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Question Paper Code : 90062

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2019

Second Semester

Civil Engineering

BE 8251 – BASIC ELECTRICAL AND ELECTRONICS ENGINEERING
(Common to Agriculture Engineering/Environmental Engineering/Chemical and
Electrochemical Engineering/Fashion Technology/Handloom and Textile Technology/
Plastic Technology/Polymer Technology/Textile Chemistry/Textile Technology)
(Regulations 2017)

Time : Three Hours

Maximum : 100 Marks

Answer ALL questions

PART – A

(10×2=20 Marks)

1. Define : Real power, Reactive power, Apparent power.
2. Name the different types of measuring instruments.
3. State Flemings left hand rule.
4. What is the need for splitting the phase for an induction motor ?
5. Explain the following terms :
 - i) Avalanche breakdown
 - ii) Zener break down of the PN junction diode.
6. Define : Voltage regulation.
7. Draw the internal circuit diagram of an S-R Flip Flop.
8. Construct a divide by 16 ripple down counter.
9. Define : Amplitude modulation index.
10. State any one advantage and disadvantage of digital communication systems.



PART - B

(5×13=65 Marks)

11. a) Determine the current in the $10\ \Omega$ resistor and find the voltage across terminals A and B for the circuit shown in the figure 11 (a). (13)

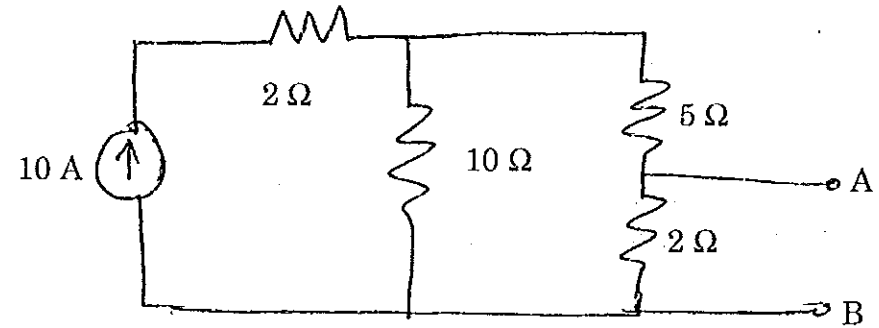


Fig. 11 (a)

(OR)

- b) With neat sketch and explain the construction and working principle of Dynamometer type watt meter. Mention its merits and demerits. (13)

12. a) i) A DC shunt motor takes current of 110A at 480 V. The resistance of the armature winding is $0.2\ \Omega$. The machine has 6 poles and is lap connected with 864 conductors. The flux per pole is 0.05 Wb. Calculate the speed and the gross torque developed by the armature. (7)

ii) Explain the basic nature of the emf induced in the armature of a DC machine. (3)

iii) How can the alternating current waveform in the armature be converted into a DC waveform? (3)

(OR)

b) i) Derive the EMF Equation of Transformer. (7)

ii) Explain any one starting method of 1ϕ induction motor. (6)

13. a) Explain the various characteristics of BJT in common emitter configuration with neat diagram. (13)

(OR)

b) Explain the working principle of a full wave rectifier with suitable circuit diagram and formulate its efficiency, ripple factor, TUF and PIV. (13)

14. a) Classify the types of D/A and A/D converters. Also explain the working principle of any one type of A/D and D/A converter. (13)

(OR)

- b) i) Draw the logic diagram and derive the truth table for the following equation :
 $F(A, B, C) = (A + B)' \oplus (B' C)' + (AB)$.
 ii) Show the operation of 3-bit synchronous UP counter with its timing diagram and its design.

15. a) i) Draw the block diagram arrangement of an AM transmitter and explain its operation.
 ii) Explain the operation of FM transmitter.

(OR)

- b) Explain the configuration of satellite communication with neat diagram. Give its merits and demerits. (13)

PART - C

(1×15=15 Marks)

16. a) Design a BCD Ripple counter using J-K flip-flops.

(OR)

- b) A three phase 400 volts supply is given to a balanced star connected load of impedance $8 + j 6$ ohms in each branch. Find the line current, power factor and total power. Also, calculate line current, power factor and total power when the circuit is delta connected. (2+2+3+3+2+3)