



# PHYSICS

## BOOKS - S CHAND IIT JEE

### FOUNDATION

## MEASUREMENT AND MOTION

### Question Bank 1 A

1. Arrange the following lengths in the increasing magnitude

1 metre, 1 megametre, 1 centimetre, 1 kilometre, 1 millimetre, 1 micrometre.



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2. If a woman has a mass of 45,000,000 mg, what is her mass in grams and kilograms?



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3. Which SI units would you use for the following measurements?

the length of a swimming pool



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4. Which SI units would you use for the following measurements?

the mass of the water in the pool



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5. Which SI units would you use for the following measurements?

the time it takes a swimmer to swim a lap



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**6.** Which of the following is the best estimate in metres of the height of a mountain?

A. 1m

B. 100m

C. 1km

D. 1Mm

**Answer: C**



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7. Ten metres is equal to

A. 100cm

B. 1,00,000mm

C. 1,000cm

D. 1, 000 $\mu m$

**Answer: C**



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8. A certain bacterial cell has a diameter of  $0.50\mu\text{m}$ . The tip of a pin is about  $1100\mu\text{m}$  in diameter. How many of these bacterial cells would fit on the top of the pin?



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9. List an appropriate SI base unit (with a prefix as needed) for measuring the following

the time it takes to play a CD in your stereo



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**10.** List an appropriate SI base unit (with a prefix as needed) for measuring the following  
the mass of a SUV



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**11.** List an appropriate SI base unit (with a prefix as needed) for measuring the following

the length of a soccer field



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**12.** List an appropriate SI base unit (with a prefix as needed) for measuring the following  
the diameter of a large pizza



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**13.** List an appropriate SI base unit (with a prefix as needed) for measuring the following



the distance between New Delhi and Jaipur



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**14.** List an appropriate SI base unit (with a prefix as needed) for measuring the following  
your mass



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**15.** List an appropriate SI base unit (with a prefix as needed) for measuring the following

the length of your school auditorium



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**16.** List an appropriate SI base unit (with a prefix as needed) for measuring the following  
your height



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**17.** Estimate the magnitude of the lengths in metres of each of the following

a ladybug



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**18.** Estimate the magnitude of the lengths in metres of each of the following  
your leg



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**19.** Estimate the magnitude of the lengths in metres of each of the following

your school building



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**20.** Estimate the magnitude of the lengths in metres of each of the following

a giraffe



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**21.** Express each of the following as indicated

3.5 dm expressed in mm



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**22.** Express each of the following as indicated

3h 20 min expressed in seconds



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**23.** Express each of the following as indicated

0.59km expressed in centimetres



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**24.** Express each of the following as indicated

$380\mu\text{m}$  in centimetres



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**25.** Express each of the following as indicated

$0.592\text{mg}$  expressed in grams



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**26.** Express each of the following as indicated

25g expressed in micrograms



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**27.** Express each of the following as indicated

36km/h expressed in metres per second



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**28.** What is the SI base unit for length?

A. inch

B. foot

C. metre

D. kilometer

**Answer: C**



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**29.** A light year (ly) is a unit of distance defined as the distance light travels in one year.



Numerically, 1 ly= 9 500 000 000 000 km. How many metres are in a light year?

A.  $9.5 \times 10^{10} m$

B.  $9.5 \times 10^{12} m$

C.  $9.5 \times 10^{15} m$

D.  $9.5 \times 10^{18} m$

**Answer: C**



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**30.** Ankit is measuring how fast bacteria grow in a dish by measuring the area that the bacteria cover. On day 1, the bacteria cover  $0.35\text{cm}^2$ . On day 2, they cover  $0.70\text{cm}^2$ . On day 3, they cover  $1.40\text{cm}^2$ . What is the best prediction for the area covered on day 4?

