

Maximum: 100 Marks

I. Elaborate on:

(2 x 15 = 30)

1. Explain in detail about AC and DC current.
2. Discuss in detail about the physical effects of Heat and Radiation and Laws governing Radiations.

II. Write notes on:

(10 x 5 = 50)

1. Charging and Discharging of capacitor.
2. Rectifiers.
3. Earth shock and its prevention.
4. Resistance in series and parallel.
5. Construction and uses of Triode valve.
6. Coplanar and concurrent forces.
7. Levers in Physiotherapy.
8. Pulleys and its applications.
9. Magnetic effects of Electric current.
10. Types of Rheostat.

III. Short answers on:

(10 x 2 = 20)

1. Free electrons.
2. Types of Magnet.
3. Velocity.
4. Base of support.
5. Types of friction.
6. Joule's Law.
7. Hooke's Law.
8. Angle of pull of a muscle.
9. Insulator.
10. Mechanical Advantage.

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

[BPT 0423]

**APRIL 2023
(FEBRUARY 2023 EXAM SESSION)**

Sub. Code: 6275

**BACHELOR OF PHYSIOTHERAPY DEGREE COURSE
FIRST YEAR - (Regulation from 2017-2018 onwards)
PAPER IV – BASIC AND APPLIED PHYSICS FOR PHYSIOTHERAPY**

Q.P. Code: 746275

Time: Three hours

Answer ALL Questions

Maximum: 100 Marks

I. Elaborate on:

(2 x 15 = 30)

1. Describe in detail about Axes and Planes in relation to movements produced in human body with examples.
2. Define Thermionic Valves and Thermionic Emission. Explain briefly about Construction, working and application of Cathode Ray Oscilloscope (CRO).

II. Write notes on:

(10 x 5 = 50)

1. DC Currents.
2. Newton's Law.
3. Cosine law and its implications.
4. Properties of magnet.
5. Wheatstone bridge.
6. Medium Frequency Currents.
7. Springs and its properties.
8. Potentiometer.
9. Voltmeter.
10. Semi – Conductors.

III. Short answers on:

(10 x 2 = 20)

1. Force and its Components.
2. Smoothing Circuits.
3. Fixation and stabilization.
4. S – D Curve.
5. Momentum.
6. Fuse.
7. Electromagnetic Spectrum.
8. Impedance.
9. Centre of gravity.
10. Farad.

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

[BPT 1123]

**NOVEMBER 2023
(AUGUST 2023 EXAM SESSION)**

Sub. Code: 6275

**BACHELOR OF PHYSIOTHERAPY DEGREE COURSE
FIRST YEAR - (Regulation from 2017-2018 onwards)
PAPER IV – BASIC AND APPLIED PHYSICS FOR PHYSIOTHERAPY**

Q.P. Code: 746275

Time: Three hours

Answer ALL Questions

Maximum: 100 Marks

I. Elaborate on:

(2 x 15 = 30)

1. Define springs. Write about its properties and about springs in parallel and series.
2. Define force. Explain briefly its classification and application in physiotherapy.

II. Write notes on:

(10 x 5 = 50)

1. Grothus Law.
2. Shunt Rheostat.
3. Fixation and Stabilization.
4. Smoothing circuits.
5. Difference between earth shock and electric shock.
6. Medium frequency currents.
7. Static electric charge.
8. Uses of Triode Valve.
9. Pulleys and its application.
10. Resistance in series and parallel.

III. Short answers on:

(10 x 2 = 20)

1. Uses of condenser.
2. Speed and Velocity.
3. Ohmmeter.
4. Kinetic Energy.
5. Types of motion.
6. Friction.
7. Rectifiers.
8. Electric Burns.
9. Movement arm.
10. Eddy currents.

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

[BPT 0824]

AUGUST 2024

Sub. Code: 6275

**BACHELOR OF PHYSIOTHERAPY DEGREE EXAMINATION
FIRST YEAR - (Regulation from 2017-2018 onwards)
PAPER IV – BASIC AND APPLIED PHYSICS FOR PHYSIOTHERAPY**

Q.P. Code: 746275

Time: Three hours

Answer ALL Questions

Maximum: 100 Marks

I. Elaborate on:

(2 x 15 = 30)

1. Explain in detail about the Newton's laws and application of its principles.
2. Explain in detail about the rectifiers and smoothing circuits.

II. Write notes on:

(10 x 5 = 50)

1. Static electric charge.
2. Line of gravity and base of support.
3. Define Force and its classification.
4. Levers – I, II, III orders.
5. Dangers and precaution against Earth shock.
6. High frequency currents.
7. Step up and step down transformer.
8. Types and uses of thermionic valves.
9. Magnetic field.
10. Types of electric current.

III. Short answers on:

(10 x 2 = 20)

1. Power plugs.
2. Voltmeter.
3. Electrons.
4. Resistance.
5. Torque.
6. Triode valve.
7. Inductance.
8. Fuse
9. Springs.
10. Reflection.

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

[BPT 0225]

FEBRUARY 2025

Sub. Code: 6275

**BACHELOR OF PHYSIOTHERAPY DEGREE COURSE
FIRST YEAR - (Regulation from 2017-2018 onwards)
PAPER IV – BASIC AND APPLIED PHYSICS FOR PHYSIOTHERAPY**

Q.P. Code: 746275

Time: Three hours

Answer ALL Questions

Maximum: 100 Marks

I. Elaborate on:

(2 x 15 = 30)

1. Discuss the effects of Electric current and add note on its hazards.
2. Describe the Characteristics of thermionic valves and its applications with their uses.

II. Write notes on:

(10 x 5 = 50)

1. Types of Equilibrium.
2. Electro magnetic induction.
3. Mechanical therapeutic energy.
4. Semiconductors.
5. Laws governing radiation.
6. Concurrent and linear forces.
7. Uses of condenser in electrotherapy.
8. Types of current frequency.
9. Properties of springs.
10. Function and application of voltmeter.

III. Short answers on:

(10 x 2 = 20)

1. Impedance.
2. Magnitude of current.
3. Integrated circuits.
4. Magnetic lines of force.
5. Thermal radiation.
6. Composition of force.
7. Oscillator.
8. Second order lever.
9. Law of reaction.
10. Resistance of conductor.
