ATAL BIHARI VAJPAYEE MEDICAL UNIVERSITY, UTTAR PRADESH

BACHELOR OF PHYSIOTHERAPY (B.P.T)

THIRD SEMESTER EXAMINATION - APRIL 2025

Time: 3 Hours **Max Marks: 80 Marks**

BIOMECHANICS AND KINESIOLOGY II

PAPER CODE : 2533110112

General instructions:

- All questions are compulsory.
- Explain with diagrams where required.
- Any attempt to use unfair means will result in disqualification.
- Please write the correct paper code.

LONG ESSAY QUESTIONS 2 X 20 = 40 Marks

Q.1 Discuss the kinetics and kinematics of human gait, including gait initiation, energy requirements, and the role of the trunk and upper extremities.

Q.2 Explain the structure and function of the shoulder complex, including its integrated function in movement and stability.

SHORT NOTE QUESTIONS 2 X 10 = 20 Marks

Q.3 Discuss the functional position of the wrist and hand and its importance in daily activities.

Q.4 Explain the biomechanics of the hip joint and discuss common pathologies such as arthrosis, fractures, and femoral abnormalities.

SHORT ANSWER QUESTIONS 5 X 4 = 20 Marks

Q.5 Describe the general effects of aging on neuromusculo-skeletal system.

Q.6 Describe the kinetic chain involvement in human movement.

Q.7 Explain the differences between static and dynamic posture.

Q.8 What is the role of the menisci in knee joint function?

Q.9 What is the role of proprioception in movement control?

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Time: 3 Hours **Max Marks: 80 Marks**

ELECTROTHERAPY - I

PAPER CODE : 2533110111

General instructions:

- All questions are compulsory.
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LONG ESSAY QUESTIONS 2 X 20 = 40 Marks

Q.1 Explain the working principles, construction, and applications of operational amplifiers in different configurations.

Q.2 Explain in detail the principles and applications of Infrared Radiation (IR) Therapy including its mechanism of action, physiological effects, therapeutic effects, indications, contraindications and dosage parameters.

SHORT NOTE QUESTIONS 2 X 10 = 20 Marks

Q.3 Explain Ohm's law and its application to DC and AC currents. How does a fuse work in electrical circuits?

Q.4 Define and describe the different types of rectifying devices. Explain the function of thermionic valves, semiconductors, and transistors.

SHORT ANSWER QUESTIONS 5 X 4 = 20 Marks

Q.5 Define and differentiate between conductors and insulators with examples.

Q.6 What is the role of microprocessors in biomedical applications?

Q.7 Define and explain the concept of binary number system and binary arithmetic.

Q.8 Explain the function and working of diadynamic currents in brief.

Q.9 What are the physiological and therapeutic effects of cryotherapy?

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EXERCISE THERAPY - I

PAPER CODE : 2533110110

General instructions:

- All questions are compulsory.
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LONG ESSAY QUESTIONS 2 X 20 = 40 Marks

Q.1 Critically analyse the different models of disability, including the ICIDH, Nagi model and ICF model. Discuss their strengths, limitations and practical applications in healthcare and rehabilitation. Support your answer with relevant examples.

Q.2 Describe in detail the therapeutic gymnasium, including its setup, importance, and role in rehabilitation. Discuss the various equipment used in a therapeutic gymnasium, along with their operational skills and clinical applications in physiotherapy. Provide examples to illustrate how different equipment is used for specific patient populations.

SHORT NOTE QUESTIONS 2 X 10 = 20 Marks

Q.3 Explain Passive Movements, including their classification, principles, indications, contraindications, effects, and techniques in physiotherapy.

Q.4 Explain the role of therapeutic massage in rehabilitation, including its classification and techniques.

SHORT ANSWER QUESTIONS 5 X 4 = 20 Marks

Q.5 Define strength, power, and endurance.

Q.6 What are the different classifications of free exercises?

Q.7 Explain the concept of isokinetic exercises and their applications.

Q.8 What are the different types of suspension therapy?

Q.9 List the principles of active-assisted exercises.

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Time: 3 Hours **Max Marks: 80 Marks**

MICROBIOLOGY

PAPER CODE : 2533110113

General instructions:

- All questions are compulsory.
- Explain with diagrams where required.
- Any attempt to use unfair means will result in disqualification.
- Please write the correct paper code.

LONG ESSAY QUESTIONS 2 X 20 = 40 Marks

Q.1 Discuss in detail the methods of sterilization and disinfection used in microbiology. Explain their importance in infection control.

Q.2 Explain the structure and function of the immune system. Describe the immune response to bacterial and viral infections.

SHORT NOTE QUESTIONS 2 X 10 = 20 Marks

Q.3 Describe the growth curve of bacteria and explain the factors influencing bacterial growth.

Q.4 Explain antigen-antibody reactions and their role in disease diagnosis.

SHORT ANSWER QUESTIONS 5 X 4 = 20 Marks

Q.5 What is the importance of normal microbial flora of the human body?

Q.6 Define opportunistic infections and give two examples.

Q.7 What are the universal precautions in infection control?

Q.8 Define pyrexia of unknown origin (PUO) and mention its causes.

Q.9 What is rheumatic fever? Name the causative organism.
