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SCHOOL OF NURSING SCIENCES & ALLIED HEALTH**

**BPT 2nd YEAR, ANNUAL EXAMINATION, MAY 2024
BIOMECHANICS AND KINESIOLOGY (THEORY)
PAPER CODE: BPT – 266**

Time: 3 Hours

Maximum Marks: 75 Marks

(Write your Roll No. on top of the paper immediately)

All sections are compulsory. Draw diagrams wherever necessary. Give examples wherever necessary.

SECTION – A

Multiple Choice Questions (All are compulsory)

(15 × 1 Mark = 15 Marks)

- Q1.** Which type of contraction occurs when the force of the muscles is less than the resistance?
a) Concentric b) Eccentric c) Isometric d) Isokinetics
- Q2.** Minimum intradiscal pressure in vertebral column is seen when a person is _____.
a) Standing b) Sitting c) Lying flat d) Lying on one side
- Q3.** The Q angle is utilized as a measure to determine the amount of lateral force on the patella. Which three bony landmarks are used to measure the Q angle?
a) Anterior superior iliac spine, superior border of the patella, tibial tubercle
b) Anterior superior iliac spine, tibial tubercle, midpoint of the patella
c) Anterior superior iliac spine, inferior border of the patella, midpoint of the patella
d) Greater trochanter, midpoint of the patella, superior border of the patella
- Q4.** The ligaments of the hip are very weak
a) On anterior side c) On lateral side
b) On posterior side d) On anterolateral side
- Q5.** True flexors of the elbow joint are
a) Biceps b) Brachialis c) Teres minor d) Brachioradialis
- Q6.** Normal angle between vertical lines of femur
a) 7 degrees b) 12 degrees c) 1.5 degrees d) 0.5 degrees
- Q7.** The factors responsible for viscosity of synovial fluid is/are
a) Chondroitin sulphate c) Heparin sulphate
b) Hyaluronic acid d) All of the above

- Q8.** Normally in the standing position the centre of gravity lies
- a) 5cms anterior to second sacral vertebra b) Around umbilicus
b) 5cms posterior to second sacral vertebra c) 5cms anterior to second lumbar vertebra
- Q9.** Weakness of hip flexors lead to:
- a) Abducted Gait c) Trendelenberg's Gait
b) Lurching Gait d) Circumduction Gait
- Q10.** Which of the following are stance phase muscles?
- a) Quadriceps b) Hamstring muscles c) Tibialis anterior d) Peroneus longus
- Q11.** Action of latissimus dorsi muscle is
- a) Supraspinatus, infraspinatus, teres major and latissimus dorsi
b) Infraspinatus, subscapularis, latissimus dorsi and pectoralis major
c) Teres minor, subscapularis, latissimus dorsi and pectoralis major
d) Teres minor, infraspinatus, supraspinatus, subscapularis
- Q12.** Which of the following is correct in medial meniscal tear?
- a) Rotation of femur on the tibia c) Locking and unlocking episodes
b) Menisci do not heal d) All of the above are correct
- Q13.** Tightness of tensor fascia latae causes
- a) Adduction of the hip c) Knocking (genu valgum) of the knee
b) Extension of the hip d) Plantarflexion of the ankle
- Q14.** Weakness in the _____ would make it extremely difficult to ambulate on crutches
- a) Medial Deltoid b) Erector Spinae c) Latissimus Dorsi d) Rhomboids
- Q15.** The most powerful muscle of the body is
- a) Quadriceps b) Gluteus maximus c) Gastrosoleus d) Deltoid

Q11. Write a short note on Torque.

SECTION - B

Answer any **THREE** of the following:

(3 × 10 Marks = 30 Marks)

- Q1.** Explain osteokinematics and arthrokinematics of tibio-femoral joints (5 + 5)
- Q2.** Write short notes on any **TWO**:
- a) "Pump-Handle" Motion (5)
 - b) Lumbar Pelvic Rythm (5)
 - c) Patella Alta And Baja (5)
- Q3.** Describe the key events and muscle actions during the initial contact phase of gait cycle and discuss the pathological gaits
- Q4.** Describe all the abnormal posture with help of labelled diagram?

SECTION - C

Answer any **TWO** of the following:

(2 × 15 Marks = 30 Marks)

- Q1.** Describe the kinematics and kinetics of sacroiliac joints?
- Q2.** Explain the structure configuration of hip joint in relation to weight bearing in unilateral and bilateral stance along with factors contributing for its stability?
- Q3.** Explain static and dynamic stabilization of glenohumeral joint?
