E IV (E-scheme) | Branch - Mechanical | Nov-2025 | R.P. code - 82459
Date - 12.12.2025

Duration: 3 hours Max Marks : 80

N. B. : - 1) Question No 1 is compulsory.
      2) Attempt any three questions out of the remaining five.
      3) All questions carry equal marks.
      4) Assume suitable data if required and state it clearly.

1 . Attempt any four. [20]

    a) Draw and explain well labeled characteristics of BJT, IGBT and SCR .
    b) Explain various features of logic family.
    c) Explain the meaning of term commutation and suggest and explain any one method of forced commutation in SCR.
    d) Compare De-Multiplexer and Multiplexer.
    e) List the features of MSP430.

2 a) Explain the working of single phase Bridge inverter with R load. [20]

    b) Explain various method of speed control of AC three phase induction motor.

3 a) Describe instrumentation amplifier with labeled diagram. State its application in various field [20]

    b) Compare CMOS logic family with TTL logic family.

4 a) Explain need of digital to analog conversion. How the ADC in MSP430 works [20]

    b) Explain BLDC motor. State its advantages.

5) a) Explain IC555 as timer . Write its application. [20]

    b) Write difference between assembly programming and C language programming. Write various application of microcontroller and explain any one.

6) a) Describe speed torque characteristics of DC motor and AC motor. Explain their criteria For selection for industrial application. [20]

    b) Draw and explain UJT as triggering method of SCR.

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