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**Question Paper Code : 91648**

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2014.

Fourth Semester

Mechanical Engineering

ME 2255/ ME 46/ EC 1265/ 080120019/ 10122 ME 406 — ELECTRONICS AND  
MICROPROCESSORS

(Common to Automobile Engineering, Production Engineering and Third Semester  
Mechanical and Automation Engineering)

(Regulation 2008 / 2010)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What are the types of impurities? Give examples.
2. Find the efficiency of the Half wave rectifier having a resistive load of  $1k\Omega$ , that rectifies an alternating voltage of 230v peak value with the diode forward resistance of  $50\Omega$ .
3. Compare CB, CE and CC configurations of BJT with its voltage gain, phase shift between input and output voltages, input resistance and output resistance.
4. Define Intrinsic – Stand-off ratio.
5. Prove the given Boolean law :  $XY + \bar{X}Z + YZ = XY + \bar{X}Z$ .
6. Draw the logical diagram of full adder.
7. What is the primary function of ALE sign?
8. Shortly comment on the operation of DAA instruction with an example.
9. What is tri-state buffer?
10. Define step angle.

PART B — (5 × 16 = 80 marks)

11. (a) Discuss the construction, V-I characteristics, breakdown mechanisms and applications of zener diode.

Or

- (b) With an energy band structure, explain the operation of open circuited PN junction. Derive the contact difference potential.

12. (a) (i) What are the advantages of FET over BJT? (4)  
(ii) How does the application of negative feedback effectively control the speed of the motor? Discuss with required diagrams. (12)

Or

- (b) (i) What are the characteristic parameters of JFET? Find the relationship among them. (6)

- (ii) Explain the construction, and characteristics of SCR. Support your answer with required diagrams. (10)

13. (a) Construct the Johnson counter with the required corrective feed back circuit. Show the logical and timing diagrams.

Or

- (b) What is the problem faced in JK flip-flop? Check out their remedies and discuss broadly.

14. (a) With a neat block diagram, discuss the architecture of 8085 CPU.

Or

- (b) Write an ALP in 8085, to find the factorial of the given integer. Give out the flow chart.

15. (a) Design a traffic light control system using 8085 CPU and show the logical interface. Explain the traffic sequence of operation.

Or

- (b) Interface the stepper motor with the 8085 CPU and explain the sequence of operation for the step angle of 30°. Provide the logical interface circuit and flow chart.