

23/05/2025 SE MECHANICAL SEM-IV C-SCHEME IE QP CODE: 10082457

Time: 3 hours

Max. Marks: 80

- Note: 1. Assume suitable data if necessary
 2. Figures to the right indicate full marks
 3. Question No. 1 is compulsory
 4. Solve any **three** out of the remaining **five** questions

Q1. Solve any four

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|---|--|----------|
| A | Draw and explain labelled V-I characteristics of zener diode | 5 |
| B | List the important characteristic of comparator | 5 |
| C | Implement basic gate using NAND gate | 5 |
| D | Explain need of digital to analogue conversion | 5 |
| E | Draw and explain equivalent circuit of an OP-Amp | 5 |

Q2.

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|---|---|-----------|
| A | Classify types of loads on the basis of time duration | 10 |
| B | Explain in brief functional block diagram of MSP430 | 10 |

Q3.

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|---|--|-----------|
| A | What do you understand by a Digital circuit? Explain following terms regarding digital circuit
1. Logic level 2. Noise immunity 3. Propagation delay 4. Fan out | 10 |
| B | Explain in detail first order low pass active filter | 10 |

Q4.

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|---|--|-----------|
| A | Explain Positive and Negative feedback of Open loop configuration of an Op-Amp | 10 |
| B | Comparison of SCR and TRIAC | 10 |

Q5.

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|---|--|-----------|
| A | Explain single-phase bridge inverter operation with neat circuit diagram and waveforms | 10 |
| B | Explain construction and characteristics of power BJT | 10 |

Q 6.

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|---|---|-----------|
| A | Explain GTO. How does it differ from an SCR | 10 |
| B | Compare Monostable and Astable Multivibrators | 10 |