

B. TECH. SEM – III (BIOMEDICAL ENGG.) (2014 COURSE)

(CBCS) : SUMMER - 2018

SUBJECT: ANALOG ELECTRONICS

Day: **Tuesday**
Date: **22/05/2018**

S-2018-2264

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 neat and labeled diagrams **WHEREVER** necessary.
- 4) Use of non-programmable **CALCULATOR** is allowed.

- Q.1** a) Define stability factor. Derive general expression for stability factor. (06)
b) Discuss transistor as a switch. (04)

OR

- Q.1** a) Design a fixed bias circuit for CE amplifier such that operating point is at $V_{CE} = 8V$ and $I_C = 2mA$. Supply voltage is 15 V with silicon transistor of $\beta = 100$. consider emitter base voltage $V_{BE} = 0.6 V$. Calculate R_B and R_C that would be employed. (06)
b) Draw the circuit diagram of collector-to-base bias circuit and mention its advantages over fixed bias circuit. (04)

- Q.2** A C.E. amplifier is driven by a voltage source of internal resistance $R_S = 800\Omega$ and load resistance $R_L = 1000\Omega$. The h-parameters are $h_{ie} = 1k\Omega$, $h_{re} = 2 \times 10^{-4}$, $h_{fe} = 50$ and $h_{oe} = 25 \mu A/v$. compute:- current gain, input resistance, voltage gain, output resistance using exact analysis and approximate analysis. (10)

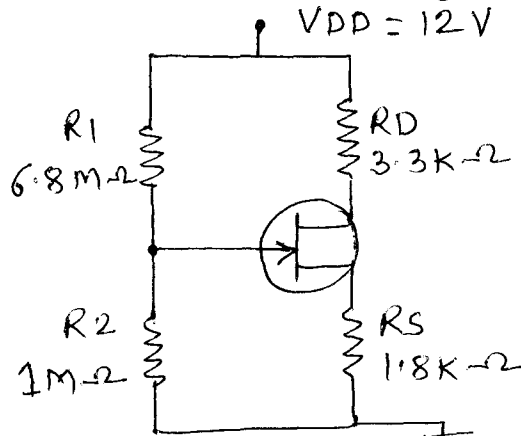
OR

- Q.2** a) Draw the diagram of generalized approximate model and show the direction of flow of currents. (06)
b) Discuss Harmonic distortion and frequency distortion in amplifiers in short. (04)

- Q.3** a) Differentiate between BJT and FET. (06)
b) Discuss the application of JFET. (04)

OR

- Q.3** Determine I_D and V_{GS} for JFET shown in fig with $V_D = 7V$. (10)



P. T. O.

Q.4 Draw and discuss operation of n-channel Enhancement type MOSFET with drain characteristics. (10)

OR

Q.4 a) Differentiate between JFET and MOSFET. (06)

b) Discuss MOSFET as VLSI device. (04)

Q.5 Define clipper circuits. Discuss in working of basic and biased positive clipper circuits with input and output waveforms. (10)

OR

Q.5 a) Draw and discuss operation of voltage Tripler circuit. (06)

b) Draw and explain Astable multivibrator circuit. (04)

Q.6 a) Describe the operation and construction of photoconductive cell. (06)

b) Draw V-I characteristics of phototransistor. (04)

OR

Q.6 a) Differentiate between LED and photodiode. (06)

b) Discuss types of PCB in short. (04)

* * * *