A.  $1.50\text{cm}^2$

B.  $3\text{cm}^2$

C.  $2.80\text{cm}^2$

D.  $2.90\text{cm}^2$

**Answer: C**



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**31.** Create a concept map using the following words

*Measurement, SI units, Length, Mass, Time, Area, Volume, CGS-units, Large units, Very small unit, megametre, micron, light year, metre, kilogram, cubic metre, centimetre, gram, cubic centimetre, square metre, square centimetre*



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1. Distance light travels in one year

2 One billionth  $\left(\frac{1}{100\text{crore}}\right)$  of a metre

3. A unit of distance used in astronomy. About

$3\frac{1}{4}$  light years.



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## Question Bank 1 B

1. What are the similarities and differences between the motion of a bicycle and a ceiling fan that has been switched on



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## 2. Fill in the blanks

Motion of a needle on a sewing machine is \_\_\_\_\_ motion



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## 3. Fill in the blanks

Motion of a wheel on a bicycle is \_\_\_\_\_ motion



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#### 4. Fill in the blanks

The motion of a plucked string of a violin or sitar is \_\_\_\_ motion



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#### 5. Fill in the blanks

A bird flying in the sky possesses \_\_\_\_ motion.



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6. Motion of a screw while going into the wood is an example

- A. linear and spin motion
- B. rotation and revolution
- C. rotation and spin motion
- D. rotation and linear motion

**Answer: D**



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7. Motion of pendulum of a clock is an example of

- A. rotational motion
- B. curvilinear motion
- C. rectilinear motion
- D. periodic motion

**Answer: D**



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8. Name the type of motion seen in the following

**Word Bank:** *revolution, periodic motion, rotation, oscillatory motion, curvilinear motion, rectilinear motion.*

- (a) Earth rotating on its axis
- (b) Blades of a moving fan
- (c) Needle end of a sewing machine
- (d) A rocket fired into space
- (e) An apple falling from a tree
- (f) A car moving along a road
- (g) A car moving along a curve on the road
- (h) Motion of the branch of a tree moving to and fro.



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9. Motion of earth has

- A. circular motion
- B. periodic motion
- C. rotational motion
- D. all the three types

**Answer: D**



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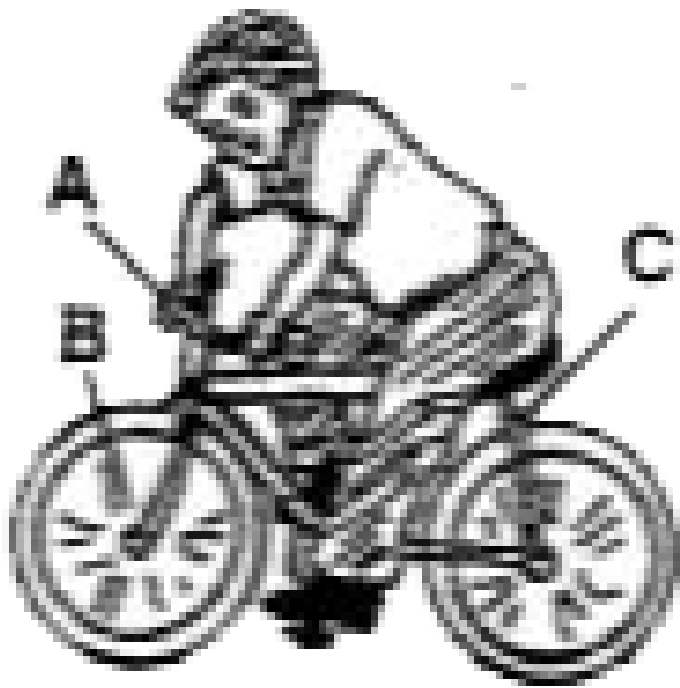
## 10. Match the following

- |                                       |   |
|---------------------------------------|---|
| (i) A buzzing bee                     | (a) Time taken by the bob to complete one oscillation |
| (ii) A bullet fired from a gun        | (b) Rotatory  |
| (iii) Guitar string                   | (c) Vibratory   |
| (iv) Time period of a simple pendulum | (d) Periodic  |
| (v) Heart beat                        | (e) Random motion                                     |
| (vi) Potter's wheel                   | (f) Linear and rotatory                               |
| (vii) A cricket ball bowled           | (g) Linear  |
| (viii) A flying kite                  | (h) Curvilinear                                       |



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**11.** Which part of the moving cycle undergoes rotatory motion?



