

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

**SUBJECT: APPLIED ELECTRONIC CIRCUITS**

Day: Wednesday  
Date: 14/11/2018

**W-2018-2371**

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.

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- 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 VCC 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  $\beta$ . **(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 Rc phase shift oscillator is known as inverting oscillator? Explain (06)  
required formulae of Rc phase shift oscillator with neat circuit diagram.
- b) What is the frequency of oscillation of clapp oscillator if  $C1=0.1\mu\text{F}$ ,  $C2=1\mu\text{F}$ , (04)  
 $C3=110\text{pf}$  and  $L=450\mu\text{H}$ .

**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  $I_{\text{ADJ}}=105\mu\text{A}$  and  $R1=600\text{ohm}$ .
- 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 Rc 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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