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Total No. of Pages : 02

Total No. of Questions : 18

**B.Tech.(ECE/Electronics Engg)/
(Electronics & Computer Engg) (2012 to 2017) (Sem.-3)**

ANALOG DEVICES & CIRCUITS

Subject Code : BTEC-301

M.Code : 57583

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.
4. Any missing data can be assumed appropriately.

SECTION-A

Write briefly :

- Q1. State the Barkhausen criteria for oscillator.
- Q2. Why negative feedback employed in high gain amplifiers?
- Q3. Draw the hybrid model of CE, CB and CC BJT's.
- Q4. What is thermal run-away?
- Q5. Compare Zener breakdown and Avalanche break down.
- Q6. Define Reverse Leakage Current of Diode.
- Q7. Calculate I_c and I_E for a transistor that has $\alpha_{dc} = 0.99$ and $I_B = 150\mu A$. Determine the value of β_{dc} for the transistor.
- Q8. Why it is required to have a stable Q-point of an amplifier?
- Q9. What is the value of Ripple factor for half wave and full wave rectifier?
- Q10. What is the Miller Effect?

SECTION-B

- Q11. Explain briefly the working of Hartley oscillator.
- Q12. In a Class C amplifier with 1MHz signal frequency, determine the suitable tank circuit component values. Calculate the max AC power delivered to the load if $V_{CEmax} = 0.5V$, $V_{cc} = 30V$, $R_L = 1.2k\Omega$.
- Q13. Derive an expression for the overall gain of voltage series feedback amplifier.
- Q14. Explain construction, operation and characteristics of JFETs.
- Q15. Draw and explain the complementary symmetry amplifier and discuss its advantages.

SECTION-C

- Q16. Define H-Parameters. Derive expression for following of CE amplifiers using h-parameters
- a) Voltage gain
 - b) Current Gain
 - c) Input Resistance
 - d) Output Resistance
- Q17. Draw and explain the working of R-C phase shift oscillator and also derive an expression for its frequency of oscillations.
- Q18. Explain working of push pull amplifier.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.