

Q1. 21 January Shift 1

Consider a modified Bernoulli equation.

$$(P + \frac{A}{Bt^2}) + \rho g(h + Bt) + \frac{1}{2} \rho V^2 = \text{constant}$$

If t has the dimension of time then the dimensions of A and B are _____, _____ respectively.

- (1) $[ML^0 T^{-2}]$ and $[M^0 LT^{-2}]$
- (2) $[ML^0 T^{-2}]$ and $[M^0 LT^{-1}]$
- (3) $[ML^0 T^{-1}]$ and $[M^0 LT]$
- (4) $[ML^0 T^{-1}]$ and $[M^0 LT^{-1}]$

Q2. 21 January Shift 2

Keeping the significant figures in view, the sum of the physical quantities 52.01 m, 153.2 m and 0.123 m is :

- (1) 205.3 m
- (2) 205.333 m
- (3) 205.33 m
- (4) 205 m

Q3. 22 January Shift 1

Match the LIST-I with LIST-II

	List-I		List-II
A.	Spring constant	I.	$ML^2 T^{-2} K^{-1}$
B.	Thermal conductivity	II.	$ML^0 T^{-2}$
C.	Boltzmann constant	III.	$ML^2 T^{-3} A^{-2}$
D.	Inductive reactance	IV.	$MLT^{-3} K^{-1}$

Choose the correct answer from the options given below:

- (1) A-II, B-IV, C-I, D-III
- (2) A-I, B-IV, C-II, D-III
- (3) A-II, B-I, C-IV, D-III
- (4) A-III, B-II, C-IV, D-I

Q4. 22 January Shift 2

If ϵ , E and t represent the free space permittivity, electric field and time respectively, then the unit of $\frac{\epsilon E}{t}$ will be

- (1) Am^2
- (2) Am
- (3) A/m^2
- (4) A/m

Q5. 23 January Shift 2

A ball of radius r and density ρ dropped through a viscous liquid of density σ and viscosity η attains its terminal velocity at time t , given by $t = A\rho^a r^b \eta^c \sigma^d$, where A is a constant and a, b, c and d are integers. The value of $\frac{b+c}{a+d}$ is _____.

Q6. 24 January Shift 1

Match the LIST-I with LIST-II

	List-I		List-II
A.	Magnetic induction	I.	$MLT^{-2}A^{-2}$
B.	Magnetic flux	II.	$ML^2T^{-2}A^{-2}$
C.	Magnetic permeability	III.	$ML^0T^{-2}A^{-1}$
D.	Self inductance	IV.	$ML^2T^{-2}A^{-1}$

Choose the correct answer from the options given below:

- (1) A-III, B-IV, C-II, D-I
 (3) A-IV, B-III, C-I, D-II

- (2) A-III, B-IV, C-I, D-II
 (4) A-I, B-III, C-IV, D-II

Q7. 28 January Shift 2

Match List - I with List - II.

	List - I		List - II
A.	Coefficient of viscosity	I.	$[ML^{-1}T^{-1}]$
B.	Surface tension	II.	$[ML^0T^{-2}]$
C.	Pressure	III.	$[ML^{-1}T^{-2}]$
D.	Surface energy	IV.	$[ML^2T^{-2}]$

Choose the correct answer from the options given below :

- (1) A-IV, B-III, C-I, D-II
 (3) A-I, B-II, C-IV, D-III

- (2) A-IV, B-I, C-II, D-III
 (4) A-I, B-III, C-II, D-IV

ANSWER KEYS

1. (4) 2. (1) 3. (1) 4. (3) 5. 1 6. (2) 7. (1)