

NEERAJ®

SCIENCE AND TECHNOLOGY

N-212

**Chapter wise Reference Book
Including Many Solved Sample Papers**

Based on

N.I.O.S. Class – X
National Institute of Open Schooling

*By Co-authors:
Prieti Gupta & Vaishali Gupta*



**NEERAJ
PUBLICATIONS**
(Publishers of Educational Books)

Retail Sales Office:

1507, First Floor, Nai Sarak, Delhi - 6

E-mail: info@neerajbooks.com

Mob.: 8510009872, 8510009878

Website: www.neerajbooks.com

MRP ₹ 300/-

Published by:



NEERAJ PUBLICATIONS

(Publishers of Educational Books)

Retail Sales Office : 1507, 1st Floor, Nai Sarak, Delhi-110 006

E-mail: info@neerajbooks.com | Website: www.neerajbooks.com

© Copyright Reserved with the Publishers only.

Typesetting by: Competent Computers, Printed at: Novelty Printer

Disclaimer/T&C

1. For the best & up-to-date study & results, please prefer the recommended textbooks/study material only.
2. This book is just a Guide Book/Reference Book published by NEERAJ PUBLICATIONS based on the suggested syllabus by a particular Board/University.
3. These books are prepared by the author for the help, guidance and reference of the student to get an idea of how he/she can study easily in a short time duration. Content matter & Sample answers given in this Book may be Seen as the Guide/Reference Material only. Neither the publisher nor the author or seller will be responsible for any damage or loss due to any mistake, error or discrepancy as we do not claim the Accuracy of these Solutions/Answers. Any Omission or Error is highly regretted though every care has been taken while preparing, printing, composing and proofreading of these Books. As all the Composing, Printing, Publishing and Proof Reading, etc., are done by Human only and chances of Human Error could not be denied. Any mistake, error or discrepancy noted may be brought to the publishers notice which shall be taken care of in the next edition and thereafter as a good gesture by our company he/she would be provided the rectified Book free of cost. Please consult your Teacher/Tutor or refer to the prescribed & recommended study material of the university/board/institute/ Govt. of India Publication or notification if you have any doubts or confusions regarding any information, data, concept, results, etc. before you appear in the exam or Prepare your Assignments before submitting to the University/Board/Institute.
4. In case of any dispute whatsoever the maximum anybody can claim against NEERAJ PUBLICATIONS is just for the price of the Book.
5. The number of questions in NEERAJ study materials are indicative of general scope and design of the question paper.
6. Any type of ONLINE Sale/Resale of "NEERAJ BOOKS" published by "NEERAJ PUBLICATIONS" on Websites, Web Portals, Online Shopping Sites, like Amazon, Flipkart, Ebay, Snapdeal, etc., is strictly not permitted without prior written permission from NEERAJ PUBLICATIONS. Any such online sale activity by an Individual, Company, Dealer, Bookseller, Book Trader or Distributor will be termed as ILLEGAL SALE of NEERAJ BOOKS and will invite legal action against the offenders.
7. The User agrees Not to reproduce, duplicate, copy, sell, resell or exploit for any commercial purposes, any portion of these Books without the written permission of the publisher. This book or part thereof cannot be translated or reproduced in any form (except for review or criticism) without the written permission of the publishers.
8. All material prewritten or custom written is intended for the sole purpose of research and exemplary purposes only. We encourage you to use our material as a research and study aid only. Plagiarism is a crime, and we condone such behaviour. Please use our material responsibly.
9. All matters, terms & disputes are subject to Delhi Jurisdiction only.

Get books by Post & Pay Cash on Delivery :

If you want to Buy NEERAJ BOOKS by post then please order your complete requirement at our Website www.neerajbooks.com where you can select your Required NEERAJ BOOKS after seeing the Details of the Course, Subject, Printed Price & the Cover-pages (Title) of NEERAJ BOOKS.

While placing your Order at our Website www.neerajbooks.com You may also avail the "Special Discount Schemes" being offered at our Official website www.neerajbooks.com.

No need to pay in advance as you may pay "Cash on Delivery" (All The Payment including the Price of the Book & the Postal Charges, etc.) are to be Paid to the Delivery Person at the time when You take the Delivery of the Books & they shall Pass the Value of the Goods to us. We usually dispatch the books Nearly within 3-4 days after we receive your order and it takes Nearly 4-5 days in the postal service to reach your Destination (In total it take nearly 8-9 days).

