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B.E. / B.TECH. DEGREE EXAMINATIONS, MAY 2017
SECOND SEMESTER

GE16251 – BASIC ELECTRICAL AND ELECTRONICS ENGINEERING
(Common to AE, CH, CE, MR and ME)

(Regulation 2016)

Q. Code: 926279

Time: Three hours

Maximum : 100 Marks

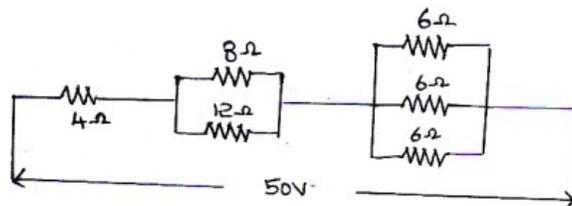
Answer **ALL** questions

PART A - (10 X 2 = 20 Marks)

1. Derive expressions for voltage, current and power in an inductor supplied with sinusoidal voltage.
2. Define power factor. What are the methods available to calculate the power factor?
3. Draw the speed torque curve of a DC series motor.
4. What are the types of single phase induction motors available?
5. What are the applications of zener diode?
6. Why bridge rectifier is preferred than a center tapped rectifier?
7. Write Demorgan's law.
8. Draw the diagram of D-flip flop.
9. List the applications of microwave.
10. What is modulation? Explain FM.

PART B - (5 X 16 = 80 Marks)

11. (a) (i) Find the current in all branches and power loss in 12Ω resistor for the given circuit. (8)



- (ii) Briefly explain the construction and principle of operation of the induction type energy meter with a diagram. (8)

(OR)

- (b) Derive the RMS value, average value, form factor and peak factor of a **(16)**
- (i) Half rectified sine wave
 - (ii) Full rectified sine wave
12. (a) (i) Explain the basic construction and principle of operation of dc generators. **(8)**
- (ii) Derive the emf equation of the dc generator. **(8)**
- (OR)**
- (b) (i) What are the types of dc motors? Draw their characteristics. **(8)**
- (ii) Explain the starting methods for the single phase induction motor. **(8)**
13. (a) What is the difference between half wave and full wave rectifier? Explain with neat diagram and waveforms. **(16)**
- (OR)**
- (b) Draw the input and output characteristics curve of a transistor in common emitter configuration. Explain their nature and shape. What do their slopes represent. **(16)**
14. (a) (i) Convert the following **(6)**
- i) 139 to binary
 - ii) 256.625 to binary
 - iii) 101110 to decimal
- (ii) Illustrate the operation of a 4-bit binary ripple counter with necessary diagrams. **(10)**
- (OR)**
- (b) (i) With neat diagrams, explain the asynchronous and synchronous counters. **(8)**
- (ii) Construct a full adder with its truth table. **(8)**
15. (a) What is modulation in the telecommunication systems. Explain the Amplitude, Frequency, Pulse and Digital Modulation Techniques. **(16)**
- (OR)**
- (b) Write short notes with neat block diagram for the following: **(16)**
- i) Television
 - ii) Radio
 - iii) Fibre optic
 - iv) Satellite.

