M.E. First Semester (Digital Electronics) (Part Time / Full Time) (C.G.S.- New)
13204 : Elective-I : RF System Design : 1 UMEF 3

P. Pages : 1

Time : Three Hours

AX - 3487

Max. Marks : 80

Notes : 1. Answer **three** question from Section A and **three** question from Section B.
2. Due credit will be given to neatness and adequate dimensions.
3. Assume suitable data wherever necessary.
4. Illustrate your answer necessary with the help of neat sketches.
5. Use of pen Blue/Black ink/refill only for writing the answer book.

SECTION – A

1. a) Explain effect of temperature on Behaviour of Bipolar Junction transistor. 7

   b) A GaAs MOSFET has following parameter. 7

   $N_D = 10^{16}\ cm^{-3}$, $d = 0.75\,\mu m$, $w = 10\,\mu m$, $L = 2\,\mu m$, $\in r = 12.0$, $V_d = 0.8\ V$ and

   $\mu_n = 8500\ cm^2/Vs$

   Determine:
   i Pinch-off voltage ii) Threshold voltage
   iii) Maximum saturation current

2. a) Compare behaviour of large signal FET model with small signal FET model. 7

   b) Explain working & frequency response of Large-Signal BJT model. 6

3. a) Explain design of RF Filter with Image Parameter Method. 7

   b) Explain unit elements in RF filter. 6

4. a) Explain different types of microstrips. 7

   b) Explain insertion loss method for Filter Design. 6

SECTION - B

5. a) Explain LNA topologies for oscillators. 7

   b) Explain high frequency oscillator configuration for fixed frequency oscillator. 7

6. a) Explain Role of Voltage controlled Oscillator in PCL. 7

   b) Explain sub sampling mixers with their performance. 6

7. a) Explain how cascaded amplifier useful in bandwidth enhancement. 7

   b) Explain Design of class F RF Power amplifier. 6

8. a) Explain Noise properties of PLL. 6

   b) Explain design of Linear PLL. 7

****