

Instructions:**Total Time: 3 Hrs****Total Marks: 80**

1. Question No: 1 is **compulsory**.
2. Answer any **three** from the **remaining five** questions.
3. Figures to the right indicate full marks.

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| 1 | Solve any four :- | (20) |
| | a) Draw application circuit of triac-diac and associated waveforms. | |
| | b) Enlist applications of inverter? | |
| | c) Draw buffer, integrator and Schmitt trigger circuit. | |
| | d) Define and describe logic operation, power dissipation and propagation delay in digital circuits. | |
| | e) Draw and explain generic microcontroller. | |
| 2 | a) Describe speed torque characteristics of dc and ac motors. | (07) |
| | b) Explain three phase inverter operation with waveforms. | (07) |
| | c) Describe in detail instrumentation amplifier. State its need and applications. | (06) |
| 3 | a) Explain an ac to dc converter supplying resistive load. Derive equation for calculating dc voltage. | (07) |
| | b) Explain procedure to select a motor for an application and describe with the speed torque characteristics. | (07) |
| | c) Explain in detail low pass active filter | (06) |
| 4 | a) Explain need of digital to analogue conversion. How the ADC in MSP430 works? | (07) |
| | b) Compare analogue and digital circuits. Enlist some of them. | (07) |
| | c) Describe closed loop speed control of DC motor. | (06) |
| 5 | a) Draw and explain architecture MSP 430 microcontroller? | (07) |
| | b) What is MOSFET? Explain its working. What are similarities between MOSFET and IGBT? | (07) |
| | c) Explain IC 555 timer as Monostable Multivibrator. | (06) |
| 6 | a) Explain with circuit diagram any forced commutation method of SCR. | (07) |
| | b) Compare microprocessor and microcontroller. | (07) |
| | c) Explain Demultiplexer and Decoder. | (06) |