

Q1 : Which of the following is both unitless and dimensionless?

- A angle
- B solid angle
- C mechanical equivalent of heat
- D refractive index

Correct Ans : D

Q2 : How many astronomical units are there in 1 metre

- A 6.68 10¹² Au
- B 6.68 10⁻¹⁰ Au
- C 6.68 10¹⁰ Au
- D 6.68 10⁻¹² Au

Correct Ans : D

Q3 : A lift is moving up with an acceleration equal to $\frac{1}{5}$ of that due to gravity. The apparent weight of a 60 kg man standing in lift is:

- A 60 kg wt
- B 72 kg wt
- C 48 kg wt
- D zero

Correct Ans : B

Q4 : The friction of air causes a vertical resistance of 10% in acceleration due to gravity. The maximum height will be decreased by

- A 11%
- B 10%
- C 9%
- D 8%

Correct Ans : C

Q5 : A projectile can have the same range R for two angles of projection. If t_1 and t_2 can be the times of flight in the two cases then what is the product of the two times of flight?

- A $t_1 t_2 R^2$
- B $t_1 t_2 R$
- C $t_1 t_2 \frac{1}{R}$
- D $t_1 t_2 \frac{1}{R^2}$

Correct Ans : B

Q6 : A body is moving with a constant speed 'V' in a circle of radius r. Its angular acceleration is

- A vr
- B zero
- C v/r
- D v/r²

Correct Ans : B

Q7 : If total energy of an earth's satellite is zero, it means that

- A The satellite is bound to earth
- B The satellite may no longer be bound to earth's field
- C The satellite moves away from the orbit along a parabolic path
- D The satellite escapes in a hyperbolic path

Correct Ans : C

Q8 : A spring balance is graduated on sea level. If a body is weighed with this balance at consecutively increasing heights from earth's surface, the weight indicated by the balance

- A will go on increasing continuously
- B will go on decreasing continuously
- C will remain same
- D will first increase and then decrease

Correct Ans : B

Q9 : A steel ring of radius r and cross sectional area 'A' is fitted on to a wooden disc of radius R (R >

r). If the Young's modulus be Y, then what is the force with which steel ring is expanded?

- A
- B
- C
- D

Correct Ans : D

Q10

:

A tuning fork arrangement produces 4 beats/second with one fork of frequency 288 Hz. A little wax is applied on the unknown fork and it then produces 2 beats/s. The frequency of the unknown fork is.....Hz.

- A 286
- B 292
- C 294

D 288

Correct Ans : B

Q11

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What is the phase difference between velocity and acceleration of a particle executing SHM?

A 0

B

C / 2

D / 4

Correct Ans : C

Q12

:

A stone is dropped into a lake by a person from a 500m high tower. He would hear the sound after approximately

A 10 sec

B 11.5 sec

C 14 sec

D 21 sec

Correct Ans : B

Q13

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If the values of $R=2/5 C_v$ for a gas, then the atomicity of the gas will be

A mono atomic

B diatomic

C polyatomic

D triatomic

Correct Ans : B

Q14

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A domestic refrigerator is loaded with food and the door closed. During a certain period the machine consumes 1 KWh of energy and the internal energy of the system drops by 5000KJ. Find the net heat transfer for the system.

A -8.6 MJ

B 86MJ

C -86MJ

D -8.6KJ

Correct Ans : D

Q15

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If the rate at which the radiation is emitted by a black body at 0°C is 2 watt, the rate of emission at 273°C will be

A 4 watt

B 8 watt

C 16 watt

D 20 watt

Correct Ans : C

