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S.E. (SEM. IV) (CBSGS) (MECHANICAL ENGG.)
INDUSTRIAL ELECTRONICS

10th June 2016
3.00 pm to 6.00 pm

Mechanical/Automobile

QP Code : 555701

(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.

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1. Solve **any four :-** **20**
   (a) Enlist four applications of SCR-diode circuit.
   (b) What is the basic principle of bridge configured converter circuit?
   (c) Explain the operation of voltage follower circuit.
   (d) Define and describe logic operation, power dissipation and propagation delay in digital circuits.
   (e) What is a brushless dc motor? Give its two applications.

2 (a) What is GTO? Explain its working. What are similarities between GTO and SCR? **7**
   (b) State and describe power MOSFET on the basis of construction, principles of operation, applications, rating, input and output characteristics. **7**
   (c) Derive the output voltage for full wave fully controlled rectifier and find the firing angle for maximum output. **6**

3. (a) Explain in detail the concept of R-L-E load in converters. **7**
   (b) Classify speed control of ac motor and describe any one using block diagram. **7**
   (c) How does driver circuit work? Illustrate with an example. **6**

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4. (a) Explain in detail first order low pass active filter. **7**
   (b) What is difference between combinational and differential circuits? **7**
   (c) Discuss speed torque characteristics of dc motor? Classify types of loads on the basis of time duration. **6**

5. (a) Describe the functional block diagram and architecture of MSP430 microcontroller? **7**
   (b) Realize basic digital gates using NOR and NAND universal gates. **7**
   (c) Write a program using MSP430 for external input and output devices. **6**

6. (a) Select a motor for machine tools application and describe with the speed torque characteristics. **7**
   (b) Compare microprocessor and microcontroller. **7**
   (c) Explain minimum six distinguishing features of MSP430 microcontroller. **6**

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