CONTENTS

SCIENCE AND TECHNOLOGY

Based on: **NATIONAL INSTITUTE OF OPEN SCHOOLING - X**

<i>S.No.</i>	<i>Chapters</i>	<i>Page</i>
	Solved Sample Paper - 1	1-4
	Solved Sample Paper - 2	1-5
	Solved Sample Paper - 3	1-4
	Solved Sample Paper - 4	1-5
	Solved Sample Paper - 5	1-4

MODULE-1 MEASUREMENT IN SCIENCE

1. Measurement in Science and Technology..... 1

MODULE-2 MATTER IN OUR SURROUNDINGS

2. Matter in Our Surroundings..... 7
3. Atoms and Molecules 16
4. Chemical Reaction and Equation 23
5. Atomic Structure 35
6. Periodic Classification of Elements 46
7. Chemical Bonding 53
8. Acids, Bases and Salts 58

MODULE-3 MOVING THINGS

9. Motion and its Description 67
10. Force and Motion 84
11. Gravitation 89

<i>S.No.</i>	<i>Chapter</i>	<i>Page</i>
MODULE-4 ENERGY		
12.	Sources of Energy.....	94
13.	Work and Energy.....	98
14.	Thermal Energy.....	107
15.	Light Energy.....	116
16.	Electrical Energy.....	126
17.	Magnetic Effect of Electric Current.....	135
18.	Sound and Communication.....	143
MODULE-5 THE LIVING WORLD		
19.	Classification of Living Organisms.....	150
20.	History of Life on Earth.....	157
21.	Building Blocks of Life–Cell and Tissues.....	161
22.	Life Processes–1 Nutrition, Transportation, Respiration and Excretion.....	166
23.	Control and Coordination.....	174
24.	Reproduction.....	181
25.	Heredity.....	187
MODULE-6 NATURAL RESOURCES		
26.	Air and Water.....	192
27.	Metals and Non-Metals.....	199
28.	Carbon and its Compounds.....	204
MODULE-7 HUMANS AND ENVIRONMENT		
29.	Natural Environment.....	211
30.	Human Impact on Environment.....	219
31.	Food Production and Animal Husbandry.....	223
32.	Health and Hygiene.....	228
■ ■		

**Sample Preview
of the
Solved
Sample Question
Papers**

Published by:



**NEERAJ
PUBLICATIONS**

www.neerajbooks.com

Solved Sample Paper - 1

Based on NIOS (National Institute of Open Schooling)

Science and Technology - X

Time : 3 Hours

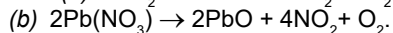
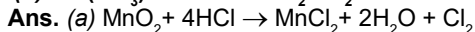
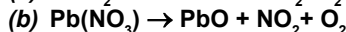
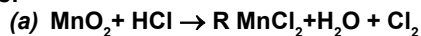
Maximum Marks : 100

- Note :** (i) This Question Paper consists of two Sections, viz., 'A' and 'B'.
(ii) All questions from Section 'A' are to be attempted.
(iii) Section 'B' has two options. Candidates are required to attempt questions from one option only.

