

Mechanical/Automobile

Sem- IV/CBGS/ Mech/ I.E/Nov-2016

28-12-16

Industrial Electronics

QP Code : 555700

(3 Hours)



[Total Marks : 80

- N.B. :**
- (1) Question No. 1 is compulsory.
 - (2) Attempt any three questions out of remaining questions.
 - (3) Figures to the right indicate full marks.
 - (4) Assume suitable data if necessary.

1. Solve any five :-

20

- a) Draw characteristics of SCR, Triac, MOSFET and IGBT.
- b) Draw connection of an LED and a switch to MSP430.
- c) Explain basic principle of single phase inverter.
- d) Enlist characteristics of ideal op-amp.
- e) Give an example of analog circuit, digital circuit, combinational circuit and sequential logic circuit.
- f) Draw torque-speed characteristics of DC shunt motor and 3-phase induction motor.
- g) What do you understand by R-L and R-L-E load?

2. a) Explain in brief functional block diagram of MSP430.

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b) Draw and explain block diagram of closed loop speed control of DC motor. Also state need of inner current loop.

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c) Draw and explain any one application circuit of Triac-Diac.

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3. a) Explain IC 555 as monostable multivibrator.

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b) Explain frequency control scheme of 3-phase induction motor with the help of block diagram.

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c) Write a short note on :- Turn-off of SCR.

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4. a) Draw the circuit diagram of differentiator and integrator? Write the output equation of each.

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b) Enlist triggering methods of SCR and explain any one gate triggering method of SCR.

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c) What do you understand by a Digital circuit? Elaborate following terms regarding digital circuits :-

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(i) logic level (ii) noise immunity (iii) propagation delay

(iv) power dissipation (v) fan out.

5. a) Elaborate: - Accuracy, Resolution and least significant bit regarding 10-bit ADC.

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b) Write a short note on 'selection of motor and power rating for a pump'.

7

c) Explain asymmetrical semi controlled converter with R load and derive equation of output voltage.

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6. a) Compare - BLDC motor, DC motor and induction motor.

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b) Compare- Microprocessor and Microcontroller.

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c) Compare- TTL and CMOS technology.

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