Step Academy official

Model Town Grw PH: 03016652757

STUDENT NAME	
PAPER CODE	62859
TIME ALLOWED	180
Paper Date	25-02-2026

CLASS	New 1st Year (FSC/ICS)
SUBJECT	Physics
TOTAL MARKS	100
Paper Type	

Q1. Choose the correct answer. **17X1=17**

1. A measuring tape has been graduated with a minimum scale division of 0.2 cm. The allowed reading using this tape may be:

(A) 80.5 cm **(B)** 80.6 cm **(C)** 80.65 cm **(D)** 80.7 cm

2. The answer of the product (2.8723 x 1.8) to the appropriate number of significant figures is:

(A) 4.59568 **(B)** 4.595 **(C)** 4.59 **(D)** 4.6

3. The diameter of a steel ball is measured using a Vernier Callipers and its reading is shown in the figure. (image). What is the diameter of the steel ball?

(A) 1.30 cm **(B)** 1.39 cm **(C)** 1.40 cm **(D)** 1.31 cm

4. The scalar product of two vectors is maximum if they are:

(A) Perpendicular **(B)** Parallel **(C)** At 30^o **(D)** At 45^o

5. The projectile gains its maximum height at an angle of:

(A) 0^o **(B)** 45^o **(C)** 60^o **(D)** 90^o

6. SI unit of impulse is:

(A) kg ms^{-2} **(B)** N m **(C)** N s **(D)** N m^2

7. A body travelling in a circle at a constant speed:

(A) Has constant velocity **(B)** Has an inward radial acceleration **(C)** Is not accelerated **(D)** Ha an outward radial acceleration

8. Every point of rotating rigid body has:

(A) Same angular velocity **(B)** Same linear velocity **(C)** Same linear acceleration **(D)** Same linear distance

9. An astronaut is orbiting around the Earth in a large capsule. then:

(A) He will be in a state of weightlessness with respect to capsule **(B)** He is freely falling toward the Earth **(C)** A ball projected at an angle has a straight line path as observed by him **(D)** All the above

10. The moment of the inertia of the body depends upon;

(A) Mass of the body and its distribution about axis of rotation **(B)** Volume of the body **(C)** Kinetic energy of the body **(D)** Angular momentum of the body

11. A man inside the artificial satellite feels weightlessness because the force of attraction due to the Earth is:

(A) Zero at the pole **(B)** Balanced by the force of attraction due to the moon **(C)** Equal to the centripetal force **(D)** Non-effective due to some particular design of the satellite

12. A body at rest may have:

(A) speed **(B)** Velocity **(C)** Momentum **(D)** Energy

13.

The height above the ground of a child on a swing varies from 0.5 m of his lower point to 1.5 m at his highest point. The maximum speed of the child is approximately:

(A) 1.5 ms^{-1} **(B)** 4.4 ms^{-1} **(C)** 9.8 ms^{-1} **(D)** Depends upon child's mass

14. The potential at a point situated at a distance of 50cm from a charge of 50 μC is:

(A) 9 x 10^{-4} volts **(B)** 18 x 10^{-4} volts **(C)** 9 x 10^{5} volts **(D)** 18 x 10^{4} volts

15. A piece of wire has resistance of 4(eq).It is doubled on itself so that its length becomes half but area of cross section is doubled.Its resistance now will be:

(A) 8Ω **(B)** 4Ω **(C)** 2Ω **(D)** 1Ω

16. Electrons while moving perpendicularly through a uniform magnetic field are:

(A) Deflected towards north pole **(B)** Deflected towards south pole **(C)** Deflected along circular path **(D)** Not deflected at all

17.
A magnet is suspended from a spring. The magnet oscillates and moves in and out of the coil connected to a galvanometer. When the magnet oscillates, the galvanometer shows:(image)

(A) Deflection to the left and to the right with constant amplitude **(B)** Deflected on one side **(C)** No deflection **(D)** Deflection to the left and right, but the amplitude steadily decreases

Q2. Write short answers of the following questions. Any 8 **8X2=16**

1 . How many significant figures should be retained in the following?