SECTION-A

- Q. 1.** The SI unit of luminous intensity is:
(a) Candela (b) Mole
(c) Kelvin (d) Ampere
Ans. (a) Candela.
- Q. 2.** For uniformly accelerated motion:
(a) $v^2 = u^2 + 2as$ (b) $u^2 = v^2 + 2as$
(c) $v = u + 2as$ (d) $u = v + 2as$
Ans. (a) $v^2 = u^2 + 2as$.
- Q. 3.** Longitudinal waves can travel through :
(a) Gas only (b) Liquid only
(c) Solid only (d) All the three
Ans. (d) All the three.
- Q. 4.** Which of the following is not a heterotroph?
(a) Bed bug (b) Frogs
(c) Bread mould (d) Algae
Ans. (d) Algae.
- Q. 5.** Which of the following is a property of non-metals ?
(a) They are electropositive elements
(b) Their hydrides are generally unstable
(c) They form acidic oxides
(d) They are generally hard solids
Ans. (c) They form acidic oxides.
- Q. 6.** A water tanker carries 10 hL water to a colony for distribution. Each person is given:
(a) 10 (b) 100
(c) 1000 (d) 10000
Ans. (b) 100.
- Q. 7.** Which of the following statements comprising Dalton's Atomic Theory is true even today?
(a) Matter consists of indivisible atoms.
(b) All the atoms of a given chemical element are identical in mass and all other properties.
(c) Atoms are indestructible.
(d) Atoms retain their identity in chemical reactions.
Ans. (d) Atoms retain their identity in chemical reactions.
- Q. 8.** Which of the following statements about U is not true?
238
92
(a) The number of electrons in an atom of U is 92.
(b) The number of neutrons in an atom of U is 238.
(c) The mass number of U is 238.
(d) The number of protons in an atom of U is 92.
Ans. (b) The number of neutrons in an atom of U is 238.
- Q. 9.** Molecular mass (in u) of a member of a particular homologous series is 56. Which of the following cannot be the molecular mass of a member of this series?
(a) 28 (b) 42
(c) 114 (d) 140
Ans. (c) 114.
- Q. 10.** Give the name and symbol of prefix used in SI units for the following multiple/submultiple.
(a) 10^{-2}
(b) 10^2
Ans. (a) Name : Centi, Symbol : C.
(b) Name : hecto, Symbol : h.
- Q. 11.** Name the device or gadget which converts:
(a) Sound energy into electrical energy
(b) Electrical energy into heat energy
(c) Light energy into electrical energy
(d) Chemical energy into electrical energy
Ans. (a) a microphone, (b) toaster (c) Solar cell
(d) Battery.
- Q. 12.** Define specific heat capacity. Give its SI unit.
Ans. The specific heat capacity of a material is defined as the amount of heat (in Joule) required to raise the temperature of 1kg mass of that material through 1 K. The SI Unit of specific heat capacity (or simply specific heat) is $J\ kg^{-1}\ K^{-1}$.

Q. 13. Balance the following chemical equations:



Q. 14. Mass of an object is constant at all places but its weight varies from place to place. Explain.

Ans. Mass of an object is constant whereas the weight of an object changes from place to place because weight depends on the gravity (weight = mass × gravity). If you are in gravity then weight will differ as compared to earth. Whereas mass is constant because mass is quantity of matter present in an object and it does not change with gravity.

Q. 15. Identify the kingdom to which each of the following belongs.

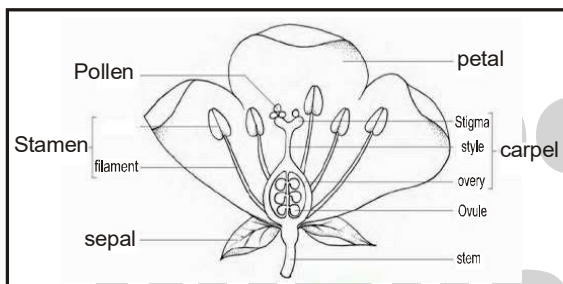
(a) Amoeba (b) Yeast (c) Bacteria (d) Ferns

Ans. (a) Protista, (b) Fungi, (c) Monera, (d) Plantae.

Q. 16. Draw a diagram of a flower and label:

(a) Stigma, and (b) Stamen in it

Ans.



Q. 17. Identify the component of air without which life is not possible. Write its any two industrial uses and one harmful effect.

Ans. This is no life possible without oxygen, a important component of air:

Industrial Uses of Oxygen:

- (i) In steel industry during forging process, oxygen is used. It removes undesirable compounds in steel.
- (ii) It is also used in welding allowing metal to melt and weld the required substance.

Q. 18. What is agricultural biotechnology? Explain: (a) Tissue or cellular culture, and (b) Genetic engineering. Write one use of each.

Ans. When plant cells, tissues (collection of cells) and plant parts are used to drive useful products by mixing them with nutrients in test tubes or beakers, it is termed Biotechnology.

(a) **Tissue or Cellular Culture:** Tissue culture involves separating of plant cells and tissues and culturing them in nutrient media in test tubes or beakers. Plants grown in this manner are then transplanted in the fields.

Uses: Through this process better quality plants can be grown in a short period of time.

(b) **Genetic Engineering:** This includes the transfer of a specific gene or DNA from a plant into the cells of another plant. In this process, gene/DNA is transferred from one plant to another through the use of re-

combinant DNA technology. DNA of one plant is entered into the genetic material of the other plant. Such plants are called transgenic plants.

Uses: This technique is used to produce better quality plants.

