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Revised
Edition

SCIENCE

Based On New Syllabus

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DOLPHIN[®] *UNNAI MUDIYUM* **SCIENCE**

SALIENT FEATURES

**Revised
Edition**

1. Choose the following
2. Fill in the blanks
3. Match the following
4. Assertion and Reasoning
5. Answer very briefly
6. Answer briefly
7. Answer in detail
8. Numerical problems
9. Higher Order Thinking Questions



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PREFACE

**"Science is a beautiful gift to humanity;
We should not distort it". - A.P.J.Abdul Kalam**

Welcome to a journey through the realms of Science, where curiosity knows no bounds and knowledge knows no limits. In the other words of A.P.J.Abdul Kalam, **"Dream, dream, dream. Dreams transform into thoughts, and thoughts result in action."** With each turn of the page. We invite you to dream, to question, and to explore the wonders of the universe. All of us do not have equal talent, But, all of us have an equal opportunity to develop our talents. This guide is your platform to nurture your talents, expand your horizons, and make your mark on the world of Science.

This guide will help you to begin the journey with open minds, eager hearts, and the unwavering belief that as Kalam said, **"You have to dream before your dreams can come true."**



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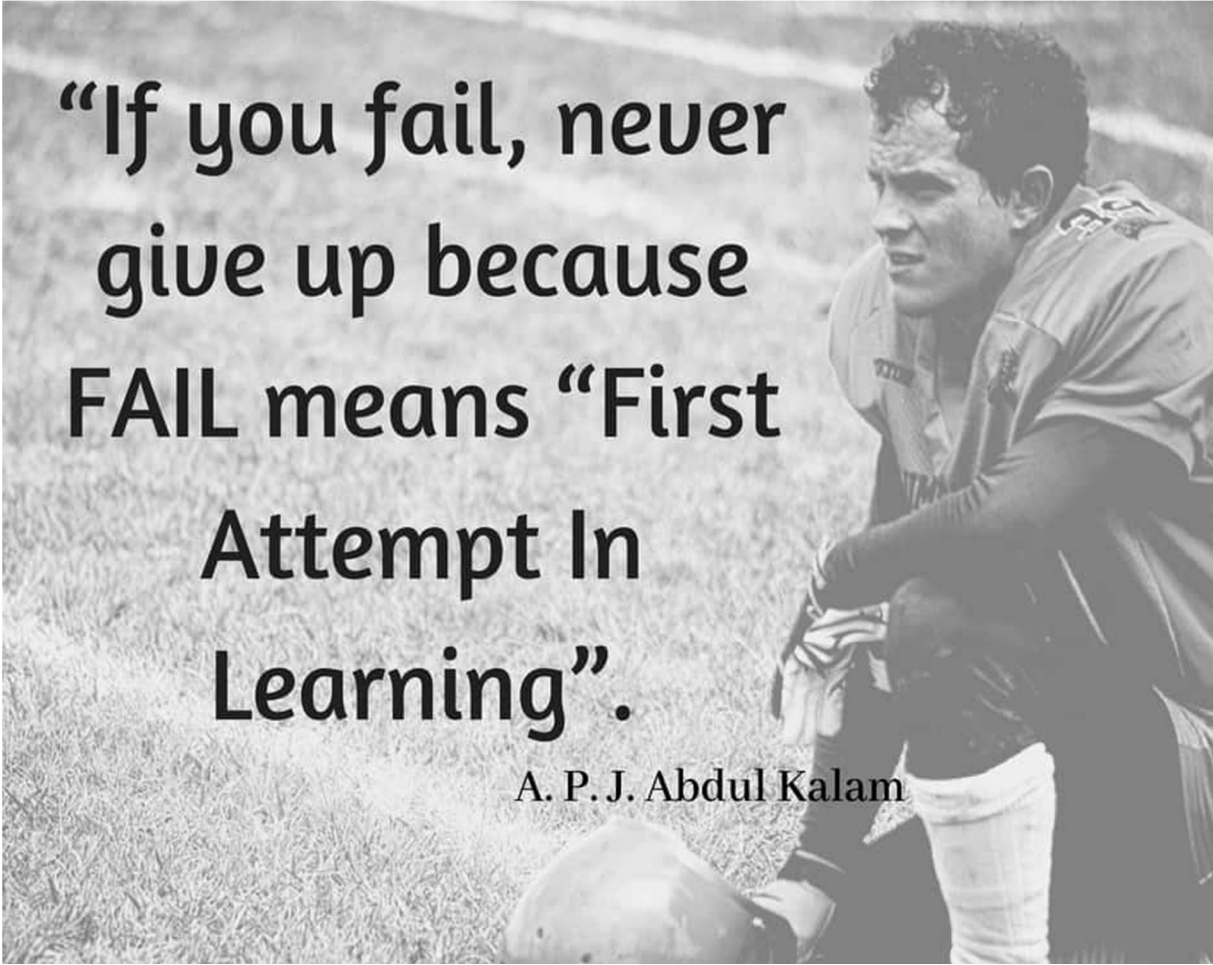


