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Question Paper Code: U8762

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2023

One credit

Mechanical Engineering

21UME862 – SMART MATERIALS

(Regulations 2021)

Duration: 1.30 hours

Maximum: 30 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. ----- compounds have combined properties of metal and nonmetals CO1-U
(a) nonmetallic (b) bimetallic (c) Intermetallic (d) fiber
2. Following is the unique to polymeric materials: CO1-U
(a) Elasticity (b) Viscoelasticity (c) Plasticity (d) None of the above
3. Piezo-electric materials are used in ----- CO1-U
(a) transducer (b) load gauges (c) batteries (d) switches
4. ----- which respond with a change in shape on the application of mechanical stress CO1-U
(a) wooden materials (b) plastic materials (c) iron materials (d) smart materials
5. ----- compounds have combined properties of metal and nonmetals CO1-U
(a) nonmetallic (b) bimetallic (c) Intermetallic (d) fiber
6. Following is the unique to polymeric materials: CO1-U
(a) Elasticity (b) Viscoelasticity (c) Plasticity (d) None of the above
7. PTFE means CO1-U
(a) polytetra-fluoride emulsion (b) poly tetra fluoro ethylene
(c) poly tetra fluorescence (d) poly tetra fluid ethanol
8. Smart inorganic polymers have ----- and responsive properties. CO1-U
(a) tunable (b) variable (c) unformable (d) desirable

9. The smart materials is one that responds to a stimulus in its ----- in a useful way. CO1-U
(a) industry (b) spaces (c) environment (d) earth
10. Self-healing materials have the ----- ability to repair damage due to normal usage CO1-U
(a)intrinsic (b) extrinsic (c)bonding (d) adhesive

PART – B (1 x 20=20 Marks)

11. (a) Classification of composite materials. Explain about Advanced composite materials. CO1- U (20)
- Or
- (b) Explain the application of smart materials in various sensors. (gas, temperature, strain, stress) CO1- U (20)