Reg. No. :
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B.E. / B.Tech. DEGREE EXAMINATION, MAY 2022

One credit

Mechanical Engineering

## 19UME862 – SMART MATERIALS

(Regulation 2019)

Duration: 1.30 hours

Maximum: 50 Marks

Answer ALL Questions

## PART A - (10 x 1 = 10 Marks)

1.	Piezo-electric materials are used in				
	(a) Transducer	(b) Load gauges	(c) Batteries	(d) Switches	
2which respond with a change is shape on the application of a				f mechanical stress	
3.			rials (c) Iron materials		
	(a) JFET	(b) PTFE	(c) LED	(d) FET	
4.	A smart material m	ay be considered as a	replacement for a materia	l.	
	(a) Traditional	(b) Conventional	(c) Un conventional	(d) Recycle	
5.	Self-healing may also be achieved through deliberately applied mechanisms.				
	(a) psychological	(b) chemical	(c) mechanical	(d) obvious	
6.	Light sensors are used in				
	(a) Lights		(b) Electric switches		
	(c) Pyroelectric ma	aterials	(d) Piezoelectric materials		
7.	Glass fiber tensile strength is		(GPa)		
	(a) 3.5 to 4.6	(b) 3.2	(c) 4.6 to 5.0	(d) 2.3	

8.	Embedding sensors within structures to monitorand damage can reduce maintenance costs and increase lifespan.						
2	(a) Strain (b) Temperature (c) Stress (d) Condition						
9.	Smartness describes self-adaptability, memory and multiple functionalities of the materials or structures.						
	(a) Self-assembly (b) Self-sensing (c) Capability (d) Conscious	sly					
10.	PTFE means						
	(a) Polytetra-fluid emulsion (b) Polytetrafluoroethylene						
	(c) Polytetra fluorescence (d) Polytetra fluid ethanol						
$PART - B (2x \ 20 = 40 \ Marks)$							
11.	(a) What are smart materials and explain the commonly used smart materials	(20)					
	Or						
	(b) Discuss about features and application of smart materials.						
12.	(a) Discuss about optical properties of smart materials.						
	. (a) Discuss about optical properties of smart materials. (20) Or						
	(b) Explain the application of smart materials in self-healing protective surfaces of aircraft						