

**B.TECH SEM – IV (2007 COURSE) (ELECTRONICS) :**

**SUMMER - 2018**

**SUBJECT: ELECTRONIC CIRCUITS**

Day : **Saturday**  
Date : **02/06/2018**

**S-2018-2620**

Time : **10.00 AM TO 01.00 PM**  
Max. Marks: 80

**N. B.:**

- 1) **Q.No.1 and Q.No.5 are COMPULSORY.** Out of the remaining attempt **ANY TWO** questions from each Section.
- 2) Figures to the right indicate **FULL** marks.
- 3) Answer to both the sections should be written in **SEPARATE** answer book.
- 4) Use of non-programmable electronic **CALCULATOR** is allowed.
- 5) Assume suitable data if necessary.

**SECTION-I**

- Q.1**
- a) What is the effect of coupling, bypass and shunt capacitances on frequency response of amplifier. (05)
  - b) Write short note on: Voltage series feedback amplifier. (05)
  - c) Why a level translator stage is required in an op-amp? (04)
- Q.2**
- a) Derive the expression for effective upper cut off frequency of a system resulting from the cascade of 'n' similar amplifier stages. (06)
  - b) Discuss the various scheme to couple the output of first stage to the input of second stage in a two stage amplifier. (07)
- Q.3**
- a) Explain the typical methodology used for feedback amplifier analysis. (06)
  - b) Using suitable block diagram explain various types of negative feedback circuit. Give feedback factor,  $R_{if}$  and  $R_{of}$  in each case. (07)
- Q.4**
- a) Explain in brief the operation of following using op-amp. (07)  
i) Subtractor ii) Summing Amplifier iii) Voltage follower
  - b) Define the following parameters of op-amp and state their standard values for IC741 (06)  
i) CMRR ii) PSRR iii) Input offset voltage

**SECTION-II**

- Q.5**
- a) Discuss with the help of circuit diagram the complementary symmetry push pull amplifier. (05)
  - b) Compare RC and LC oscillator. (05)
  - c) Draw the high frequency hybrid- $\pi$  common emitter transistor model. (04)
- Q.6**
- a) Prove that power dissipation is maximum in class B push pull amplifier, when  $V_m = \frac{2V_{cc}}{\pi}$ . (06)
  - b) Explain the working of series fed directly coupled class A amplifier with the help of neat circuit diagram. (07)
- Q.7**
- a) Explain internal structure of IC 723 voltage regulator with the help of block diagram. (07)
  - b) In Hartley oscillator,  $L_1 = 20\text{mH}$  and  $C = 60\text{pF}$ . Calculate  $L_2$  for frequency of 160KHz, if mutual inductance between  $L_1$  and  $L_2$  is  $5\mu\text{H}$ . (06)
- Q.8**
- a) Explain with neat diagram a single tuned amplifier. (06)
  - b) A single stage CE amplifier is measured to have bandwidth of 2MHz with resistive load of  $600\Omega$ . Find value of source resistance  $R_s$  that will give the required bandwidth. Assume  $h_{fe} = 100$ ,  $g_m = 50 \text{ mA/V}$ ,  $r_{bb'} = 100\Omega$ . (07)

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