

B.Tech. SEM -IV E & TC 2014 Course (CBCS) : WINTER - 2018

SUBJECT: APPLIED ELECTRONIC CIRCUITS

W-2018-2371

Day: Wednesday
Date: 14/11/2018

Time: 02.30 PM TO 05.30 PM
Max Marks: 60

N.B.:

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Draw appropriate diagram **WHEREVER** necessary.
- 4) Use of non-programmable **CALCULATOR** is allowed.

- Q.1** a) Analyze the current gain of the transformer coupled amplifier? (06)
- b) What is the bootstrapped emitter follower? (04)

OR

- Q.1** a) How square wave testing is used to find bandwidth of amplifiers? (05)
- b) A CE, RC coupled amplifier uses transistors with $h_{fe}=50$, $h_{ie}=1200\Omega$, $h_{oe}=30 \times 10^{-6}$ mho, $h_{re}=2.5 \times 10^{-4}$. The value of g_m at the operating point is 35 mmhos. The biasing resistor R_1 between V_{CC} and base is $79K\Omega$ and R_2 between base and ground is $8K\Omega$. The load resistor $R_c=3K\Omega$. Find R_o , R_b , R_i , and $r_{b'e}$. (05)

- Q.2** a) With neat circuit diagram explain current series feedback amplifier. (06)
- b) An amplifier has voltage gain with feedback of 120. If the gain without feedback changes by 21% and the gain with feedback should not vary more than 2%. Determine A and β . (04)

OR

- Q.2** a) What is effect of negative feedback on the input and output resistance of current shunt feedback amplifier? (08)
- b) An amplifier has a basic voltage gain of 1000, $\beta=0.03$. If the open loop gain changes by 10% due to temperature, find % change in gain with feedback. (02)

- Q.3** a) Derive efficiency of class B push pull amplifier. (06)
- b) What is the difference between graphical characteristics of class A and class B power amplifiers? (04)

OR

- Q.3** a) Explain class B complementary symmetry push pull circuit in detail. (05)
- b) What is the required power dissipation per transistor in class A direct coupled amplifier? (05)

P.T.O.

- Q.4 a) Why R_c phase shift oscillator is known as inverting oscillator? Explain (04)
required formulae of R_c phase shift oscillator with neat circuit diagram.
- b) What is the frequency of oscillation of clapp oscillator if C₁=0.1μF, C₂=1μF, (04)
C₃=110pf and L=450μH.

OR

- Q.4 a) State and prove the principle of oscillator? (05)
- b) What is the Colpitt's oscillator? Derive it's oscillations frequency. (05)
- Q.5 a) Explain linear transistorized shunt voltage regulator. (05)
- b) Which are the performance parameters of regulators? (05)

OR

- Q.5 a) Design an adjustable voltage regulators using IC LM 317 for the following (06)
specifications :
output voltage is 5V to 10V, Output current=1.2A I_{ADJ} =105μA and R₁=
600ohm.
- b) Explain regulation action in Zener voltage regulators. (04)
- Q.6 a) Derive higher cut-off frequency of amplifier at high frequency range. (05)
- b) Explain high frequency model of R_c coupled amplifier. (05)

OR

- Q.6 a) What are the drawbacks of T model of CE amplifier? (05)
- b) What is the effect of high frequency on amplifier behavior? (05)

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