



SF-7109

B. E. - III (Sem. VI) (EL) Examination

May / June - 2011

Electrical Measurement & Instruments : Paper - II

Time : Hours]

[Total Marks :

Instructions :

(1)

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

Name of the Examination :
B. E. - 3 (Sem. 6) (EL)

Name of the Subject :
Electrical Measurement & Instruments - II

Subject Code No. : 7 1 0 9 Section No. (1, 2,.....): 1&2

Seat No. :

Student's Signature

- (2) Attempt all questions.
- (3) Assume suitable data if required.
- (4) Support your answer with neat sketches.
- (5) Figures to the right indicate maximum marks.

SECTION - I

1 (a) Attempt the following :

- (1) Write the advantages of Electronic voltmeter. 2
- (2) Why voltage control circuits do not use resistance potential dividers ? 2
- (3) Write means to avoid Gross error. 2
- (4) Draw block-diagram of d.c. and a.c. electronic voltmeter. 2
- (5) Match the following : 2

Method	Type of fault
(i) alternating current Bridge method	(i) ground and short circuit fault
(ii) Loop test	(ii) open circuit fault
(iii) Pulse Echo method	(iii) ground fault only
(iv) Induction method	(iv) ground, short circuit and open circuit fault

- (b) Describe the various high voltage tests those are carried out on porcelain insulators. **10**
- 2** (a) Explain multistage impulse generator. **8**
- (b) In a test by Murray-loop method for a fault to earth on a 1000 metre length of cable having a resistance of 1.5Ω per 1 km; the faulty cable is looped with a sound cable of the same length but having a resistance 2.5Ω per 1 km. The resistance of the other two arms of the testing network, at balance, are in the ratio of 3 : 1. Calculate distance of fault from testing end of cable. **7**

OR

- 2** (a) Explain emitter follower type of Electronic voltmeter. **7**
- (b) Explain earth overlap test. **8**
- 3** Attempt any **three** : **15**
- (1) Explain Induction method of locating fault.
- (2) Three resistors have the following ratings :
- $$R_1 = 37 \Omega \pm 5\%, \quad R_2 = 75 \Omega \pm 5\%, \quad R_3 = 50 \Omega \pm 5\%$$
- Determine the magnitude and limiting error in ohm and in percent of the resistance of these resistances connected in series.
- (3) Two quantities x_1 and x_2 have limiting errors of $\pm \delta x_1$ and $\pm \delta x_2$ respectively. Derive the expression for relative limiting error in X when $X = \frac{x_1}{x_2}$.
- (4) Explain sphere-gap method of peak voltage measurement.
- (5) Explain ac voltmeters using rectifiers.

SECTION - II

- 4 (a) Attempt the following :
- (1) Thermistors are ideally suited to measure the temperature over 100 to 300°C - True/False. 1
 - (2) X-Y recorders record one quantity with respect to another quantity. True/False. 1
 - (3) Define Transducer. 1
 - (4) _____ recording is usually used when more accurate and response to DC voltages are required. 1
 - (5) Give any two advantages of magnetic tape recorders. 2
 - (6) Define inverse transducers and give its example. 2
 - (7) Give two examples of resistance transducers. 2
- (b) Classify methods of digital recording and explain NRZ type recording. 10
- 5 (a) Explain construction of wire wound strain gauge and derive the expression for gauge factor. 8
- (b) Write advantages and disadvantages of LVDT. 7
- OR**
- 5 (a) Draw block diagram of a CRO and also explain the function of each block. 8
- (b) Explain direct recording process in magnetic tape recorder. 7
- 6 Attempt any **three** : 15
- (1) Write advantages and disadvantages of thermocouples.
 - (2) Explain strip chart recorder.
 - (3) Explain CRT.
 - (4) Write a note on wireless data transmission.
-