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**DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING**

**GATE QUESTION - BATCH 4**

Branch : ECE Subject : Analog Electronic

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

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| 1 | The input impedance (*Zi*) and the output impedance (*Z*0) of an ideal  trans-conductance (voltage controlled current source) amplifier are  (A) *Zi* = 0,*Z*0 = 0 (B) *Zi* = 0,*Z*0 = α  (C) *Zi* = α,*Z*0 = 0 (D) *Zi* = 3,*Z*0 = α | GATE – 2006  (CO3) |
| 2 | 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 *ID* = 0 mA  Which of the following *Q* point will given the highest transconductance  gain for small signals?  (A) *VGS* = - 6 Volts (B) *VGS* = - 3 Volts  (C) *VGS* = 0 Volts (D) *VGS* = 3 Volts | GATE – 2006  (CO3) |
| 3 | In the transistor amplifier circuit shown in the figure below, the  transistor has the following parameters:  *βDC* = 60, *VBE* = 0.7*V*,*hie*  = α  The capacitance *CC* can be assumed to be infinite.    Under the DC conditions, the collector-or-emitter voltage drop is  (A) 4.8 Volts (B) 5.3 Volts  (C) 6.0 Volts (D) 6.6 Volts | GATE – 2006  (CO1) |
| 4 | The effect of current shunt feedback in an amplifier is to  (A) increase the input resistance and decrease the output resistance  (B) increases both input and output resistance  (C) decrease both input and output resistance  (D) decrease the input resistance and increase the output resistance | GATE – 2006  (CO3) |
| 5 |  | GATE – 2006  (CO1) |
| 6 | Voltage series feedback (also called series-shunt feedback) results in  (A) increase in both input and output impedances  (B) decrease in both input and output impedances  (C) increase in input impedance and decrease in output impedance  (D) decrease in input impedance and increase in output impedance | GATE – 2006  (CO3) |
| 7 | The DC current gain (β) of a BJT is 50. Assuming that the emitter injection efficiency is 0.995, the base transport factor is  a. 0.980  b. 0.985  c. 0.990  d. 0.995 | GATE – 2007 (CO1) |
| 8 | For the BJT circuit shown, assume that the β of the transistor is very large and VBE = 0.7 V. The mode of operation of the BJT is    a. cut-off  b. saturation  c. normal active  d. reverse active | GATE – 2007 (CO1) |
| 9 | In the circuit shown below, capacitors *C*1 and *C*2 are very large and are shorts at the input frequency. *vi* is a small signal input. The gain magnitude V0/Vin at 10 M rad/s is | GATE – 2013 (CO3) |