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**“If you fail, never
give up because
FAIL means “First
Attempt In
Learning”.**

A. P. J. Abdul Kalam

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UNIT

1

MEASUREMENT



Learning Objectives



After the completion of this lesson, students will be able to:

- ◆ understand fundamental quantities and units.
- ◆ explain the system of units and measurements.
- ◆ analyse the different system of units.
- ◆ know about temperature, amount of substance, electric current and luminous intensity.
- ◆ explore the knowledge of accuracy in measurements.
- ◆ differentiate plane angle and solid angle.
- ◆ solve problems related to measurement.



EXERCISE

Page No: 9

I. CHOOSE THE BEST ANSWER

1. Which one of the following systems of unit is the British System of unit?

- a) CGS b) MKS c) FPS d) SI [c] FPS

2. Electric current is a _____ quantity

- a) base b) supplementary c) derived d) professional [a] base

3. SI unit of temperature is _____.

- a) celsius b) fahrenheit c) kelvin d) ampere [c] kelvin

4. Luminous intensity is the intensity of _____

- a) laser light b) UV light c) visible light d) IR light [c] visible light

5. Closeness of two or more measured values is called as _____

- a) accuracy b) precision c) error d) approximation

[b] precision

6. Which one of the following statement is wrong?

- a) Approximation gives a accurate value.
 b) Approximation simplifies the calculation.
 c) Approximation is very useful when little information is available.
 d) Approximation gives the nearest value only **[a) Approximation gives a accurate value]**

II. FILL IN THE BLANKS

1. The solid angle is measured in _____ [Steradian (Sr)]
 2. The coldness or hotness of a substance is expressed by _____ [Temperature]
 3. _____ is used to measure electric current [Ammeter]
 4. One mole of a substance contains _____ atoms molecules [6.023 X 10⁺²³]
 5. The uncertainty in measurement is called as _____ [Errors]
 6. The closeness of the measured value to the original value is _____ [Accuracy]
 7. The intersection of two straight lines gives us _____ [Plane angle]

III. STATE TRUE OR FALSE. IF FALSE, CORRECT THE STATEMENT

1. Temperature is a measure of **total kinetic energy** of the particles in a system. [False]
 Temperature is a measure of **average kinetic energy** of the particles in a system.
 2. If one coulomb of charge is flowing in one **minute**, it is called 'ampere' [False]
 If one coulomb of charge is flowing in one **second**, it is called 'ampere'
 3. Amount of substance gives the number of particles present in a substance. [True]
 4. Intensity of light coming from a candle is approximately equal to one 'candela'. [True]
 5. **Quartz clocks** are used in GPS Devices [False]
Atomic clocks are used in GPS Devices
 6. Angle formed at the top of a cone is an example for '**plane angle**'. [False]
 Angle formed at the top of a cone is an example for '**Solid angle**'.
 7. The number 4.582 can be rounded off as 4.58 [True]

