

**Q.P.Code: 201014**

**Reg. No.:.....**

**Second Year BPT Degree Examinations - October 2012**

**BIOMECHANICS**

**Time: 3 hrs**

**Max marks : 100**

- Answer all questions
- Draw diagrams wherever necessary

**Essays**

**(2x10=20)**

1. Describe the role of cruciate ligaments and menisci in the kinematics of the tibiofemoral joint. Add a note on locking mechanism of the knee
2. Define gait and mention the phases of gait cycle. Describe kinetics and kinematics of stance phase of gait cycle.

**Short notes**

**(10x5=50)**

3. Describe isotonic contraction with suitable examples
4. Explain the extensor mechanism of the hand with diagrams
5. Mention the different lever systems and describe them with examples
6. Define posture and add a note on sitting posture
7. Explain the structure of plantar arches and mention three functions .
8. Mention the motions available at the patella femoral joint. Add a note on the motions of patella during flexion and extension of the knee
9. Analyze the muscle forces at the hip during unilateral stance
10. What is stress and strain. Explain the load deformation curve with an example
11. Ligaments of the wrist complex
12. Describe the joint motions and muscle activity that occur in running gait

**Answer briefly**

**(10x3=30)**

13. Forward head posture
14. Mechanical advantage of lever
15. Contractile unit of a muscle
16. Intrinsic minus hand
17. Centre edge angle of acetabulum
18. Pes planus
19. Measurement methods of crutches and canes
20. Movements of pelvis on femur
21. .Deltoid ligament and lateral collateral ligament of ankle joint
22. Concave- convex rule with an example

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