Reg.No. \_\_\_\_\_\_\_\_\_\_\_\_



**UNIVERSITY**

(Karunya Institute of Technology & Sciences)

(Declared as Deemed-to-be University under Sec.3 of the UGC Act, 1956)

**End Semester Examination – Nov/Dec – 2016**

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|  |  | **Semester :** | **2016-17 ODD** |
| **Code :** | **15EI2010** | **Duration :** | **3hrs** |
| **Sub. Name :** | **Fundamntals of biomechanics** | **Max. marks :** | **100** |

**ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)**

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| **Q. No.** | **Sub Div.** | **Questions** | **Course**  **Outcome** | **Marks** |
| 1. | a. | An old man came with a fracture on his bone. As a biomechanist how will you analyze the condition? | CO3 | 12 |
| b. | The person had fracture due to loading. In this perspective comment on loading and related mechanical properties of bones. | CO3 | 8 |
| (OR) | | | | |
| 2. | a. | As a biomechanist what are the parameters that has to be considered while designing rehabilitation equipment that will ease walking for an athlete who suffers due to structural malfunctions. | CO3 | 14 |
| b. | How are solids and liquids classified in bio-fluid mechanics? | CO1 | 6 |
| 3. | a. | Comment on different medical applications of blood rheology. As a biomechanist how can you relate the significance of blood rheology? | CO2 | 8 |
|  | b. | List the components of blood. Evaluate the case where an individual is deficient of these components. | CO2 | 12 |
| (OR) | | | | |
| 4. | a. | As a biomechanist what are the parameters that has to be considered while designing prosthetic valve. | CO2 | 10 |
|  | b. | Comment on Laminar flow of blood in a tube. | CO1 | 10 |
| 5. | a. | A person who finds difficulty in walking fails to do a proper STRIDE. As a biomechanist how can you classify the main tasks in STRIDE? | CO3 | 15 |
|  | b. | Explain stance phase and its instances. | CO1 | 5 |
| (OR) | | | | |
| 6. | a. | Differentiate mid swing and terminal swing | CO1 | 5 |
|  | b. | Comment on foot pressure measurements with pedobarograph | CO3 | 5 |
|  | c. | As a biomechanist analyze the use of 4D WATBAK | CO2 | 5 |
|  | d. | Write short notes on function and structure of lumbar spine | CO2 | 5 |
| 7. | a. | A diabetic patient has amputation in one of his leg. The other leg is also facing a serious verge of amputation. In motor neuropathy how can you classify the situation according to the physical changes of his foot? | CO3 | 13 |
|  | b. | The ultimate aim of foot pressure measurement is ulceration. Justify the statement | CO2 | 7 |
| (OR) | | | | |
| 8. | a. | Comment on the peculiarity of L5/S1 in spine biomechanics | CO1 | 5 |
|  | b. | Write short notes on function and structure of thoracic spine | CO2 | 5 |
|  | c. | Differentiate swing and stance phase | CO1 | 5 |
|  | d. | What are the risk factors involved in a person who have a severe back pain? | CO3 | 5 |
|  | | **Compulsory:** |  |  |
| 9. | a. | Comment on joint kinetics and kinematics. | CO2 | 10 |
|  | b. | Analyze biomechanics of hip, loads on hip and hip prosthesis. | CO3 | 10 |

ALL THE BEST