



SF-6583

B. E. - II (Sem. IV) (TT/TP) Examination

May / June - 2011

Basic Electronics

(Old Course)

Time : 3 Hours]

[Total Marks : 100

Instructions :

(1)

नीचे दशांशक निशानीवाणी विगतो उत्तरवही पर अवश्य कर्तव्य.
Fillup strictly the details of signs on your answer book.

Name of the Examination :

B. E. - 2 (SEM. 4) (TT / TP)

Name of the Subject :

BASIC ELECTRONICS (OLD)

Subject Code No. : **6** **5** **8** **3** Section No. (1, 2.....): **NIL**

Seat No. :

Student's Signature

- (2) Attempt all questions.
(3) Figure on right side indicates full marks.
(4) Make necessary assumption wherever necessary.

1 (a) Attempt the following : 10

- (i) Ripple factor of half wave rectifier is _____.
- (ii) Find the value of β if $\alpha = 0.9$ $\beta =$ _____
- (iii) For the center tapped full wave rectifier _____ is maximum reverse voltage across the diode.
- (iv) During avalanche breakdown the electric field produced across the junction of diode is _____.
- (v) The phase difference between input and output voltage of common emitter transistor amplifier is _____.
- (vi) The best method for transistor biasing in CE configuration is _____.
- (vii) The transistor of $\alpha = 0.99$ and $I_E = 10$ mA the value of $I_B =$ _____.
- (viii) The TOF of bridge rectifier is _____
- (ix) The efficiency of transformer coupled class-A amplifier is _____.
- (x) The basic use of zener diode is as a _____.

- (b) Draw and explain the circuit of full wave center tapped rectifier also derive the equation for efficiency. 5
- (c) Find voltage V_o for the circuit shown in figure 1. The diode D_1 is Si diode with cut in voltage $V_r = 0.7$ V and D_2 is Ge diode with $V_r = 0.1$ V. 5

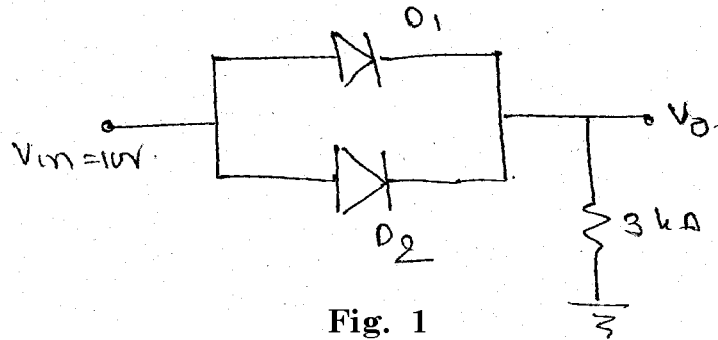


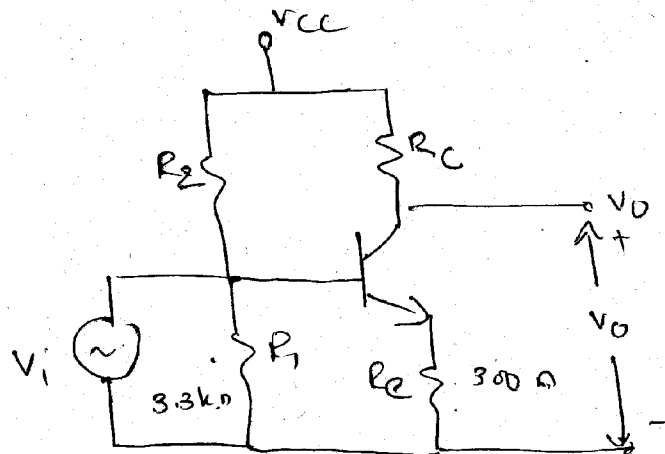
Fig. 1

- 2 Attempt any two of the following : 12
- (a) Draw the circuit for R_c coupled transistor amplifier and explain its operation. Also plot the frequency response and mention the effect of different capacitances.
- (b) For common emitter configuration prove the following relationship.

(1) $\beta = \frac{\alpha}{1-\alpha}$ and

(2) $I_C = \beta I_\beta = +I_{CEO}$

- (c) The Ce transistor amplifier has $\beta = 100$ and $V_{BE} = 0.6$ V. The voltage divider biasing is used. Calculate R_2 and R_C so that $I_{CQ} = 1$ mA and $V_{CEQ} = 2.5$ V.



- 3 Attempt any three : 18
- (a) Class B push pull amplifier
 - (b) Voltage divider biasing
 - (c) Ac and dc load lines of transistor amplifier
 - (d) Common collector configuration of transistor
 - (e) π filter.
- 4 (a) Answer the following : 10
- (i) Thermocouple is _____
 - (a) Passive transducer
 - (b) Active transducer
 - (c) Active and passive transducer
 - (d) Output transducer
 - (ii) An oscillator converts _____
 - (a) A.C. power into D.C. power
 - (b) D.C. power into A.C. power
 - (c) Mechanical power into A.C. Power
 - (d) None of the above
 - (iii) An oscillator employs _____ feedback.
 - (a) Positive
 - (b) Negative
 - (c) Neither positive nor negative
 - (d) Data insufficient
 - (iv) Work function of Metal is generally measured in _____
 - (a) joules
 - (b) electron-volt
 - (c) watt-hour
 - (d) watt
 - (v) Give full form of
 - (a) C.R.T.
 - (b) L.V.D.T.
- (b) Give types of Electron Emission. Explain any one in detail. 6
- (c) In the RC Wien bridge oscillator, $R_1 = R_2 = 220 \text{ k}\Omega$ and $C_1 = C_2 = 250 \text{ PF}$. Determine the frequency of oscillations. 4

- 5 (a) Explain the construction and uses of CRO with suitable block diagram. 8
- (b) Draw and explain LC Hartley oscillator. 7
- OR**
- 5 (a) Explain the construction of strain gauge and state the expression for gauge factor. 8
- (b) Explain principle and working of LVDT. 7
- 6 Attempt any three : 15
- (a) Digital Computer
- (b) LED
- (c) Classification of transducer
- (d) Electronic voltmeter
- (e) Photo transistor.
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