IV. MATCH THE FOLLOWING

1.	Temperature	Closeness to the Actual Value
2.	Plane angle	Measure of hotness or coldness
3.	Solid angle	Closeness to two or more measurements
4.	Accuracy	Angle formed by the intersection of three or more planes
5.	Precision	Angle formed by the intersection of two planes

Answer
Measure of hotness or coldness
Angle formed by the intersection of two planes
Angle formed by the intersection of three or more planes
Closeness to the Actual Value
Closeness to two or more measurements

V. CONSIDER THE STATEMENT GIVEN BELOW AND CHOOSE THE CORRECT OPTION

- a) Both assertion and reason are true and reason is the correct explanation of the assertion.
b) Both assertion and reason are true but reason is not the correct explanation of the assertion.
c) Assertion is true, but reason is false.
d) Both assertion and reason are false.

1. **Assertion** : The SI system of units is the suitable system for measurements.

Reason : The SI unit of temperature is kelvin.

[b) Both assertion and reason are true but reason is not the correct explanation of the assertion.]

2. **Assertion** : Electric current, amount of substance, luminous intensity are the fundamental physical quantities.

Reason : They are independent of each other.

[b) Both assertion and reason are true but reason is not the correct explanation of the assertion.]

3. **Assertion** : Radian is the unit of solid angle.

Reason : One radian is the angle subtended at the centre of a circle by an arc of length equal to its radius.

[*Assertion is false, but reason is true.]

VI. ANSWER VERY BRIEFLY

1. **How many base quantities are included in SI system?**

➤ There are seven base quantities are included in SI system.

2. **Give the name of the instrument used for the measurement of temperature.**

➤ Thermometers are used to measure the temperature.

3. **What is the SI unit of luminous intensity?**

➤ The SI unit of luminous intensity is candela.

4. **What type of oscillations are used in atomic clocks?**

➤ Atomic oscillations are used in atomic clocks.

5. **Mention the types of clocks based on their display.**

1. Analog clocks
2. Digital clocks

6. **How many times will the 'minute hand' rotate in one hour?**

➤ The 'minute hand' will rotate 60 times in one hour.

7. **How many hours are there in a minute?**

➤ There are 0.0167 hours in a minute.

VII. ANSWER BRIEFLY**1. What is measurement?**

- The process of finding an unknown physical quantity by using a standard quantity is called as measurement.

2. Name the three scales of temperature?

The three scales of temperature are

- i) Celsius
- ii) Fahrenheit
- iii) Kelvin

3. Define - Ampere.

- If one coulomb of charge is flowing through a conductor in one second, then the amount of current flowing is said to be one ampere.

4. What is electric current?

- Flow of electric charges, in a particular direction is known as 'electric current'.
- The amount of electric charges flowing through a conductor in one second is called as the magnitude of electric current.

$$\text{Electric current} = \frac{\text{Amount of electric charge}}{\text{time}}$$

$$I = \frac{Q}{t}$$

- The SI unit of electric current is ampere (A).

5. What do you mean by luminous intensity?

- The measure of the power of the emitted light by a light source in a particular direction, per unit solid angle is called as luminous intensity.
- The SI unit of luminous intensity is Candela (cd)

6. Define – Mole.

- Mole is defined as the amount of substance, which contains 6.023×10^{23} entities.
- It is denoted as 'mol'.

