

( 3 Hours )

[ Total Marks : 100

- N.B. : (1) Question No.1 is compulsory.  
 (2) Attempt any four questions out of remaining six questions.  
 (3) Figures to the right indicate full marks.

1. Attempt any four :
  - (a) Mention the factors that causes error during a Q-measurement. 5
  - (b) State typical specification of Digital voltmeter. 5
  - (c) Discuss the intensity modulation and velocity modulation related to C.R.O. 5
  - (d) State the requirements of good laboratory type signal generator. 5
  - (e) What are the factors involved in the selection of electronic voltmeter. 5
2. (a) Compute the value of self-capacitance of a coil when the following measurements are made. At frequency  $f_1 = 2 \text{ MHz}$ , the tuning capacitor is set at 450 PF. When the frequency is increased to 5 MHz, the tuning capacitor is tuned at 60 PF. 10
  - (b) What is Q of a coil ? Explain the principle of operation of a Q-meter. 10
3. (a) With respect to C.R.O. explain the function of following terms briefly : 10
  - (i) Intensity (iii) Triggering
  - (ii) Decay line (iv) Blanking.
  - (b) What do you understand by synchronisation in C.R.O. ? How is it achieved ? Also explain square wave testing of amplifiers using C.R.O. 10
4. (a) Explain with necessary expressions and diagrams R-2R ladder type Digital to Analog converter. 10
  - (b) Explain the working of an analog electronic phasemeter. State the advantages and limitations. 10
5. (a) With the help of neat diagram, explain the working of digital frequency meter. How is it used for time interval measurement. 10
  - (b) State the various parameters of an ideal Op-Amp. Draw functional block diagram of Op-Amp and explain. 10
6. (a) Explain in brief the working of R.F. signal generator with the help of block diagram. 10
  - (b) Discuss in brief the principle of working of true rms reading and average reading electronic voltmeters. 10
7. Write short notes on any two : 20
  - (a) Beat frequency oscillator and its applications
  - (b) Component testing using C.R.O.
  - (c) Successive approximation type of Digital voltmeter.