Student Exam No:_____

GANPAT UNIVERSITY

B.TECH SEM. Vth BIOMEDICAL & INSTRUMENTATATION ENGINEERING

REGULAR EXAMINATION NOVEMBER-DECEMBER 2012

2BM502 ELECTRONICS MEASUREMENT & INSTRUMENTATION

TIME:-3 HOURS TOTAL MARKS-70

INSTRUCTION:-

1. All the questions are compulsory.
2. Answer to each section must be written in separate answer sheet.
3. Figure to the right indicate marks.
4. Assume suitable data and draw figure wherever necessary.
5. Conventional terms / notations are used

Section-I

Q-1 [12]

(a) Explain probability of error and Gaussian curve with figure. A set of 5 independent measurements were made to determine the value of an unknown voltage source. The measured values in volt were 49.7, 50.1, 50.2, 49.6, and 49.7. Calculate the A) mean value b) the standard deviation of the readings and c) the probable error. D) variance

(b) Explain the PMMC meter movement. Explain Damping in PMMC instrument. How it can be used to construct D.C. ammeter.

OR

Q-1 [12]

(a) Explain loading effect A voltmeter having a sensitivity of 1 kΩ volt reads 80v on its 150 V range, when connected across an unknown resistor in series with a mili-ammeter. The ammeter reads 15mA. Calculate i) Apparent resistance ii) Actual resistance of unknown resistor iii) percentage error due to loading effect.

(b) Explain rectifier based A.C. voltmeter with its V-I characteristic graph. Prove that the A.C. voltmeter using full wave rectifier is 90% sensitive to that of D.C. voltmeter.

Q-2 [11]

(a) Explain Ramp type digital voltmeter. State its advantages and dis-advantages.

(b) Prove that in a Cathode ray tube, the deflection of electron beam is directly proportional to the potential applied to the deflecting plates.

OR

Q-2 [11]

(a) Explain Staircase type digital voltmeter with its advantages and disadvantages

(b) Explain different types of sweeps used in CRO. Explain circuit of any one sweep generator

Q-3 **Answer the following questions(Any Three)** [12]

(a) Sampling oscilloscope
(b) Digital phase meter
(c) Vector impedance meter
(d) Digital storage oscilloscope

Section-II

Q-4 [12]

(a) Explain Function Generator with the help of block diagram in detail.
(b) State the objectives of DAS system. Draw and explain each components used in DAS system.

OR

Q-4 [12]

(a) Draw the circuit diagram and explain resistance diode shaping circuit used to convert triangular into sine waveform.
(b) Write a note on Digital to Analog converter.

Q-5 [11]

(a) Explain the working of LED display with a neat labeled diagram and state its advantages and disadvantages.
(b) Write a note on sources of error in Q-meter. Find the value of distributed capacitance Cs & inductance L if f1= 2MHz & C1= 600pF during first measurement, the second measurement is at f2= 4MHz & C2= 100pF.

OR

Q-5 [11]

(a) Explain the working of Electrophoretic image display with its advantages & limitations.
(b) State and explain different marking mechanisms used in recorders.

Q-6 **Write shot note on** [12]

(a) Frequency selective wave analyzer.
(b) X-Y recorder
(c) Potentiometric type recorder.

END OF PAPER