

**B. Tech. Sem – III (Biomedical Engg.) (2014 COURSE) (CBCS) :  
WINTER - 2018**

**SUBJECT: ANALOG ELECTRONICS**

Day: Monday  
Date : 26/11/2018

Time: 10.00 AM TO 01.00 PM  
Max. Marks. 60

**W-2018-2320**

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**N.B.**

- 1) All questions are **COMPULSORY**.
  - 2) Figures to the right indicate **FULL** marks.
  - 3) Draw neat diagram **WHEREVER** necessary.
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**Q.1** Describe the need of biasing and discuss the operation of fixed bias and voltage divider biasing circuit. **(10)**

**OR**

What is mean by DC load line? Derive the expression for DC load line and explain the shape of the signal if Q point is near to the saturation region. **(10)**

**Q.2** Discuss in detail different types of distortions present in amplifiers. **(10)**

**OR**

Consider a single stage CE amplifier with  $R_S=1K\Omega$ ,  $R_L=1.2K\Omega$  **(10)**  
Calculate :  $A_I$ ,  $R_I$ ,  $A_V$ ,  $A_{IS}$ ,  $A_{VS}$ ,  $A_P$  and  $R_O$  by using Exact Analysis method.  
h-parameters are:  $h_{ie}=1.1K\Omega$ ,  $h_{re}=2.5 \times 10^{-4}$ ,  $h_{fe}= 50$ ,  $h_{oe}= 25\mu A/V$

**Q.3 a)** Draw and explain the structure of JFET in detail **(06)**

**b)** Explain parameters of JFET – **(04)**

**i)** Drain resistance

**ii)** Transconductance

**OR**

Discuss in detail the operation of n-channel JFET. Describe the pinch-off region and draw transfer characteristics for the same. **(10)**

**Q.4 a)** Differentiate between D-MOSFET and E-MOSFET **(06)**

**b)** Discuss MOSFET as VLSI device **(04)**

**OR**

Draw and discuss the operation of n-channel Depletion type MOSFET in detail with diagram. **(10)**

**Q.5** Draw and explain the operation of simple and biased positive clipper circuits with input and output waveforms. **(10)**

**OR**

**a)** Draw and explain the operation of Astable multivibrator circuit **(06)**

**b)** Draw and explain voltage quadrupler circuit **(04)**

**Q.6 a)** Discuss the construction , operation and V-I characteristics of LED **(06)**

**b)** What is optocoupler? Explain the operation of optocoupler with diagram. **(04)**

**OR**

Explain in detail the different copper clad laminates used in PCB making process. **(10)**

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