7. What are the differences between plane angle and solid angle?

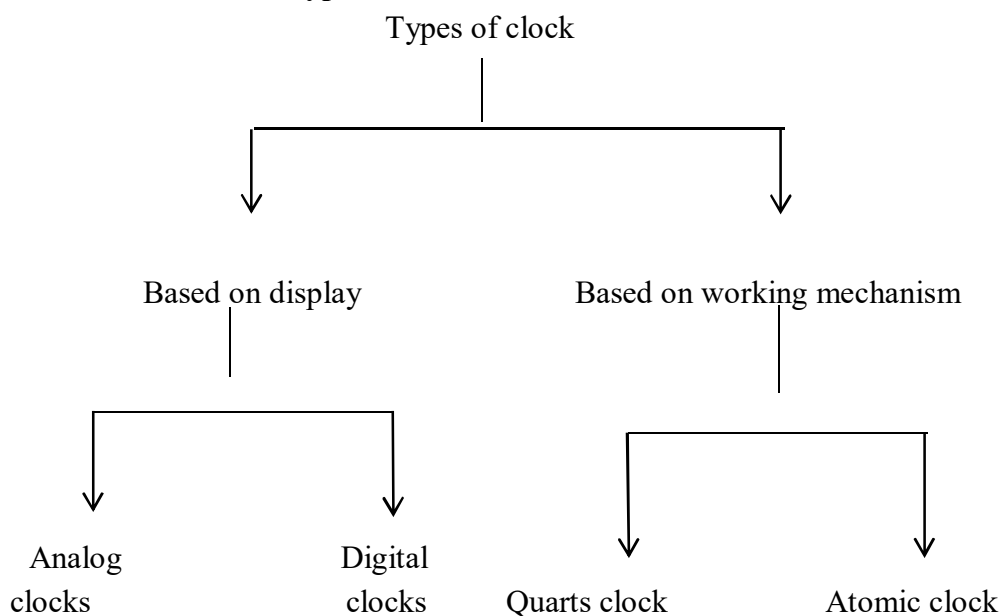
Plane angle	Solid angle
It is the angle made at the point of intersection of two lines or planes.	It is the angle by the intersection of three or more planes at a common point.
It is two dimensional	It is three dimensional
Its unit is radian	Its unit is steradian

VIII. ANSWER IN DETAIL

1. List out the base quantities with their units.

S.No.	Quantity	Unit	Symbol
1.	Length	Metre	m
2.	Mass	Kilogram	Kg
3.	Time	Second	s
4.	Temperature	Kelvin	K
5.	Electric current	Ampere	A
6.	Amount of Substance	Mole	mol
7.	Luminous Intensity	Candela	cd

2. Write a short note on different types of clocks.



1) Analog clocks:



- Analog clocks look like a classic clock.
- It has three hands to show time
 - i) Hours hand – It shows hour
 - ii) Minutes hand – It shows minute
 - iii) Seconds hand – It shows second
- Analog clocks can be driven either mechanically or electronically.

2) Digital clocks:

- A digital clock displays the time directly.
- It shows the time in numerals or other symbols.
- It may have 12 hours or 24 hours display
- Recent clocks are showing date, day, month, year, temperature etc.

3) Quartz clock:

- These clocks are activated by electronic oscillations. Which are controlled by a quartz crystal.



- The frequency of a vibrating crystal is very precise. So it is more accurate than mechanical clock.

4) Atomic clock:

- These clocks make use of periodic vibrations occurring within the atom.
- These clocks have an accuracy of one second in every 10^{13} seconds.
- Atomic clocks are used in Global positioning system (GPS) Global Navigation Satellite System (GLONASS) and International Time distribution services.

IX. HIGHER ORDER THINKING QUESTION

1. Your friend was absent to school yesterday. You are enquiring about his absence. He told that he had fever and it was measured to be 100°C . Is it possible to have 100°C fever? If he is wrong, try to make him understand.

- There is no possible to have 100°C fever
- The average human body temperature is 98.4°F to 98.6°F
- In celcius scale, it is about 37°C
- So, I will try to make him understand by saying that, it is possible to have 100°F fever, but it is not possible to have 100°C .



