

RITS- 37
JEE ADVANCED-2018
ANSWER KEY
Paper-I
Code: 108725

PHYSICS		CHEMISTRY		MATHEMATICS	
1	ABD	1	ABD	1	B
2	AD	2	ABCD	2	AC
3	ABC	3	ACD	3	ABC
4	BC	4	ABC	4	B
5	BD	5	AD	5	C
6	AB	6	AD	6	C
7	ABD	7	ABD	7	BCD
8	C	8	ABCD	8	AC
9	AC	9	AB	9	BC
10	BCD	10	ABD	10	B
1	A- P B- Q C- R,S D- R,S	1	A-p,q,r B-s C-s D-q,r	1	A- p B- s C- q D- r
2	A- P,Q,S B- R C- P,Q D- P,Q	2	A-p,r B-p,r,t C-q,r,t D -p,s,t	2	A - r B - q C - s D - p
1	5	1	9	1	9
2	1	2	0	2	8
3	7	3	6	3	6
4	0	4	4	4	2
5	6	5	4	5	4
6	3	6	3	6	8
7	4	7	3	7	6
8	5	8	7	8	9

Hint and Solution PHYSICS

- 1 ABD
- 2 AD
- 3 ABC
- 4 BC

4. Sol Mean $\bar{x} = 12.676 \text{ cm}$

Round off to sig figs: 12.68 cm

Mean absolute error: 0.0672 cm

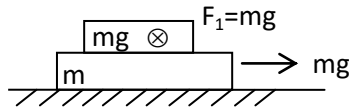
Round off to sig figs = 0.07 cm

\Rightarrow Reported value = $12.68 \pm 0.07 \text{ cm}$

Since even the tenths place can vary, might as will prefer to report the measure only up to tenths.

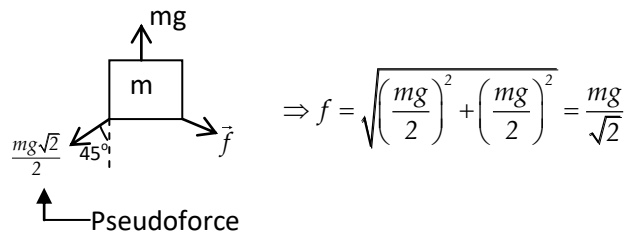
So 12.7 ± 0.1 is a "more correct" way of reporting

- 5 BD



$$a = \frac{mg\sqrt{2}}{2m} = \frac{g}{\sqrt{2}}$$

FBD of upper block from lower block frame: (Top view)



- 6 AB
- 7 ABD

Sol AM > GM > H.M.

In parallel effective inductance is given by $L_{\text{eff}} = \frac{L_1 L_2 - M^2}{L_1 + L_2 + 2M}$ and L effective can never be

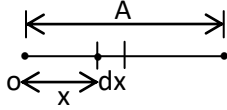
negative

- 8 C
- 9 AC
- 10 BCD

- 1 A- P
B- Q
C- R,S

D- R,S

- 2 A- P,Q,S
B- R
C- P,Q
D- P,Q



$$\text{velocity } v(x) = \sqrt{\frac{k}{m}} \sqrt{A^n - x^n} \left(\because \frac{1}{2} kx^n + \frac{1}{2} mv^2 = \frac{1}{2} kA^n \right)$$

T from mean to extreme

$$= \sqrt{\frac{m}{k}} \int_0^T \frac{dx}{\sqrt{A^n - x^n}}$$

Put $x = Au \Rightarrow dx = Adu$

$$T = \sqrt{\frac{m}{k}} \int_0^1 \frac{Adu}{A^{n/2} \sqrt{1-u^n}}$$

$$= CA^{1-\frac{n}{2}}$$

So. If $n > 2$, higher A implies lower T

1. Taking torque about ground point and using

$$\vec{\tau} = \frac{d\vec{L}}{dt} :$$

$$Mg \cdot 2R \sin \theta = \frac{2}{5} MR^2 \omega \sin \theta \Omega \Rightarrow \Omega = \frac{5g}{R\omega}$$

$n = 5$. (Ans)

2. $n = 1$

3. 7

4. $n = 0$

Balanced Wheatstone bridge in complex impedances.

5. Ans. 6

$$\text{For upper chamber } P_0 (32V_0)^{\gamma} = 32P_0 V'^{\gamma}$$

$$\Rightarrow V' = \frac{32V_0}{(32)^{\frac{1}{\gamma}}} = \frac{32V_0}{(32)^{\frac{3}{5}}} = 4V_0$$

$$\Rightarrow \text{volume of lower chamber} = 64V_0 - 4V_0 = 60V_0 = 10nV_0$$

$$\Rightarrow n = 6$$

6. Ans. $n = 3$

7. Ans. 4 ampere

8. Ans. 5

Chemistry

3. (ACD)

$$\Delta G^0 = -2.303RT \log K$$

$$\Delta H^0 - T\Delta S^0 = -2.303RT \log K$$

$$2.303 \log K = -\frac{\Delta H^0}{R} + \frac{\Delta S^0}{R}$$

$$\text{Slope} = -\frac{\Delta H^0}{2.303R} = \tan 45^0$$

$$\therefore \Delta H^0 = -2.303 \times 2 \times 1 = -4.606 \text{ cal}$$

$$\text{Intercept} = \frac{\Delta S^0}{2.303R} = 2$$

$$\therefore \Delta S^0 = 2.303 \times 2 \times 2 = 9.212 \text{ cal}$$

$$\Delta G^0 = \Delta H^0 - T\Delta S^0$$

$$= -4.606 - 298 \times 9.212 = - 2.75 \text{ kcal}$$