Registration No.: | | | | | | | | | | |

Total Number of Pages: 02

Course: B.Tech/IDD
Sub_Code: EOPC3003

5th Semester Regular Examination: 2025-26
SUBJECT: Electronics Measurement & Instrumentation
BRANCH(S): ECE, ETC, ECE
Time: 3 Hours
Max Marks: 100
Q.Code: U281

Answer Question No.1 (Part-I) which is compulsory, any eight from Part-II and any two from Part-III.
The figures in the right-hand margin indicate marks.

Part-I

Q1 **Answer the following questions:** **(2 x 10)**

a) Distinguish between systematic and random errors.
b) Mention two advantages of electronic multimeter.
c) Define quantization.
d) What is ADC?
e) Write down the main advantage of Wagner Earth devices used in a.c. bridge circuits.
f) Define triggering in a CRO.
g) Define square wave generator.
h) Draw Lissajous pattern for $f_v=1/3\ f_n$
i) Mention two uses of a triangular wave generator.
j) What is a phase detector?

Part-II

Q2 **Only Focused-Short Answer Type Questions- (Answer Any Eight out of Twelve)** **(6 x 8)**

a) In Wheatstone bridge the value of resistances of various arms are P = 1000ohm, Q = 100ohm, R = 2005ohms and S=200ohm. The battery has an emf of 5V and negligible internal resistance. The galvanometer has a current sensitivity of 10mm/microampere and an internal resistance of 100ohm. Calculate the deflection of galvanometer and the sensitivity of the bridge in terms of deflection per unit change in resistance.
b) Explain different types of measurement errors with examples.
c) Explain the construction and operation of true RMS responding voltmeter.
d) Describe the principle and applications of Maxwell bridges.
e) Explain the working of a function generator.
f) Discuss the need and working of deflection amplifiers.
g) Compare analog CRO and digital storage oscilloscope.
h) Explain the working of a simple frequency counter.

i) Compare single-channel and multi-channel DAS.
j) Explain the data conversion process in detail.
k) Explain automatic computing counter.
l) State the advantage of IEEE-488 GPIB bus.

Part-III

Only Long Answer Type Questions (Answer Any Two out of Four)

Q3 With neat diagrams, explain the construction and operation of CRT and its deflection systems. **(16)**

Q4 With neat diagrams, explain the construction and applications of spectrum and network analyzers. **(16)**

Q5 Explain the complete architecture, functioning, and applications of analog and digital data acquisition systems. **(16)**

Q6 Draw the Circuit of the Kelvin double ratio arm bridge and show the effect of lead resistance is eliminated. **(16)**