Q. 19. How does modern periodic law differ from Mendeleev periodic law? Explain any two defects of Mendeleev periodic table which were overcome in the modern periodic table.

Ans. Ref.: See Chapter-6, Page No. 51, Q. No. 1, Q. No. 3, Page No. 50, Q. No. 6 and Page No. 50-51, Q. No. 10.

Q. 20. Write any two point of difference in the properties of ionic and covalent compounds. Write two examples of each.

Ans. Ref.: See Chapter-7, Page No. 55, Q. No. 1 and 2 (Terminal Questions).

Also Add: Examples of ionic compound: NaCl, $MgCl_2$

Examples of conale compound $N_2, O_2,$

Harmful effect of Oxygen:

If concentration of oxygen in air is increased proceses like metabolism, combustion and speedual up creating the harmful effect.

Q. 21. What is meant by the term momentum? Give its SI unit. Is it a scalar or a vector quantity.

A force of 68 N acts on a body and produces an acceleration of 1.7 ms^{-2} . Find the mass of the body.

Ans. Momentum is the quantity of motion of a moving body.

$$\text{Momentum} = \text{Mass} \times \text{Velocity}$$

The SI unit of momentum is kg m/sec.

Momentum is vector quantity.

Give $F = 68 \text{ N}$

$a = 1.7 \text{ m/s}^2$

mass = ?

$$F = ma \Rightarrow m = \frac{F}{a}$$

$$\therefore m = \frac{68}{1.7} = 40 \text{ kg}$$

Ans. Mass = 40 kg.

Q. 22. Name the functional group which is present in carboxylic acids. Write its chemical formula. What is the formula and IUPAC name of the carboxylic acid present in vinegar? How is it obtained? Write the reaction involved.

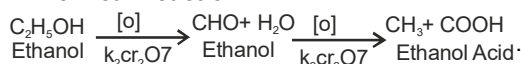
Ans. In carboxylic acid carboxyl group is presents its chemical formula is - COOH.

The vinegar is CH_3COOH .

The IVPAC name is Ethanoic Acid.

Ethanal on oxidation firts yields ethanal which on further oxidation produces ethanoic acid.

Chemical Reaction:



Q. 23. What is eutrophication? Give sequence of events that results in the death of aquatic animals?

Ans. The process by which a body of water becomes enriched in dissolved nutrients (such as phosphates) that stimulate the growth of aquatic plant life

Sample Preview of The Chapter

Published by:



**NEERAJ
PUBLICATIONS**

www.neerajbooks.com

SCIENCE AND TECHNOLOGY

Based on NATIONAL INSTITUTE OF OPEN SCHOOLING – X

MODULE-1

Measurement in Science

Measurement in Science and Technology



SUMMARY

Measurement is defined as the counting of the number of times for which a chosen scale is used. It is the process or the result of determining the ratio of a physical quantity, such as a length, time, temperature etc., to a unit of measurement, such as the meter, second or degree celsius. Since accurate measurement is essential in many fields, and since all measurements are necessarily approximations, a great deal of effort must be taken to make measurements as accurate as possible. A unit is a measure, device or a scale in terms of which we make physical measurement. The value of a physical quantity consists of two parts; a numerical quantity and a unit and is equal to their product.

Value of physical quantity = numerical quantity \times unit

A unit must be relevant, convenient and well-defined. The parts of human body were used for measurement in the ancient times, which led to conflicts and confusions because of non-uniformity, thus the standard units were developed, which were acceptable to everybody. Since early times the adoption of standard weights and measures has reflected in the ancient Indian measurement system. During the Chandragupta Maurya period in India, there was a well-defined system of weights and measures. For example, one Yojan is roughly equal to 10 kilometres. During the period of

Moghul Emperor Akbar, the gaz was used as the unit of measuring length. In British period also, the inch, foot, and yard were introduced to measure length whereas grain, ounce, pounds, etc. were used to measure mass till the time of Independence in 1947. Currently, an international system of units, called SI units is followed. This system is based on seven base units which correspond to seven base physical quantities namely length, mass, time, temperature, amount of substances, light intensity and electric current, whose SI units are metre, kilogram, second, kelvin, mole, candela and ampere respectively. The SI units for all other physical quantities such as force, area, density, velocity can be derived in terms of the base SI units and are called derived units. For example:

Volume of cuboid = length \times breadth \times height

Since breadth and height are also measured in metre, thus, SI unit of volume will become:

Unit of Volume = metre \times metre \times metre = (metre)³ = m³

The physical quantities are provided special names respectively because of their complex expression. For example, the derived SI units of force is m.kg.s⁻², hence the unit is assigned special name such as Newton. SI prefixes are used in cases where the quantity being measured is too large or too small as compared to the base unit of the physical quantity. For example,

2 / NEERAJ : SCIENCE AND TECHNOLOGY (N.I.O.S-X)

Radius of Sun = 6.96×10^8 m = 696×10^6 m = 696 mm (696 mega metre). There are certain rules to be followed for representing the SI units correctly acceptable in the worldwide.