2 . Write the dimensions of: (i) Planck's constant (ii) Angular velocity.

3 . State right hand rule for two vectors with reference to vector products?

4 . State the condition under which birds fly in air?

5 . Show that range of projectile is maximum at an angle of 45^{o}.

6 . Describe briefly effects of air resistance on the range and maximum height of a projectile.

7 . Why is the acceleration of a body moving uniformly in a circle, directed towards the centre?

8 . A ball is just supported by a string without breaking. If it is whirled in a vertical circle, it breaks. Explain why.

9 . Mass is a measure of inertia in linear motion. What is its analogue in rotational motion? Describe briefly.

10 .
A bicycle has a K.E of 150 j. What K.E would the bicycle have if it had: (i) same mass but has speed double? (ii) three times mass and was moving with one half of the speed?

11 . Write the following numbers is significant notation: (a) 143.7 (b) 206.4 x 10^{2}

12 . State second law of motion in case of rotation.

Q3. Write short answers of the following questions. Any 8 **8X2=16**

1 . Differentiate between streamline and turbulent flow of a fluid.

2 . A gas is expanding adiabatically. Explain what happens to temperature and pressure of the gas.

3 . State 2^{nd} law of thermodynamics in two different forms.

4 . Show that area under P-V graph is equal to work done.

5 . What are the quantities which affect the frequency of standing wave along a string?

6 . Give an example of stationary waves in real life.

7 . Why is it difficult to recognize beats when the frequency difference is greater than 10 Hz?Exemplify

8 . Which measurement of a wave is the most important when determining the wave's intensity?

9 . Would it be possible to use a polarizer as an analyzer? If yes, give at least two examples.

10 . What is the significance of detecting gravitational waves?

11 . What is the space-time curvature?

12 . Why standing near fast moving train is dangerous? Explain briefly.

Q4. Write short answers of the following questions. Any 6 **6X2=12**

1 . Suppose you follow an electric field line due to a positive point charge. Do electric field and the potential increases or decrease?

2 . Why are electric field lines useful?

3 . If a point charge q of mass m is released in a non-unifrom electric field with lines pointing in the same direction, will it make a rectiliinear motion?

4 . What factors affect the resistivity of a meterial?

5 . What is electric power?

6 . What happens to the terminal p.d when current increases?

7 . What is the condition for balance in Wheatstone bridge?

8 . What happen when Wheatstone bridge is balanced?

9 . How a galvanometer is converted into: (i) an ammeter (ii) a Voltmeter

Q5. Write detailed answers of the following questions. Any 6 **6X4=24**

1a . Define and explain scalar product. Write down its important characteristics.

b . Check the homogeneity of the relation $v = \sqrt{\frac{t \times \ell}{m}}$. where v is the speed of transverse wave of a stretched string of tension T, length l and mass m.

2a . What is projectile motion? Explain.

b .
A railway wagon of mass 4 x 10^4 kg moving with velocity of 3 ms^{-1} collides with another wagon of mass 2 x 10^4 kg which is at rest. They stick together and more off together. Find their combined velocity.

3a . Define K.E and derive an expression for the same.

b . A 1200 kg car is running at a speed of 40 km h^{-1}. How much power will be expended by it to accelerate at 2 ms^{-2}.

4a . State and derive equation of continuity.

b . A tank filled with water has a hole at a depth of 5 m from the water surface. Calculate the velocity of water flowing out of the hole.

5a . How can polarized light be obtained by the method of reflection? Explain.

b .
A disc of 10cm^2 area is placed in a vertical electric field E = 5x10 ^ 5 * N C^{-1}.If the plane of the disc makes an angle of 30^o with the horizontal, determine the electric flux through the disc.