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Practice **Set 3** Solution

# Units & **MEASUREMENT**

**Topics :**

- 3. Errors, Estimation of error, relative error, percentage error, propagation of errors.
- 4. Measurement with Vernier caliper and micrometer screw gauge.

**DDCET final exam weightage of this topic :** 3 Questions ( 6 Marks )

**Total Practice sets  
of this topic :**

$10 \text{ ( sets ) } \times 25 \text{ ( questions ) } = 250 \text{ Questions}$

**Total Practice tests  
of this topic :**

$2 \text{ ( exams ) } \times 25 \text{ ( questions ) } = 50 \text{ Questions}$

**Offline / Online  
during lecture :**

$4 \text{ ( lectures ) } \times 50 \text{ ( Questions ) } = 200 \text{ Question}$

**Total 500 Questions to  
practice this topic**



**91739 04421**



# UNITY TRAINING ACADEMY FOR DDCET

## Section 1 :

3. Errors, Estimation of error, relative error, percentage error, propagation of errors.  
4. Measurement with Vernier caliper and micrometer screw gauge.

1. Which of the following is a random error?

- A) Instrumental error
- B) Personal error
- C) Least count error
- D) Fluctuations in temperature ✓

2. The absolute error is the:

- A) Square of the error
- B) Ratio of error to the actual value
- C) Difference between measured and true value ✓
- D) Product of error and true value

3. If a value is measured as 20 cm and the error is  $\pm 2$  cm, the relative error is:

- A) 10% ✓
- B) 20%
- C) 5%
- D) 15%

4. Which of the following cannot reduce systematic errors?

- A) Taking multiple readings ✓
- B) Calibrating instruments
- C) Using correct formula
- D) Removing zero error

5. If a measurement has a large number of significant figures, it has:

- A) Greater error
- B) Greater accuracy ✓
- C) Greater uncertainty
- D) Greater deviation

6. The maximum error in the product of two measurements is:

- A) Sum of relative errors ✓
- B) Product of absolute errors
- C) Square of error
- D) Sum of absolute errors

7. Percentage error is:

- A)  $(\text{Absolute Error} / \text{Actual Value}) \times 100$  ✓
- B)  $(\text{Measured Value} / \text{Actual Value}) \times 100$
- C)  $\text{Absolute Error} \times 100$
- D)  $\text{Actual Value} \times 100$

8. The least count of an instrument affects:

- A) Systematic error
- B) Personal error
- C) Random error
- D) Instrumental error ✓

9. Which of the following is an example of a systematic error?

- A) Human reaction time
- B) Zero error in an instrument ✓
- C) Fluctuation in temperature
- D) Parallax error

10. In addition of measurements, the absolute error is:

- A) Added ✓
- B) Multiplied
- C) Subtracted
- D) Divided





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11. When subtracting two quantities, the maximum possible error is:

- A) Sum of absolute errors ✓
- B) Difference of errors
- C) Product of errors
- D) Ratio of errors

12. The number of significant figures in 0.004506 is:

- A) 4 ✓
- B) 5
- C) 6
- D) 3

13. The term "precision" in measurements refers to:

- A) Closeness to true value
- B) Reproducibility of results ✓
- C) Largest value measured
- D) None of these

14. Repeated measurements improve:

- A) Accuracy only
- B) Precision only ✓
- C) Both accuracy and precision
- D) Neither accuracy nor precision

15. In multiplication/division, how do you calculate percentage error?

- A) Add percentage errors ✓
- B) Subtract percentage errors
- C) Multiply absolute errors
- D) Take root of sum of squares

16. The least count of a vernier caliper is:

- A) 0.01 cm ✓
- B) 0.1 cm
- C) 1 mm
- D) 0.001 cm

17. The total number of divisions on the main scale in vernier caliper is usually:

- A) 10
- B) 100 ✓
- C) 1
- D) 9

18. A zero error in a vernier caliper affects:

- A) Only small measurements
- B) All measurements equally ✓
- C) Only large measurements
- D) None of these

19. Positive zero error means:

- A) Vernier scale is ahead of the main scale ✓
- B) Vernier scale is behind the main scale
- C) Both scales coincide
- D) None of these

20. The least count of a micrometer screw gauge is:

- A) 0.01 mm ✓
- B) 0.1 mm
- C) 1 mm
- D) 0.5 mm





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21. In screw gauge, pitch is:

- A) Distance moved per one rotation ✓
- B) Total distance of travel
- C) Least count
- D) Screw diameter

22. The formula for least count of screw gauge is:

- A) Pitch / number of divisions ✓
- B) Pitch  $\times$  number of divisions
- C) Radius / time
- D) Pitch  $\times$  time

23. Zero error correction is done by:

- A) Adding it always
- B) Subtracting if positive
- C) Subtracting if negative
- D) Based on sign ✓

24. A negative zero error in screw gauge means:

- A) Error to be added ✓
- B) Error to be ignored
- C) Error to be subtracted
- D) No error

25. Vernier caliper can measure:

- A) Only external diameters
- B) Only internal diameters
- C) Only depth
- D) All of the above ✓

