ARJUNA (NEET)

Units and Mesurements

P XI M1 Pg30

DPP-07

1. A rectangular plate has length (2 ± 0.02) cm and width (1 ± 0.01) cm. The maximum percentage error in the measurement of its area is

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(A) 1% (B) 2%
(C) 3% (D) 5%

2. The maximum error in the measurement of mass and length of the side of a cube are 2% and 1%, respectively. The maximum error in its density is

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(A) 2% (B) 1%
(C) 3% (D) 5%

3. A student measures quantities a, b and c and then calculates S by the formula $S = ab^2/c^3$. If the error in a, b, c are 1%, 3% and 2% respectively, the maximum error in S can be

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(A) 13% (B) 7%
(C) 4% (D) 1%

4. A student measures the distance traversed in free fall of a body, initially at rest, in a given time. He uses these data to estimate g, the acceleration due to gravity. If the maximum percentage errors in measurement of the distance and the time are e_1 and e_2, respectively, the percentage error in the estimation of g is

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(A) $e_2 - e_1$ (B) $e_1 + 2e_2$
(C) $e_1 + e_2$ (D) $e_1 - 2e_2$

5. In an experiment four quantities a, b, c and d are measured with percentage error 1%, 2%, 3% and 4%, respectively. Quantity P is calculated as follows :

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$$P = \frac{a^3b^2}{cd}$$ % error in P is

(A) 7% (B) 4%
(C) 14% (D) 10%

6. The period of oscillation of a simple pendulum in the experiment is recorded as 2.63s, 2.56s, 2.42s, 2.71s and 2.80s respectively. The average absolute error is

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(A) 0.1 s (B) 0.11 s
(C) 0.01 s (D) 1.0 s

7. The resistance is $R = \frac{V}{I}$ where $V = 100 \pm 5$ volts and $I = 10 \pm 0.2$ amperes. What is the total error in R?

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(A) 5% (B) 7%
(C) 5.2% (D) $\left(\frac{5}{2}\right)\%$

8. Zero error of an instrument introduces

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(A) Systematic errors
(B) Random errors
(C) Both
(D) None

9. Two resistors R_1 (24 ± 0.5) Ω and R_2 (8 ± 0.3) Ω are joined in series. The equivalent resistance is

32-33

(A) 32 ± 0.33 Ω (B) 32 ± 0.8 Ω
(C) 32 ± 0.2 Ω (D) 32 ± 0.5 Ω

10. A quantity is represented by $X = M^a L^b T^c$. The percentage error in measurement of M, L and T are α%, β% and γ% respectively. The percentage error in X would be

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(A) $(\alpha a + \beta b + \gamma c)\%$
(B) $(\alpha a - \beta b + \gamma c)\%$
(C) $(\alpha a - \beta b - \gamma c)\%$
(D) None of these

11. True value of length of a wooden stick is 38.762 cm. Its length is measured by using two different instruments of different least count. Measurement results are 38.763 cm and 38.76 cm respectively. Which of the following option is coned?

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(A) 38.76 cm is more accurate and less precise

(B) 38.763 cm is more accurate and more precise

(C) 38.763 cm is more accurate and less precise

(D) 38.76 cm is less accurate and more precise

ANSWERS

1. **(B)**
2. **(D)**
3. **(A)**
4. **(B)**
5. **(C)**
6. **(A)**
7. **(B)**
8. **(A)**
9. **(B)**
10. **(A)**
11. **(B)**

Note - If you have any query/issue

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