



Sixth Semester B.E. Degree Examination, June/July 2019
Electrical Engineering Materials

Time: 3 hrs.

Max. Marks: 100

Note: Answer FIVE full questions, selecting atleast TWO questions from each part.

PART - A

- 1 a. Briefly explain the properties and uses of following materials i) Copper ii) Aluminium. (08 Marks)
b. Explain Fermi dirac distribution. (06 Marks)
c. The resistance of wire increases from 40 Ohm at 28°C to 49 Ohm at 80°C. Find the temperature coefficient and resistance of the material at 0°C. (06 Marks)
2 a. Write a short note on :
i) Intrinsic semiconductors ii) Extrinsic semiconductors. (10 Marks)
b. List the differences between hard and soft magnetic materials. (06 Marks)
c. A mild steel ring having a cross sectional area of 5cm^2 and a mean circumference of 40cm is wound with 200 turns. For an exciting current of 6.4A, through the coil, the total flux produced was found to be 0.8mwb. Determine : i) Flux density ii) Field intensity. (04 Marks)
3 a. Define dielectric strength. Explain the factors affecting the dielectric strength. (06 Marks)
b. An air condenser of capacitance 0.005uF is connected to a DC supply of 500V. It is then disconnected from the supply and immersed in oil with a dielectric constant of 2.5. Find the energy stored in condenser before and after immersion. (06 Marks)
c. Write a short note on :
i) Dipolar relaxation ii) Dielectric loss. (08 Marks)
4 a. Explain the mechanical and thermal properties of insulating materials. (12 Marks)
b. Explain different types of insulating varnishes. (08 Marks)

PART - B

- 5 a. With a neat sketch, explain the working of Fuel cell. (10 Marks)
b. With the help of neat diagram explain the working of solar photo voltaic cell. (10 Marks)
6 a. Explain in detail about magnetic resonance. (08 Marks)
b. Explain in detail about atomic absorption spectroscopy. (12 Marks)
7 a. What are shape memory alloys? Explain their effects. Also explain their properties and applications. (12 Marks)
b. Explain the properties of Electro Archeological Fluids and mention their applications. (08 Marks)
8 a. What are ceramics? How these are classified? Explain the properties of each class in brief. (12 Marks)
b. Explain the following :
i) Rubber ii) Thermoplasts. (08 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and/or equations written eg, 42+8 = 50, will be treated as malpractice.