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**RN-6151**

**B. E. II (Sem. III) (Civil) Examination**

**May / June - 2010**

**EC-306 C - Electronics & Instrumentation**

Time : Hours]

[Total Marks : 100

**Instructions :**

(1)

नीचे दशविवेक निशानीवाणी विगतो उत्तरवडी पर अवश्य लखवी.  
Fillup strictly the details of signs on your answer book.

Name of the Examination :  
**B. E. 2 (Sem. 3) (Civil)**

Name of the Subject :  
**EC-306 C - Electronics & Instrumentation**

Subject Code No. : **6 1 5 1** Section No. (1, 2,.....): **1&2**

Seat No. :

Student's Signature

- (2) Attempt all the questions.
- (3) Assume suitable data whenever necessary.
- (4) Figures to right indicate full marks.
- (5) Use scientific calculators casio fx 82, 83, 100 or equivalent of any company.
- (6) Write both the sections on separate answer books.

**SECTION - I**

- 1 (a) Answer the following : 10
- (i)  $I_C = \alpha I_E + \text{_____}$ , where  $I_C$  and  $I_E$  are collector and emitter currents of BJT.
  - (ii) Define : Knee voltage.
  - (iii) What is requirement of filter ckt?
  - (iv) Define : PIV
  - (v) In a semiconductor, donor type impurities must have at least \_\_\_\_\_ valance electrons.
  - (vi) Draw the symbol of NPN transistor.
  - (vii) Draw the symbol of SCR.
  - (viii) Give the relation between  $\alpha$  and  $\beta$  parameter of transistor.
  - (ix) The ripple factor of a half wave rectifier is \_\_\_\_\_.
  - (x) If +ve terminal of battery is connected in P-type of material and -ve terminal of battery is connected to a n-type material. Then this bias is called as \_\_\_\_\_.

- (b) Find the rms value of output for center-top rectifier. 6  
(c) Explain intrinsic and extrinsic semiconductor. 4
- 2 (a) Explain basic working of NPN and PNP transistor. 7  
(b) Explain UJT as a relaxation oscillator with ckt diagram and necessary waveform. 8
- OR**
- 2 (a) What is necessary condition for oscillator ckt to generate oscillation? Draw the ckt diagram of wein bridge oscillation and its working. 7  
(b) Draw and explain zener diode V-I characteristics. 8  
Draw and explain the circuit diagram of zener diode voltage regulator in brief.
- 3 (a) Explain full wave bridge rectifier with necessary waveforms. 7
- OR**
- 3 (a) Describe the construction and working of UJT. 8  
Define the term "Intrinsic stand off ratio".  
(b) Explain class A, class B, class C amplifier.
- SECTION - II**
- 4 (a) Explain the following terms : 10  
(i) Electronic Instrument  
(ii) Gross Error  
(iii) Accuracy  
(iv) Linearity  
(v) Resolution  
(b) State and explain applications of LVDT. 5  
(c) Classified transducer and explain in detail. 5
- 5 (a) Derive the strain gauge factor equation  $G_f (1+2\nu)$  with proper derivation. 8  
(b) Draw the basic block diagram of CRO and explain each block in detail. 8
- OR**
- 5 (a) Describe with diagram, the operation of LVDT. 8  
(b) Write a short note on capacitive transducer. 8
- 6 (a) Write any **two** : 10  
(i) Explain in detail : Hat wire anemometer.  
(ii) Explain semiconductor strain gauge in detail  
(iii) State salient feature and application of thermistor  
(b) State 4 advantages and 4 disadvantages of LVDT. 4