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B. M. S. College of Engineering, Bengaluru - 560019

Autonomous Institute Affiliated to VTU

October / November 2021 Supplementary Examinations

Programme: B.E. **Semester : I / II**
Branch : ALL **Duration: 3 hrs.**
Course Code: 18EC1ESECE / 18EC2ESECE **Max Marks: 100**
Course: Elements of Electronics Engineering **Date: 30.10.2021**

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may suitably assumed.

UNIT - I

1. a) What is PN junction? With the help of neat diagrams, explain the VI characteristics of PN junction diode. **08**

   b) A bridge rectifier supplies a load of 10KΩ. The ac voltage applied to the diode is 6V V_{rms}. If the diode forward resistance is neglected, calculate i_{dc}, output current. ii) dc output voltage. iii) ripple factor. **06**

   c) With a neat circuit diagram, explain the working of Zener diode voltage regulator. **06**

UNIT - II

2. a) With a neat circuit diagram and input output characteristics, explain the working of NPN transistor CE configuration. **08**

   b) With a neat diagram, explain the working of transistor as a switch. **06**

   c) An amplifier has an input signal of 0.5V and draws 1.5mA from the source. It delivers 10V to a load at 15mA find. i) voltage gain ii) current gain iii) power gain. **06**

OR

3. a) Derive the expression for V_{CE} and I_E of a voltage divider bias circuit. **08**

   b) With a neat block diagram, derive the expression for feedback gain of an negative feedback system. **06**

   c) What are the advantages of negative feedback amplifier? Explain any one in detail. **06**

UNIT - III

4. a) With a neat circuit diagram, explain the working of Colpitts oscillator. **08**

   b) Derive the expression for output voltage of a three input Non-inverting summing amplifier using Op-Amp. **06**

   c) For the inverting amplifier shown in fig 4C, determine A_f, V_o, i_{in}, i_f, and i_L. **06**

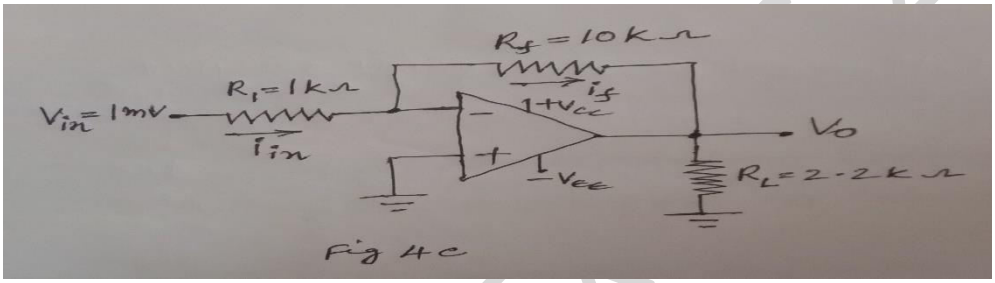

Fig 4C

UNIT - IV

5. a) Realize EX-NOR gate using basic gates and NOR gates. **06**

   b) Convert the given expression in standard POS form: **06**

   f (a, b, c) = (a + b) (b + c') (a + c).

   c) Simplify the given expression and implement using NAND gates and basic gates: F = (w x + w y') (x + w) + w x (x'+ y') **08**

OR

6. a) Simplify the given expression using 3-variable K-map: **04**

   f (a, b, c) = $\sum$ (1,2,3,6,7).

   b) What is multiplexer? With a neat logic diagram and truth table, explain the working of 8:1 multiplexer. **08**

   c) What is a decoder? Implement 3X8 decoder. **08**

UNIT - V

7. a) List the difference between analog and digital signals. **03**

b) With a neat block diagram, explain the working of digital communication system. **10**

c) Discuss the evolution of cellular communication system. **07**

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