S. E. Com (SEM) III Exam

Electronic Devices & linear Circuits

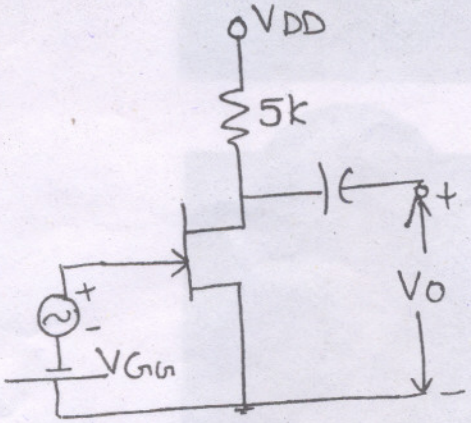
Con. 3003-10. **AN-2494**

30 : 1st half-10-DD (F)

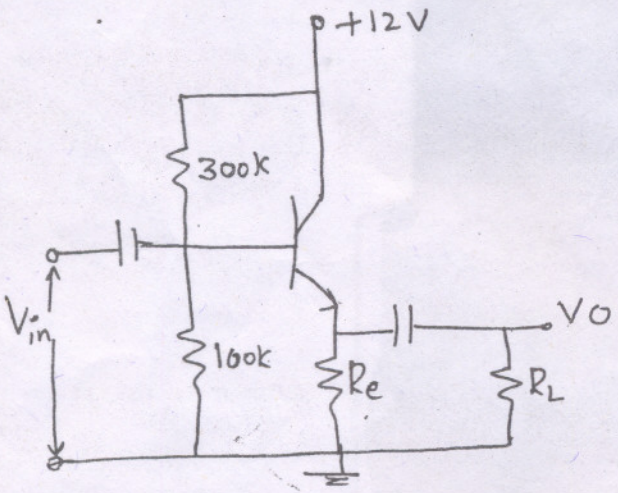
(3 Hours) **[Total Marks : 100**

N.B. (1) Question No. **1** is **compulsory**.
(2) Attempt any **four** questions out of the remaining **six** questions.
(3) Answer to questions should be **grouped** and written **together**.
(4) Assume any **suitable** data wherever **required** but justify the **same**.

1. (a) Derive the expressions for A_v, Z_i, Z_o, A_i for CE Amplifier. **10**
   (b) Compare JFET and BJT. **5**
   (c) Consider the following circuit. Determine I_D, V_{GS} for $(I_{DSS}) = 4$ mA **5**



2. (a) Explain the Graphical determination of the h-parameters using characteristic curves of CE Amplifier. **10**
   (b) For the amplifier shown in below **figure**. Determine the following parameters :— **10**
   (i) DC bias Q-point (V_{CEQ} and I_{CQ})
   (ii) Current gain (i_o/i_n)



Assume :
$r_e = 100\ \Omega$
$V_{BE} = 0{\cdot}6$ V
$\beta = 100$
$R_e = 3k\ \Omega$
$R_L = 5k\ \Omega$

3. (a) Draw the block diagram of typical Op-Amp. Explain function of each block. **6**
   (b) Explain the following terms for an Op-Amp :— **4**
   (i) Input offset voltage
   (ii) CMRR.
   (c) Explain three Op-Amp Instrumentation Amplifier and also derive the overall gain A_V. **10**

4. (a) Explain how an Op-Amp can be used as : **15**
   (i) Integrator (ii) Differentiator (iii) Summing amplifier.
   (b) Using practical Op-Amp realize the following relation :— **5**
   $V_O = 5V_1 - 5V_2 + 3V_3$.

5. (a) Explain the operation of Monostable multivibrator using IC 555. **10**
   (b) Explain any two applications of Astable multivibrator. **10**

6. (a) Explain a high voltage Low Current Regulator and Low Voltage High Current Regulator. **10**
   (b) Design a regulator using LM 723 for $V_O = 9V$, $I_O = 3Amp$. **10**

7. Write short notes on any **three** of the following :— **20**
   (a) pLL
   (b) Non-Inverting Schmitt Trigger
   (c) Digital to Analog Converter using R-2R Resistors.
   (d) Properties of Ideal Op-Amp.
