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**DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING**

**GATE QUESTION - BATCH 3**

Branch : ECE Subject : Analog Electronic

Year/Sem : II/ III Subject code : 1151EC103

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| 1 | The effect of current shunt feedback in an amplifier is to  a. increase the input resistance and decrease the output resistance  b. increase both input and output resistances  c. decrease both input and output resistance  d. decrease the input resistance and increase the output resistance | GATE – 2002 (CO3) |
| 2 |  | GATE – 2004  (CO1) |
| 3 | The oscillator circuit shown in the figure has an ideal inverting amplifier. Its frequency of oscillation (in Hz) is | GATE - 2002(CO3) |
| 4 | For an npn transistor connected as shown in the figure VBE = 0.7 volts. Given that reverse saturation current of the junction at room temperature 3000 K is 10-13 A, the emitter current is    a. 30 mA  b. 39 mA  c. 49 mA  d. 20 mA | GATE – 2005 (CO1) |
| 5 | In an ideal differential amplifier shown in the figure, a large value of (RE)    a. increases both the differential and common mode gains.  b. increase the common-mode gain only.  c. decrease the differential-mode gain only  d. decrease the common-mode gain only | GATE – 2005 (CO5) |
| 6 | The circuit using a BJT with β = 50 and VBE = 0.7V is shown in the figure. The base current IB and collector voltage Vc are respectively    a. 43 μA and 11.4 Volts  b. 40μA and 16 Volts  c. 45μA and 11 Volts  d. 50μA and 10 Volts | GATE – 2005 (CO1) |
| 7 | The input impedance (Zi) and the output impedance (Z0) of an ideal transconductance (voltage controlled current source) amplifier are  a. Zi = 0, Z0 = 0  b. Zi = 0, Z0 = ∞  c. Zi =∞, Z0 = 0  d. Zi =∞, Z0 = ∞ | GATE – 2006 (CO3) |
| 8 | An n-channel depletion MOSFET has following two points on its ID – VGS curve. (i) VGS = 0 at ID = 12 mA and (ii) VGS = - 6 Volts at Z0 = ∞ Which of the following Q-points will give the highest trans-conductance gain for small signals?  a. VGS = -6 Volts  b. VGS = - 3 Volts  c. VGS = 0 Volts  d. VGS = 3 Volts | GATE – 2006 (CO2) |
| 9 | βDC = 60, VBE = 0.7, hie →∞, hfe →∞ The capacitance Cc can be assumed to be infinite.    In the figure above, the ground has been shown by the symbol ▼  Under the DC conditions, the collect to-emitter voltage drop is  a. 4.8 Volts  b. 5.3 volts  c. 6.0 volts  d. 6.6 volts | GATE – 2006 (CO1) |