	UNVERSITY OF TECHNOLOGY
Name :	
Roll No. :	(A Phone of Excellence and Excellent
Invigilator's Signature :	
CS/B.TECH(BME-C	DLD)/SEM-4/BME-402/2012
20	12
BIOMEC	HANICS

Time Allotted : 3 Hours

Full Marks: 70

The figures in the margin indicate full marks. Candidates are required to give their answers in their own words as far as practicable.

## **GROUP** – A

## (Multiple Choice Type Questions)

1. Choose the correct alternatives for the following :

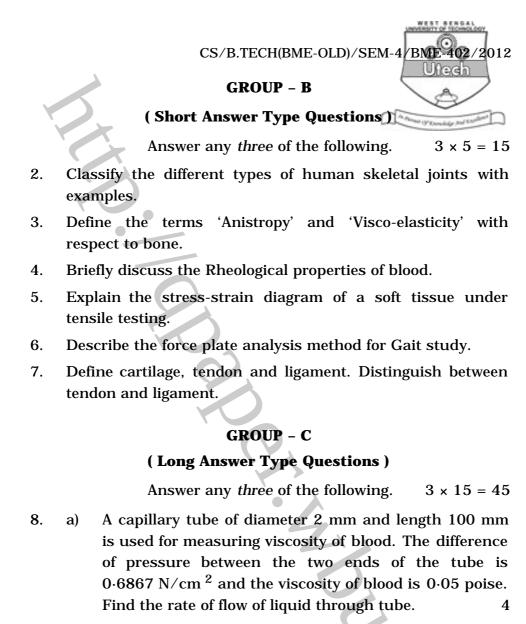
 $10 \times 1 = 10$ 

- i) In the Strees-Strain analysis curve of Brittle type of biomaterials has more
  - a) plastic region b) elastic region
  - c) no plastic region d) no elastic region.
- ii) The most freely movable joint is
  - a) Shoulder joint b) Hip joint
  - c) Elbow joint d) None of these.
- iii) In mechanics 'Creep' is the term associated with
  - a) deformation b) creation
  - c) relaxation d) none of these.

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iv)	Rod	cell is a		A
	a)	touch receptor	b)	vision receptor
	c)	pressure receptor	d)	none of these.
v)	The	blood protein which is	s imp	ortant for blood velocity
	is			
×	a)	Albumin	b)	Globulin
	c)	Myosin	d)	None of these.
vi)		proper Visco-elastic resented by	mode	el of the bone can be
	a)	Kelvin-Vioght model	b)	Maxwell model
	c)	Standard solid model	d)	None of these.
vii)	Hun	nan Elbow Joint is und	er the	e group of
	a)	Synarthrosis	b)	Amphiarthrosis
	c)	Diarthrosis	d)	None of these.
viii)	The	moment of inertia of h	umar	ı limb can be measured
	by			
	a)	quick release method		
	b)	compound pendulum	meth	bd
	c)	both (a) and (b)	4	
	d)	none of these.		
ix)	The	Bio-mechanical mo	del	of Human Bone is
	repr	resented		
	a)	only by Spring		
	b)	only by Dashpot		
	c)	combination of Spring	& Da	ashpot
	d)	no Spring or Dashpot.		
x)	Liga	ment connects		
	a)	Bone to Bone	b)	Bone to Muscle
	c)	Muscle to Muscle	d)	None of these.
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- b) Write the names of different types of mechanical heart valves with sketch and their advantages and disadvantages. 6
- c) What are the problems occurred in natural heart valves? 2
- d) What is the test performed before imptanting an artificial heart valve ? 3

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9.	a)	How you can determine the moment of inertia of human
		limb by Compound Pendulum methods ? 6
	b)	What are the different types of fractures that can occur
		in human bone ? Also write the names of different
		fracture fixators and explain in brief. $5 + 4$
10.	a)	Name the various types of septum and orifice present
		inside our heart. 2
	b)	Explain the blood flow through the heart and blood
		supply to the myocardium. 8
	c)	What is cardiac cycle ?2
	d)	Classify different types of cartilage according to their
		structure and position. 3
11.	a)	With schematic diagram write the characteristic
	<b>.</b> .	features of sinovial joints. 6
	b)	Briefly discuss about the piezoelectric properties of
		Human Bone. 6
	c)	What do you mean by autograft for heart valve
4.0	`	prosthesis? 3
12.	a)	What type of tissue is bone ? Briefly explain the structure of bone. 1 + 4
	<b>L</b> )	
	b)	What are called as soft tissue ? Give some of the
		examples of soft tissue which are commonly found in our body. $1+2$
	c)	How could you find out the C.G. of human body of a
	C)	given posture by Segmental Analysis ? 4
	d)	Elbow joint consists of three joints. Explain it. 3
13.		te short notes on any <i>three</i> of the following : $3 \times 5$
101	a)	Mechanics of knee joint
	b)	Dynamics of hip
	c)	Structure of tooth with mechanical properties
	d)	Human gait cycle
	e)	Electrical properties of bone.
	0)	
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