[19,700 प्रतियाँ]

Roll No. .....

Code No. : 1903

Sl. No. 16983

[Total No. of Pages : 7

SPECIAL BACK PAPER/BACK PAPER EXAMINATION, JUNE - 2019

APPLIED PHYSICS - I

Time : 2:30 Hours]

[Maximum Marks : 50

[Minimum Marks : 17

NOTES :

i) Attempt **all** questions.

ii) Students are advised to specially check the Numerical Data of question paper in both versions. If there is any difference in Hindi translation of any question, the students should answer the question according to the English version.

iii) Use of Pager and Mobile Phone by the students is not allowed.

Q1) Answer any ten parts: **[10×1=10]**

a) Write down dimensional formula of surface tension.

b) Write one example of centripetal force.

c) Write SI unit of angular velocity.

d) The exact relation between moment of inertia and kinetic energy of rotation is

i) $K = I\omega$

ii) $K = \frac{1}{2} I\omega^2$

iii) $K = I^2\omega$

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e) Write down expression for moment of inertia of a solid sphere about its diameter.

f) Write the name of any two errors in measurement.

g) The relation b/w angular momentum (J) and moment of inertia (I) is

i) $J = I\omega$

ii) $J = I\omega^2$

iii) $J = I^2\omega^{1/2}$

h) Write one application of Zeroth law of thermodynamics.

i) Write SI unit of damping constant in a damped vibrations.

j) In a free vibration, the amplitude of a vibration _____.

i) Remains constant

ii) Decreases with time

iii) Increases with time

k) Which one of following is Unit of loudness _____.

i) Hertz

ii) Poise

iii) decibel

l) The value of acceleration due to gravity (g) is maximum at _____.

i) pole

ii) earth surface

iii) moon.

Q2) Attempt any five parts : [5×2=10]

a) How dimensional analysis is used in checking dimensional balance of an equation? Explain with example.

b) What are errors in measurement? Define systematic errors.

c) Write the statement of theorem of perpendicular axis in moment of inertia.

d) Define coefficient of friction and write its two advantages.

e) Write the relation between torque and angular momentum.

f) Define coefficient of thermal conductivity and write its unit.

g) Write any two Kepler's Law.

Q3) Attempt any two parts : [2×5=10]

a) Define Simple Harmonic Motion (SHM). Write its differential equation and obtain expression for its displacement and velocity.

b) What are reverberation and reverberation time? Write and explain Sabine formula of reverberation time.

c) Define orbital velocity of a satellite and obtain expression of it. Also prove that orbital velocity of a satellite does not depend on its mass.

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Q4) Attempt any two parts : [2×5=10]

a) Differentiate between damped and forced vibrations. Also write formula of quality factor.

b) Define coefficient of viscosity of a liquid. Describe its method of determination with the help of Stoke's method.

c) The length of a spring is increased by 0.20 meter, when a body of mass 0.5 kg is hanged from spring and pulled down and left free. Calculate the time period of the spring.

Q5) Write notes on any two : [2×5=10]

a) First and second law of thermodynamics.

b) Bernaulli's theorem and its applications.

c) Geostationary Satellite.