Reg. No. : | | | | | | | | | | | | |

Question Paper Code: U8762

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2024

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 is 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-fluid 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) uniformable (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)