# EC-101/1848

## B. Tech. (Semester-I) Exam.-2014
## Electronics Engineering
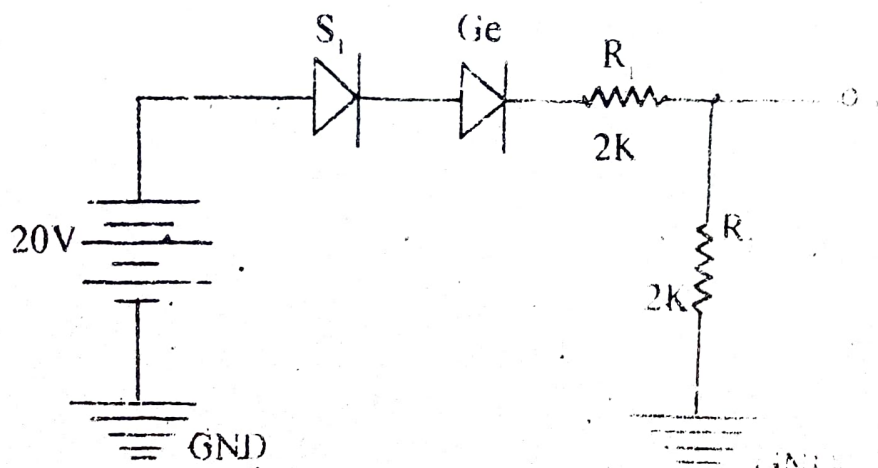
*Time: Three Hours*

*Maximum Marks:* **100**

**Note:** **Attempt questions from all the sections.**

### Section-A
### (Short Answer Type Questions)

**Note:** **Attempt any ten questions. Each question carries 4 marks.** (4×10=40)

1. What is the process of formation of depletion layer in P-N junction diode? Explain.

2. Determine output voltage for given network

3.   Explain the centre top full wave rectifier.

4    Find out expression for ripple factor.

5    Draw the input and output characteristics for CENPN transistor.

     CE - NPN

6    Find the expression for base current $I_b$ and output voltage $V_{ce}$ for self biased circuit.

7    Determine the following for the fixed bias configuration as shown in figure $I_b$, $I_c$, $V_{ce}$, $V_b$, $V_c$, $V_{bc}$. Given that $\beta = 50$

     $R_1 = 240 k$ . $R_3 = 2.2 k$.



Vcc = 12V
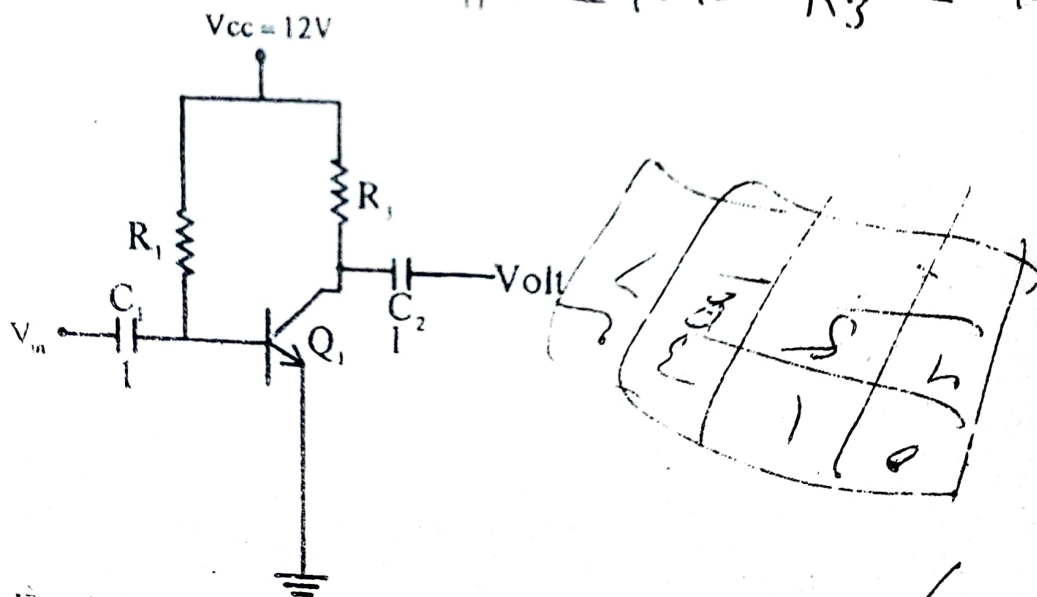
8    Explain drain and transfer characteristics of FET.

9    What do you understand by Pinch off condition? Explain.

10   Explain transition and diffusion capacitance of diode.

11. Give the ideal characteristics of an op-amp.

12. Explain the voltage follower or unit gain configuration of op-amp.

13. Convert the following:
(i)     $(786.983)_{10}$ into $(\quad)_{16}$
(ii)    $(172.878)_{10}$ into $(\quad)_8$

14. Solve the following k-map:
(i)     $F(A, B, C) = \Sigma m(0,2,4,5)$
(ii)    $F(A, B, C, D) = \Sigma m(0,2,4,5,6,7,8,10,11,12,14,15)$

15. Give the process of finding amplitude and frequency for given wave form on CRO.

## Section-II
### (Long Answer Type Questions)

Note: Attempt any three questions. Each question carries 20 marks.                    (20x3=60)

1. (a) Find out the expression for efficiency of half-wave rectifier.
   (b) What do you understand by clipper and clamper circuit, explain?

2. Explain construction and working of Enhancement type MOSFET with its characteristics curve.

3. (a) Explain the adder and integrator circuit of an OP amp.

   (b) What do you understand by universal gate? Give its truth table also with the help of universal gate realize AND. OR, NOT and XOR.

4. (a) What is the role of filter in rectifier circuit? Explain in detail the capacitor filter.

   (b) Explain potential divider biasing of transistor. Also find out the value of Q point on characteristics.

5. (a) Explain the working principal of digital voltmeter with suitable diagram.

   (b) With the help of block diagram explain the working of CRO.

6. Consider a single stage CE amplifier with $R_s = 1K\Omega$, $R_1 = 50K\Omega$, $R_2 = 2K\Omega$, $R_c = 1K\Omega$, $R_L = 1.2K\Omega$, $h_{fe} = 50$, $h_{ie} = 1.1K$, $h_{oc} = 25MA/V$ and $h_{re} = 2.5 \times 10^{-4}$ Find $A_i$, $R_i$, $A_v$, $A_{vs}$, $A_{is}$ and $R_o$.