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10CS32

Third Semester B.E. Degree Examination, December 2012
Electronic Circuits

Time: 3 hrs. Max. Marks:100

Note: ***Answer FIVE full questions, selecting at least TWO questions from each part.***

PART – A

1 a. Explain transistor in its fixed bias mode with relevant expression. **(06 Marks)**

b. With a neat sketch, explain transistor as a switch. **(06 Marks)**

c. For the circuit shown calculate I_B, I_C, V_{CE}, V_C, V_E, V_B. Assume $\beta = 100$. **(08 Marks)**

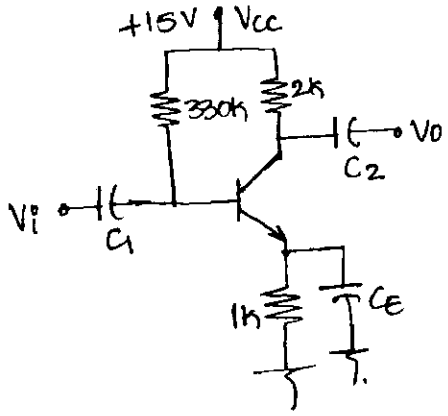

Fig.Q.1(c)

2 a. Explain the VI characteristics of n-channel JFET and define various conditions. **(08 Marks)**

b. Explain the construction and working of n-channel depletion mode MOSFET. **(08 Marks)**

c. Mention merits and demerits of IGBT. **(04 Marks)**

3 a. Explain the construction and working of phototransistor and mention its applications. **(10 Marks)**

b. What are optocouplers? Explain the working and characteristics of optocoupler. **(10 Marks)**

4 a. Derive expression for A_i, Z_i, A_v, Y_o, A_p for a transistor amplifier using h-parameter model. **(12 Marks)**

b. Explain the need for cascading amplifier and with the block diagram, explain two stage cascaded amplifier. **(08 Marks)**

PART – B

5 a. Explain different fb amplifiers. **(08 Marks)**

b. With the block diagram, explain the negative feedback in small signal amplifier. **(06 Marks)**

c. An amplifier having a voltage gain of 60dB uses $1/20^{th}$ of its output in negative feedback. Calculate the gain with feedback, the percentage change in gain without and with feedback consequent on 50% change in gm. **(06 Marks)**

6 a. Explain the construction and working of RC phase shift oscillator. **(08 Marks)**

b. Find the frequency of the oscillations of a Colpitts oscillator having $C_1 = 150pF$, $C_2 = 1.5$ nF and $L = 50\mu H$. **(04 Marks)**

c. With a circuit diagram, explain the working of RC low pass and RC high pass circuits. **(08 Marks)**

7 a. With a block diagram, explain the working of three terminal voltage regulators. **(06 Marks)**

b. Explain the construction and working of SMPS and mention different types of switching regulators. **(08 Marks)**

c. Define the terms load regulation, line regulation and output resistance for a voltage regulator. **(06 Marks)**

8 a. Briefly explain characteristics of an ideal op-amp and compare with practical op-amp. **(10 Marks)**

b. With relevant formulas, neat diagram and wave form explain op-amp Schmitt trigger. **(10 Marks)**

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