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Code No. : 13606 O

VASAVI COLLEGE OF ENGINEERING (Autonomous), HYDERABAD
B.E. (I.T.) II Year I-Semester Backlog Examinations, December-2017

Micro electronics

Time: 3 hours

Max. Marks: 70

Note: Answer ALL questions in Part-A and any FIVE from Part-B

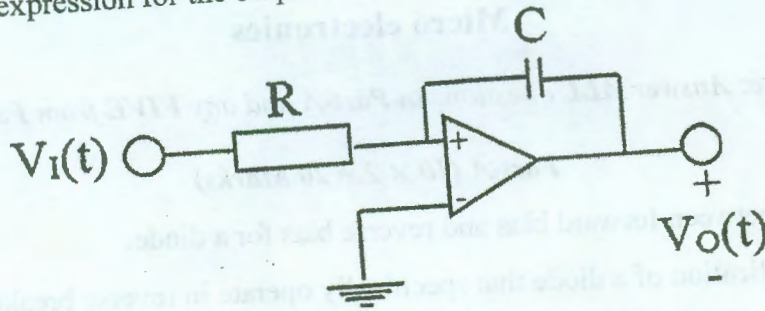
Part-A (10 × 2 = 20 Marks)

1. Distinguish between forward bias and reverse bias for a diode.
2. State the application of a diode that specifically operate in reverse breakdown region.
3. List out the BJT modes of operation.
4. Distinguish between npn and pnp transistors.
5. Give one biasing technique for MOSFET amplifier.
6. Draw the circuit symbols of NMOS and PMOS Transistors.
7. Discuss about negative feedback?
8. Which class of amplifiers are used for audio power amplifiers and RF power amplifiers?
9. State characteristics of ideal Operational Amplifiers.
10. Draw the circuit of a monostable multivibrator?

Part-B (5 × 10 = 50 Marks)

11. a) Explain the operation of a center tapped transformer Full wave rectifier and derive the expressions for ripple factor and efficiency. [6]
b) Consider the peak rectifier circuit above being fed by a 60 Hz sinusoid having a peak value of $V_P = 100$ V. Let the load resistance R be equal to 10 k Ω . Find [4]
 - i) The value of the capacitance C that will result in a peak-to-peak ripple of 2V.
 - ii) The fraction of the cycle during which the diode is conducting and the average and peak values of the diode current.
12. a) Explain the behavior of Zener Diode as Voltage Regulator. [4]
b) Explain the Operation of Positive and negative clipping circuits using a diode. [6]
13. a) Draw the h-parameter model of a BJT in Common Emitter configuration and define its parameters. [5]
b) Draw the switching circuit using BJT and explain its operation. [5]
14. a) Sketch i_D - v_{DS} characteristics for a n-channel MOSFET. [5]
b) Implement NAND and NOR gates using CMOS Transistors. [5]
15. a) State and explain Barkhausen criterion. [4]
b) Draw the circuit diagram of Colpitts Oscillator and write the expression for its frequency of Oscillation. [6]

16. a) Draw the equivalent circuit of an ideal Operational Amplifier. [4]
 b) Derive an expression for the output of the circuit shown below. [6]



17. Write short notes on any *two* of the following: [5]

- a) Loop Gain [5]
 b) Instrumentation Amplifier [5]
 c) Voltage Controlled Current Switch. [5]