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Question Paper Code: 41231

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2016

Second Semester

Civil Engineering

14UEE206 - BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

(Common to Mechanical Engineering)

(Regulation 2014)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

- Which of the following are integrating instruments?
 - Ammeters
 - Voltmeters
 - Wattmeters
 - Ampere-hour and watt-hour meters
- The form factor is the ratio of
 - peak value to r.m.s value
 - r.m.s. value to average value
 - average value to r.m.s value
 - none of the above
- The slip of an induction motor normally does not depend on
 - rotor speed
 - synchronous speed
 - shaft torque
 - core-loss component
- A 4 point starter is used to start and control the speed of a
 - DC shunt motor with armature resistance control
 - DC shunt motor with field weakening control
 - DC series motor
 - DC compound motor

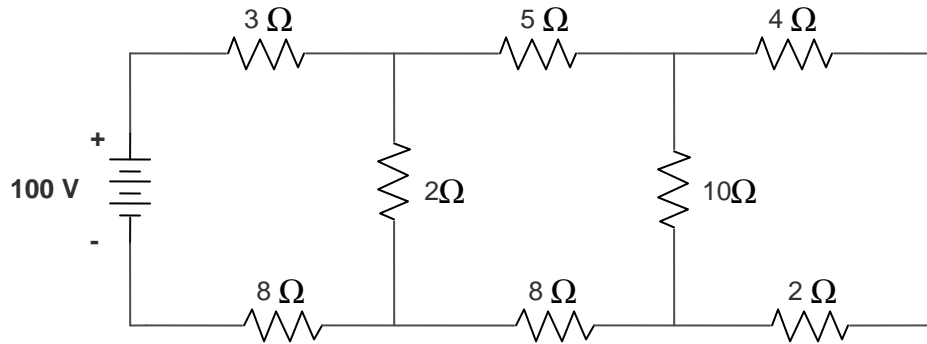
5. In an intrinsic semiconductor, the free electron concentration depends on
- (a) Effective mass of electrons only
 - (b) Effective mass of holes only
 - (c) Temperature of the semiconductor
 - (d) Width of the forbidden energy band of the semiconductor
6. Ebers – Moll model is applicable to
- (a) Bipolar junction transistors
 - (b) nMOS transistors
 - (c) Unipolar Junction transistors
 - (d) Junction field effect transistors
7. Indicate which of the following logic gates can be used to realized all possible combinational logic functions
- (a) OR gates only
 - (b) NAND gates only
 - (c) EX-OR gates only
 - (d) NOR gates only
8. An equivalent 2's complement representation of the 2's complement number is 1101 is
- (a) 110100
 - (b) 001101
 - (c) 110111
 - (d) 111101
9. The velocity of sound waves in air
- (a) is constant at all temperatures
 - (b) varies directly as temperature
 - (c) varies inversely as absolute temperature
 - (d) varies directly as square root of absolute temperature
10. VSB modulation is preferred in TV because
- (a) it reduces the bandwidth requirement to half
 - (b) it avoids phase distortion at low frequencies
 - (c) it results in better reception
 - (d) none of the above

PART - B (5 x 2 = 10 Marks)

11. Define power factor.
12. What is emf equation of a transformer?
13. What is early effect?
14. Draw the symbol for EX-OR gate and write its truth table.
15. Define modulation. What are the different types of modulation?

PART - C (5 x 16 = 80 Marks)

16. (a) Find the current through each branch by network reduction technique. (16)



Or

- (b) Explain the principles and operation of PMMC instruments. How ammeter and voltmeter can be constructed using PMMC instruments? (16)
17. (a) A 4 pole, wave wound generator having 40 slots and 10 conductors placed per slot. The flux per pole is 0.02 *wb*. Calculate the generated emf when the generator is drive at 1200 *rpm*. (16)

Or

- (b) Explain the working principle of transformer with its construction details. (16)
18. (a) Describe the working of a PN junction diode with neat diagrams. Also explain its V-I characteristics. (16)

Or

- (b) Explain the working of the CE configuration of a BJT. (16)
19. (a) Briefly explain the working of JK flip flop. (16)

Or

- (b) With necessary diagrams explain the functioning of any one type of A/D converter and D/A converter. (16)
20. (a) (i) Explain the principle of amplitude and frequency modulation. (8)
- (ii) Write detailed notes on microwave communication. (8)

Or

- (b) Draw the block diagram of radio broadcasting and reception system and explain the function of each block. (16)

