

S.E. sem-III CBN M-2014

Sub-ECCF. COMP

22/5/14

QP Code : **NP-18652**

(3 Hours)

[Total Marks : 80

- N. B. :** (1) Questions No. 1 is compulsory.
(2) Solve **any three** questions out of remaining questions.
(3) Draw neat and clean diagrams.
(4) **Assume** any suitable **data** if required.

1. (a) Explain input offset voltage, CMRR and SVRR for operational amplifier. 5
(b) Explain Barkhausen's criteria for principle of oscillation. 5
(c) Explain principle of FDM. 5
(d) Compare FM and AM. 5
2. (a) Sketch a typical drain characteristics for $V_{GS} = 0$ for an n-channel JEFET. 10
Explain the shape of the characteristics, identify regions and indicate the important current and voltage levels.
(b) Explain class C BJT power amplifier in detail. Compare it with class A BJT power amplifier. 10
3. (a) Explain amplitude modulation for more than one modulating signal in following cases 10
(i) Mathematical equation
(ii) AM waveform
(iii) Amplitude and power spectrum
(iv) Modulation coefficient
(v) Transmission power
(b) Explain with block diagram AM superheterodyne receiver. 10
4. (a) Explain ideal as well as practical differentiator using operational amplifier in detail. 10
(b) The antenna current of an AM broadcast transmitter, modulated to a depth of 40% by an audio sine wave is 11 A. It increases to 12 A as result of simultaneous modulation by another audio sine wave. What is the modulation index due to this second wave? 10
5. (a) State sampling theorem. What happens if the sampling is done at less than $2f_{max}$. 10
(b) What is multiplexing in communication system? Draw block diagram of TDM-PCM System and explain?. 10

[TURN OVER

Con. 11450-14.

6. (a) Explain PLL as a frequency synthesizer. 5
- (b) Explain operating principle of PLL. 5
- (c) List different types of ADC's and explain binary weighted ADC in detail. 10
-