VIRUDHUNAGAR DISTRICT
Annual Examination - 2024

Time : 2.30 Hours

Marks : 100

I. Choose the best answer :

12x1=12

- 1) S.I. Unit of temperature is _____
a) celsius b) fahrenheit c) Kelvin d) ampere
- 2) If the Image and object distance is same, then the object is placed at
a) infinity b) at F c) between F and P d) at C
- 3) When an abonite rod is rubbed with fur, the charge acquired by the fur is
a) negative b) positive
c) partly positive and partly negative d) None of these
- 4) MRI stands for _____
a) Magnetic Resonance Imaging b) Magnetic Running Image
c) Magnetic Radio Imaging d) Magnetic Radar Imaging
- 5) Symbol of mercury is
a) Ag b) Hg c) Au d) Pb
- 6) Which of the following is known as azote?
a) Oxygen b) Nitrogen c) Sulpher d) Carbon dioxide
- 7) Solubility of carbon dioxide in water is high when the
a) pressure is low b) pressure is high
c) temperature is high d) None of the above
- 8) The unit of calorific value of fuel _____
a) KJ Mol^{-1} b) KJg^{-1} c) KJ kg^{-1} d) JKg^{-1}
- 9) _____ shows both living and nonliving characteristics
a) Protozoa b) virus c) Bacteria d) Fung
- 10) Penicillin is an antibiotic which is extracted from
a) algae b) fungi c) bryophytes d) pterido phytes
- 11) Cockroach moves with the help of its
a) leg b) bone c) muscular foot d) whole body

12) Wildlife protection Act was implemented in _____

- a) 1986 b) 1972 c) 1973 d) 1971

II. Fill in the blanks :

5x1=5

13) A simple barometer was first constructed by _____

14) Dry ice is used as a _____

15) The boiling point of water is _____

16) The largest cell is egg of an _____

17) _____ seeds transfer their unique characteristics.

III. State True or False. If False correct it :

5 x 1 = 5

18) Chandrayaan - 1 was launched sriharikota.

19) Acids are corrosive in nature.

20) The density of water will not change at all temperature?

21) Cardiac muscle is a voluntary muscle.

22) Female anopheles mosquito is a carrier of dengue virus.

IV. Match the following :

5 x 1 = 5

- 23) Edward Jenner - Glucose
24) Rhodophyceae - Neem leaves
25) Carbohydrates - Red algae
26) Bio-repellants - Gujarat
27) Gir National Park - Vaccine

V. Answer any 10 of the following :

10 x 2 = 20

28) What is electric current?

29) Name three types of heat transfer

30) What is an ultrasonic sound?

31) Define magnetic field

32) Write the symbols for the following elements.

- a) Oxygen b) Gold c) Calcium d) Cadmium

33) Write the names of the following compounds

a) CO

b) N₂Oc) NO₂d) PCl₅**34) Define :** Specific heat capacity.**35)** Expand CNG. List out its uses.**36)** Write the four types of bacteria based on their shape**37)** Mention the function of 'Alveoli'?**38)** How is the skeleton of a bird well suited for flying?**39)** Name the methods of sowing?**40)** Name the two endangered animals.**VI. Answer any 8 of the following :****8 x 4 = 32****41)** Give the different types of friction and explain each with an example.**42) i)** State snell's law of refraction**ii)** Define the refractive index of a medium**43)** Explain series and parallel circuit**44)** Mention the uses of the following compounds.

a) Baking soda

b) Bleaching Powder

c) Quick lime

45) Write the chemical formula for the following compounds.

a) Aluminium sulphate

b) Silver nitrate

c) Magnesium Oxide

d) Barium chloride

46) What are the uses of acids & bases?**47)** Write difference between Monocot and dicot plants?**48)** Draw the structure of human eye and label its.**49)** What are the effects of acid rain? How can prevent them?**50)** What are the physical changes that occur in boys and girls during adolescence?

