

24142

**B.Tech. 4th Semester (EE) F-Scheme Examination,
May-2018**

ANALOG ELECTRONICS

Paper-EE-202-F

Time allowed : 3 hours] [Maximum marks : 100

Note : Question No. 1 is compulsory. Attempt one question from each section.

- 1. (a) Define load line concept. 4
- (b) Draw high frequency model of MOSFET. 4
- (c) Define CMMR and PSSR of an Op-Amp. 4
- (d) Why does CE configuration provide large current amplification ? 4
- (e) Why does differential Amplifiers are preferred to be used as single ended Amplifiers. 4

Section-A

- 2. (a) How a PN Junction formed ? Also discuss V-I characteristics of P-N diode. 10
- (b) Explain the following Breakdown mechanisms in P-N Junction
 - (i) Avalanche Breakdown
 - (ii) Zener Breakdown. 10

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- 3. (a) Discuss the working of Full wave Bridge rectifier. Derive the expression for :
 - (i) D.C. O/P Voltage
 - (ii) Rectification efficiency
 - (iii) PIV
 - (iv) Ripple factor 15
- (b) Explain the peak to peak detector circuits. 5

Section-B

- 4. (a) Explain the working and construction of Enhancement-type MOSFET Transistor. 10
- (b) Explain the working operation of single stage amplifiers. 10
- 5. (a) Discuss the high frequency MOSFET Model. 10
- (b) Draw and explain the frequency response of CE Amplifier. 10

Section-C

- 6. (a) Compare CC, CE and CB configuration of a transistor in term of input impedance, output Impedance, current and voltage gain. 10
- (b) Draw and explain input and output characteristics of C.B. configuration. Also explain the various regions of operation. 10

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7. (a) A CE transistor amplifier with voltage divider bias circuit is designed to establish the quiescent point at $V_{CE} = 12$ V, $I_C = 2.5$ mA and stability factor ≤ 5.2 . If $V_{CC} = 24$ V, $V_{BE} = 0.7$ V, $\beta = 50$ and $R_C = 4.7$ k Ω . Determine the values of resistors R_E , R_1 and R_2 . 12
- (b) Draw and explain high frequency model of B.J.T. 8

Section-D

8. (a) Explain how OP-Amp act as difference Amplifier. 8
- (b) Explain the properties of negative feedback. 12
9. (a) Explain the working operation of BJT differential pair configuration. 10
- (b) Discuss the different topologies of feedback Network. 10

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