Exercise– L2

Q2.1 **What is an error in measurement?**
A) A failure to perform measurement
B) A perfect representation of a quantity
C) A deviation of the measured value from the true value
D) A value obtained from calibration only

Q2.2 **Why is it important to quantify the maximum error in a measurement?**
A) To completely eliminate all errors
B) To improve accuracy by reducing errors
C) To modify the true value
D) To increase the measurement complexity

Q2.3 **How are errors classified?**
A) Systematic and Random Errors only
B) Gross, Systematic, and Random Errors
C) Direct and Indirect Errors
D) Minor and Major Errors

Q2.4 **Which of the following is NOT a type of Gross Error?**
A) Misreading of an instrument
B) Computational mistakes
C) Instrument tolerance
D) Incorrect adjustment of an instrument

Q2.5 **Which of the following is a cause of Instrumental Errors?**
A) Computational mistakes
B) Wear in instrument components over time
C) Errors made by an observer
D) Variations in environmental conditions

Q2.6 **What are environmental errors mainly caused by?**
A) Poor observer judgment
B) Physical conditions like temperature and humidity
C) Using incorrect formulas
D) Mechanical failures in an instrument

Q2.7 **Which of the following is NOT an example of an observational error?**
A) Imperfect measurement techniques
B) Poor judgment of an observer
C) Peculiarities in making an observation
D) Internal resistance of a voltmeter

Q2.8 **Why does the measurement process always disturb the system being measured?**
A) Because all instruments create heat
B) Due to the interaction between the measuring instrument and the system
C) Because measuring devices are too large
D) Because errors are unavoidable

Q2.9 **What influence does the loading effect have in an electrical circuit?**
A) It stabilizes the circuit
B) It increases the voltage of the circuit

C) It changes the resistance and affects measurement accuracy
D) It removes random errors

Q2.10 **How can the loading effect of a voltmeter be minimized?**
A) By decreasing the resistance of the voltmeter
B) By using a voltmeter with higher internal resistance
C) By removing resistors from the circuit
D) By using a weaker power source

Q2.11 **Which of the following is NOT a way to minimize modifying input errors?**
A) Proper analysis
B) Careful instrument design
C) Ignoring environmental conditions
D) Using techniques like signal filtering

Q2.12 **What is the main characteristic of random errors?**
A) They can be completely eliminated
B) Their magnitude and sign fluctuate unpredictably
C) They only affect electronic instruments
D) They are caused by poor calibration

Q2.13 **What is another name for random errors?**
A) Gross Errors
B) Systematic Errors
C) Residual Errors
D) Observational Errors

Q2.14 **How can random errors be minimized?**
A) By employing statistical analysis over multiple readings
B) By using a single measurement
C) By increasing the system disturbance
D) By reducing the environmental temperature

Q2.15 **Which type of error can be corrected by calibration?**
A) Random Errors
B) Gross Errors
C) Observational Errors
D) Systematic Errors

Q2.16 **What happens to the percentage error in measurement as the internal resistance of a voltmeter increases?**
A) The percentage error increases
B) The percentage error decreases
C) The percentage error remains constant
D) The circuit stops functioning

Q2.17 **In measurement, what is a modifying input?**
A) An environmental condition affecting instrument output
B) A technique used for signal amplification
C) An error caused by improper calculations
D) A process for increasing accuracy

Q2.18 **Why is it difficult to completely eliminate modifying inputs?**

A) Because measuring devices are not accurate
B) Because it is impossible to control all environmental conditions
C) Because instruments are expensive
D) Because modifying inputs improve accuracy

Q2.19 **Which technique is NOT used to minimize modifying input errors?**
A) Opposing inputs method
B) High gain feedback
C) Increasing environmental variations
D) Signal filtering

Q2.20 **What does the ratio Em/Eo indicate in a circuit with a voltmeter?**
A) The accuracy of the instrument
B) The percentage of environmental error
C) The effect of loading on voltage measurement
D) The fluctuation of random errors

Answers

Question	Answer
Q2.1	C
Q2.2	B
Q2.3	B
Q2.4	C
Q2.5	B
Q2.6	B
Q2.7	D
Q2.8	B
Q2.9	C
Q2.10	B
Q2.11	C
Q2.12	B
Q2.13	C
Q2.14	A
Q2.15	D
Q2.16	B
Q2.17	A
Q2.18	B
Q2.19	C
Q2.20	C