A. A

B. B

C. C

D. All of these

**Answer:**



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**12.** Praveen is drilling a hole in the wall. What type of motion is caused?



A. rotatory

B. translatory

C. curvilinear

D. None

**Answer: A::B**



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**13.** The motion of sea waves is

A. rectilinear

B. curvilinear

C. oscillatory

D. both a and c

**Answer: D**



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**14.** When you play soccer, the motion described by the football is





A. curvilinear

B. circular

C. oscillatory

D. non-uniform

**Answer: A::D**



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**15.** Which of the following objects does not have more than one type of motion?

A. screw

B. rolling ball

C. scooter's wheel

D. child on a seesaw

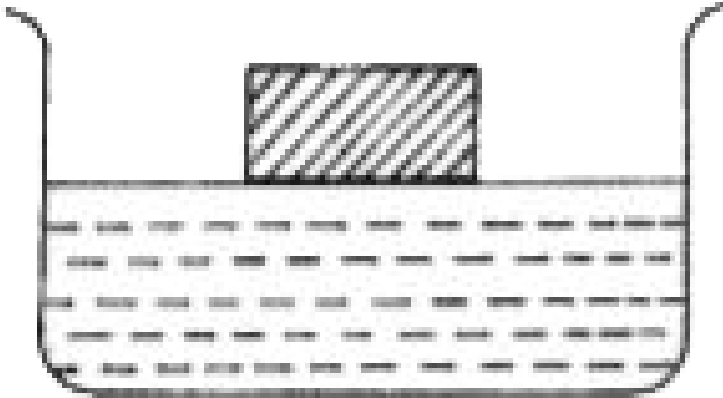
**Answer: D**



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**16.** A cork is placed on the surface of water. A small stone is dropped in the water. As a result wave motion is produced on the surface of water and the cork starts moving. What kind

of motion does the cork describe ?



A. periodic

B. linear

C. circular

D. both periodic and circular

**Answer: A**





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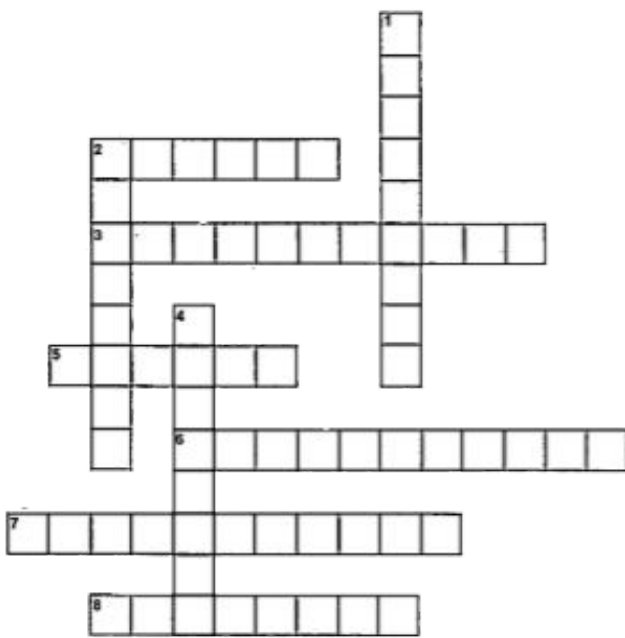
17. Using the following words draw a concept map

**Words :** *Motion, Translatory, Circular, Rotatory, Oscillatory, Repetitive, Periodic, Non-periodic, Vibratory, Rectilinear, Curvilinear.*



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18. Solve the following crossword with the help of the given clues



