Total No. of printed pages = 7

Sc-104/Ap.Phy-I/1st Sem(New)/2017/N

APPLIED PHYSICS – I

(New Course)

Full Marks – 70

Time – Three hours

The figures in the margin indicate full marks for the questions.

PART – A

Marks – 25

1. Fill up the blanks with appropriate words : 1×10=10

(i) Dimensional formula for Gravitational constant is ..... .

(ii) The radius of circle is 2.12m. Its area according to significant figures is ..... .

(iii) Impulse is the product of ..... .

(iv) Time is a ..... quantity.

(v) Thermal capacity of body is equal to the product of massx ..... .

[Turn over

(vi) The loudness of sound depends upon its ..... .

(vii) The working of a rocket is based on ..... .

(viii) Work done by a man is ..... however hard he may struggle against a wall.

(ix) The stress required to double the length of a wire of Young's modulus 'Y' is ..... .

2. Choose the correct answers from each of the following : 1×10=10

(a) S. I unit of power is

(i) Watt (ii) Kilowatt

(iii) Joule (iv) Erg

(b) Principle of transmission of pressure is stated by

(i) Newton's law

(ii) Boyl's law

(iii) Pascal's law

(iv) None of the above

(c) Value of 'g' is

(i) same at all places

(ii) more on the moon than on the Earth

(iii) more at the equator than at the pole

(iv) more at the pole than at the equator

(d) The temperature of a patient is 40°C, his temperature of Fahrenheit scale will be

(i) 104°F (ii) 72°F

(iii) 96°F (iv) 100°F

(e) When the listener approaches the source of sound the pitch

(i) increases

(ii) decreases

(iii) remain the same

(iv) first increases and then decreases

(f) In S.H.M acceleration is proportional to

(i) displacement (ii) velocity

(iii) time period (iv) frequency

(g) S.I unit of energy is

(i) erg (ii) calorie

(iii) joule (iv) electron volt

(h) Work is always done on a body when

(i) a force acts on it

(ii) it moves through a certain distance

(iii) it experiences an increase in energy through a mechanical influence

(iv) both (i) and (ii)

(i) Ultrasonic means

(i) frequency less than 20 hertze

(ii) frequency between 20 hz to 20,000 hz

(iii) frequency greater than 20,000 hz

(iv) something else.

2. Write true or false : 1×5=5

(i) Action and reaction force acts on the same body.

(ii) The velocity of a particle at a point is always along the tangent to the path of the particle at that point.

(iii) A ball is thrown up. At the highest point of motion its K.E. becomes zero.

(iv) Water is better thermoelectric substance than mercury.

(v) The relative density of a certain substance is 8, its density is 8 kg/m^3.

PART – B

Marks – 45

4. (a) Differentiate between permissible and experimental error. 2

(b) What is meant by significant figures ? 2

(c) State Newton's laws of motion. 3

(d) A train was moving at the rate of 36 Km/hour, when breaks were applied. It come to rest in a distance of 200 metres. Calculate the retardation produced in the train. 3

5. (a) What is the difference between mass and weight ? 2

(b) State Newton's law of gravitation. Hence define gravitational constant and give its dimensional formula. 2+1+1=4

(c) A wire of length 1.5 metres and cross-section 1 sq.mm, increases by 1.55 mm. When stretched by a weight of 10 kg, find the Young's modulus of the material of the wire. 4

6. (a) What do you meant by Buoyancy and buoyant force. 2

(b) State Pascal's law of transmission of liquid pressure. Show how this law provides the principle of multiplication of force. 2+2=4

Or

A force of 50 kgf is applied to the smaller piston of hydraulic machine. Neglecting friction, find the force exerted on the larger piston. The diameter of the pistons being 2 cm and 10 cm respectively.

(c) What is atmospheric pressure ? State its S.I units. What is barometer ? Why water is not used in barometer ? 1+1+1+1=4

7. (a) Distinguish between sensible heat and latent heat. 2

(b) Define co-efficient of linear expansion. Show that co-efficient of superficial expansion is twice of co-efficient of linear expansion. 1+3=4

(c) "The latent heat of fusion of ice is 80 cal/gr." What do you understand by this statement ? 2

(d) What are the different mode of transmission of heat ? 2

8. (a) Distinguish between Longitudinal wave and Transverse wave. 2

(b) Write Newton's formula for the velocity of sound. 1

(c) Calculate the frequency of a note in air moving with velocity 330 m/sec and wavelength 170 cm. 2

Or

Define frequency and wavelength.