

**B. TECH. SEM -III (E & TC ENGG.) (2014 COURSE) (CBCS) :**  
**WINTER - 2017**

**Subject: Electronic Devices & Applications**

Day: **Monday**  
Date: **15/01/2018**

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

**W-2017-2059**

**N.B.:**

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Assume suitable data if necessary.

**Q.1** Draw & explain the circuit diagram of voltage divider bias circuit and explain how it stabilizes operating point. **(10)**

**OR**

**Q.1** Write a note on: **(10)**  
i) Need of biasing      ii) Thermal Runaway      iii) Thermal Resistance.

**Q.2** A CE amplifier is driven by a voltage source of internal resistance  $R_s = 800\Omega$ , and the load resistance is  $R_L = 1000\Omega$ . The h-parameters are  $h_{ie} = 1k\Omega$ ,  $h_{re} = 2 \times 10^{-4}$ ,  $h_{fe} = 50$  and  $h_{fc} = 25 \mu A/V$ . Compute the current gain  $A_i$ , input resistance  $R_i$ , voltage gain  $A_v$  and output resistance  $R_o$  using exact analysis and approximate analysis. **(10)**

**OR**

**Q.2** Explain in detail following types of distortion in amplifier. **(10)**  
i) Harmonic distortion      ii) Frequency distortion  
iii) Phase distortion.

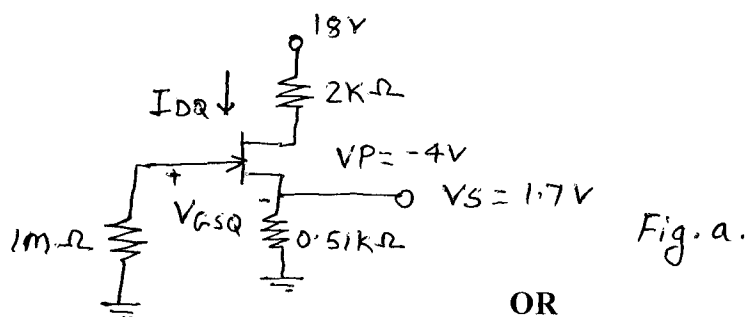
**Q.3** Define & explain the parameter transconductance  $g_m$ . Drain resistance  $r_d$ , amplification factor  $\mu$  of a JFET. Establish the relation between them. **(10)**

**OR**

**Q.3** Explain common source (CS), Common drain (CD) amplifier in detail. **(10)**

**Q.4** For the given measurement  $V_S = 1.7V$  for the network as shown in fig. a. **(10)**  
Determine

- i)  $I_{DQ}$       ii)  $V_{GSQ}$       iii)  $I_{DSS}$       iv)  $V_D$       v)  $V_{DS}$



**OR**

**Q.4** Explain in detail the qualitatively shapes of the  $I_D$  vs  $V_{DS}$  and  $I_D$  vs  $V_{GS}$  characteristics for the three types of FET. **(10)**

**P.T.O.**

**Q.5** Explain with suitable diagram Astable multivibrator circuit using BJT. (10)

**OR**

**Q.5** Explain in detail voltage Tripler and voltage quadruple configuration in detail. (10)

**Q.6** Draw a constructional detail and Explain VI characteristics & application of photodiode and optocoupler. (10)

**OR**

**Q.6** Explain in detail artwork design and fabrication process of single sided PCB. (10)