## Across

2. Irregular motion such as motion of a ball during a game of hockey or football.
3. The motion in which all parts of the body travel through the same distance
5. Movement of a body
6. Motion of a body along a curved path

7. Motion of a body like a pendulum

8. Occurring or appearing at intervals

Down

1. Motion of a plucked string of a sitar

2. Spinning of a body about a fixed axis

4. Motion of a girl sitting on a merry-go-round



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**Self Assessment Sheet 1 A**

## 1. Match the following

### Column A

- (i) dm
- (ii) mg
- (iii) kilo
- (iv) centi
- (v) Mm

### Column B

- a. one hundredth  $\left(\frac{1}{100}\right)$  part
- b. Megametre
- c. One thousand (1000)
- d. milligram
- e. decimetre



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2. One dozen coins were arranged one above the other. Their total height was 6cm 6mm. The thickness of each coin is



A. 6.4mm

B. 6.6mm

C. 5.5mm

D. None of these

**Answer: C**



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**3.** Arrange the following symbols in the increasing order of lengths they represent

dm cm m km dam Mm mm  $\mu m$



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4. If a tunnel is dug along the diameter of the earth and a ball is dropped into the tunnel, it will have

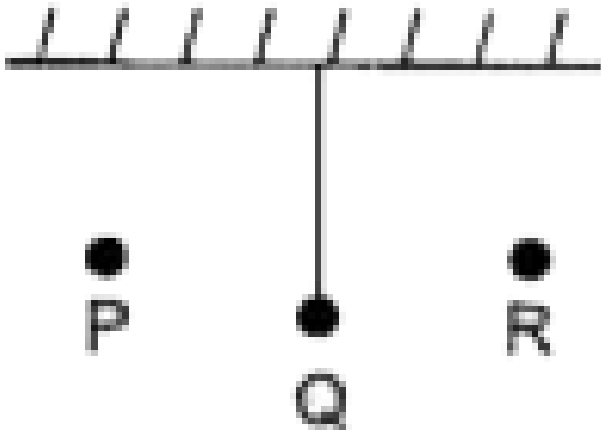
- A. linear motion
- B. circular motion
- C. oscillatory motion
- D. translatory motion

**Answer: C**



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5. Which of these represents one complete oscillation of the pendulum shown here.



A. PQR

B. PQQR

C. QRRP

D. PQR RQP

**Answer: D**



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**6.** A satellite is orbiting the earth in such a manner that the satellite is always straight above India. It is at a height of about 36,000km. Which of the following is true?

- A. Its period of rotation is 24 hours
- B. Its period of revolution is 24 hours
- C. Its period of rotation is 48 hours.
- D. Its period of revolution is 48 hours.

**Answer: B**



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7. Answer true or false

The SI unit of length is cm



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**8.** Answer true or false

The motion of moon around the earth is circular



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**9.** Answer true or false

The motion of the ball in a game of foot-ball is curvilinear.



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**10. Answer true or false**

The thickness of 80 turns of a wire is found to be 72cm. The thickness of the wire is 9cm.



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**11. Answer true or false**

The motion of the seconds hand of a clock is rotational.



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12. The motion of the arms of soldies taking part in march past

A. circular

B. oscillatory

C. rotatory

D. non-periodic

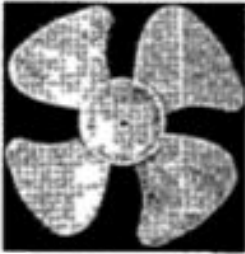
**Answer: B**



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13. What is common to the motion exhibited in the following pictures.



Blades of an exhaust fan



A child on a merry go round



The motion of a spinning wheel



A couple taking 7 rounds in marriage

A. All motions are translatory

B. All motions are curvilinear

C. All motions are rotatory

D. All motions are circular

**Answer:**



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**14. Which one is odd man out?**

A. A car taking turn on a curved road

B. Motion of a swing

C. Motion of needle end of a sewing  
maching

D. Motion of an engine piston

**Answer: A**



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