Symbol Number: _____ Invigilator's Sign: _____ Superintendent's Sign: _____

Symbol No. in Words: _____ Code No. [ ]

School: SOE	Level: BE	Program: BEEE	Exam Year: 2080, Push
Subject: Instrumentation (EG505EE)			Year/Part: II/I (Model Question)
GROUP A (Multiple-Choice Questions)			[10x1=10]

i. Answers should be given by filling the Multiple-Choice Questions' Answer Sheet.
ii. Main answer sheet can be used for rough
iii. Maximum time of 20 minutes within the total time is given for this group.

Code No. [ ]

1. Operational Amplifier is used as a …….. Device in Instrumentation.
   a. Transducer b. Signal Conditioner
   c. Analog to Digital Converter d. Output
2. If a voltmeter has accuracy of 1% in its full scale reading of 100 V, how accurate will it be to measure 80 V?
   a. 1% b. 1.25%
   c. 1.5% d. 2%
3. The Schering's Bridge Circuit is used to measure ……+.. .
   a. Resistance b. Inductance
   c. Capacitance d. Input Voltage
4. The sensitivity of a linear potentiometer tuned at X_i out of the full scale of X_{total} may be calculated as:
   a. E_{out}/X_{total} b. E_{in}/X_{total}
   c. E_{in}/X_i d. X_i/E_{out}
5. The Gauge Factor of a Strain Gauge with initial Length (L), Diameter (D) and Resistance (R) may be calculated as:
   a. $\Delta L/L$ b. $\Delta R/R$
   c. $-(\Delta D/D)/(\Delta L/L)$ d.$(\Delta R/R)/(\Delta L/L)$
6. The input impedance of an Ideal Operational Amplifier is:
   a. Zero b. Infinite
   c. R_f/R d. R/R_f
7. What will be the analog output for a digital input of 1010_2 if the full-scale range of the DAC converter is 80 Volts?
   a. 20 V b. 40 V
   c. 50 V d. 60 V
8. Which of the following component is not essential for Analog Data Acquisition System?
   a. Transducer b. Signal Conditioning
   c. ADC d. Recorder
9. A Wattmeter can be realized by the combination of Current Coil and Pressure Coil by connecting:
   a. Current Coil and Pressure Coil in Parallel with load
   b. Current Coil and Pressure Coil in Series with load
   c. Current Coil in Parallel and Pressure Coil in Series with load
   d. Current Coil in series and Pressure Coil in parallel with load
10. Which of the following frequency meter works under the phenomenon of mechanical resonance?
    a. Reed Frequency Meter
    b. Vibrating Weston Type Frequency Meter
    c. Ratiometer Type Frequency Meter
    d. Electrodynamometer Type Frequency Meter

Multiple Choice Questions' Answer Sheet

Marks Secured: _____

In Words: _____

Examiner's Sign: _____ Date: _____

Scrutinizer's Marks: _____

In Words: _____

Scrutinizer's Sign: _____ Date: _____

Corrected Fill

Incorrected Fill

1.	Ⓐ	Ⓑ	Ⓒ	Ⓓ		6.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
2.	Ⓐ	Ⓑ	Ⓒ	Ⓓ		7.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
3.	Ⓐ	Ⓑ	Ⓒ	Ⓓ		8.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
4.	Ⓐ	Ⓑ	Ⓒ	Ⓓ		9.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
5.	Ⓐ	Ⓑ	Ⓒ	Ⓓ		10.	Ⓐ	Ⓑ	Ⓒ	Ⓓ

MANMOHAN TECHNICAL UNIVERSITY
Office of the Controller of Examinations
Exam Year: 2080, Push

School: SOE	**Level: BE**	**Program: BEEE**	**Time: 3 Hours**
Year/Part: II/I (Model Question)			**Full Marks: 50**
Subject: Instrumentation (EG505EE)			**Pass Marks: 20**

- ✓ *Candidates are required to give their answers in their own words as far as practicable.*
- ✓ *The figures in the margin indicate Full Marks.*
- ✓ *Assume suitable data if necessary*.

GROUP A *(Multiple-Choice Questions and Answer Sheet in separate paper)* **[10x1=10]**

GROUP B *(Short Answer Questions - Attempt Any Eight)* **[2x8=16]**

1. Differentiate between the analog and digital Instrumentation system.
2. Justify the difference between accuracy and precision in an instrumentation system with an example.
3. Find the standard deviation of the measurements if a barometer gives the following readings for air pressure under 10 observations:
   101311 Pa, 101299 Pa, 101422 Pa, 101296 Pa, 101333 Pa,
   101298 Pa, 101420 Pa, 101445 Pa, 101333 Pa, 101325 Pa.
4. Write the process of measurement of pH level of any liquid.
5. What are the characteristics of an ideal Op-Amp?
6. Draw the circuit of Flash Type Analog to Digital Converter.
7. Explain how the sample and hold circuit works in digital instrumentation.
8. What are functions of the different components of Analog Data Acquisition System?
9. Explain in brief about the types of displays used in measuring instruments.

GROUP C *(Long Answer Questions - Attempt Any Six)* **[6x4=24]**

10. How can an Inductance (L) be measured using Maxwell's Bridge? Also find the quality factor of the circuit.
11. Derive the expression for output voltage for a linear potentiometer under loading condition.
12. Describe the working principle of LVDT with diagram.
13. Derive the output equation of the differentiator circuit using Op-Amp.
14. Describe the working principle of Dual Ramp Type Analog to Digital Converter.
15. Explain the working of a power factor meter with diagram.
16. Explain the working of PMMC Voltmeter with diagram.

∞∞ ***The End*** ∞∞