INTEXT QUESTIONS – 1.1

Q. 1. Define the term measurement by giving two examples.

Ans. Measurement is a kind of a counting of the number of times a chosen scale is used. For example, the length of a piece of string can be measured by using a metre scale. The weight of human beings can be measured using the weighing machines.

Q. 2. What is a unit?

Ans. A unit of measurement is a definite magnitude of a physical quantity, defined and adopted by law, that is used as a standard for measurement of the same physical quantity.

Q. 3. List the essential characteristics of a unit.

Ans. The essential characteristics of a unit are as follows:

1. The unit must be relevant for the quantity being measured.
2. The unit must be convenient so that well understood by other people.
3. A unit should also be well-defined.

INTEXT QUESTIONS – 1.2

Q. 1. Name the smallest unit of length during the Chandragupta Maurya period.

Ans. Parmanu.

Q. 2. List the parts of human body which can be used for measurements.

Ans. Arm, angul, cubit etc.

Q. 3. Why cannot the parts of human body be used for accurate measurement?

Ans. Because the parts of human body may vary from person to person and we cannot trust on our senses to measure exactly and accurately.

Q. 4. In which period was 'gaz' introduced as a unit to measure length?

Ans. During the period of Mughul Emperor Akbar, the gaz was used as the unit of measuring length.

INTEXT QUESTIONS – 1.3

Q. 1. Differentiate between base units and derived units.

Ans. (a) Fundamental units are only seven in number, whereas derived units are very large in number.

(b) Fundamental units are independent of each other, but derived units are obtained from fundamental units.

Q. 2. What is the difference between mass and amount of a substance?

Ans. Mass of a body is the amount of matter contained in a body, while the amount of substances is equal to its molecular mass.

Q. 3. Derive the unit of Pressure. (Pressure = Force/Area)

Ans. (i) Unit of force = unit of mass \times unit of acceleration
 $= \text{kg ms}^{-2}$

(ii) Unit of pressure = $\frac{\text{unit of force}}{\text{unit of area}}$
 $= \frac{\text{kg ms}^{-2}}{\text{m}^2}$
 $= \text{kgm}^{-1} \text{s}^{-2}$.

Q. 4. Which term of measurement is commonly used by the announcer of your favourite radio programme?

Ans. Hertz (Hz).

Q. 5. Observe a bulb/tube light at your home for the unit measurement written on it. From Table 1.3 find out the physical quantity it measure?

Ans. We measure the power of light by Watt.

Q. 6. Veena, Mohindar and Alam went to market. Veena brought milk with a litre measure, Mohindar brought ribbon by a measuring mark on the table and Alam brought vegetables using stones. Which of them did not use the appropriate measurement while purchasing goods? Explain while given the names of right measurement.

Ans. Mohindar and Alam did not use the appropriate measurement. For measuring ribbon, a meter-scale should be used and the vegetables must be weigh in kilograms using the weighing balance.

INTEXT QUESTIONS – 1.4

Q. 1. Rewrite the following measurements of length using suitable SI prefixes.

- (i) Effective radius of a proton; $1.2 \times 10^{-15} \text{m}$
- (ii) Radius of human red blood cell; $3.7 \times 10^{-6} \text{m}$
- (iii) Radius of our galaxy; $6 \times 10^{19} \text{m}$

Sol. (i) $1.2 \times 10^{-15} \text{m} = 1.2 \text{ femtometer} = 1.2 \text{ fm}$.
 (ii) $3.7 \times 10^{-6} \text{m} = 3.7 \text{ micrometer} = 3.7 \mu\text{m}$.
 (iii) $6 \times 10^{19} \text{m} = 60 \times 10^{18} \text{m} = 60 \text{ exa-meter} = 60 \text{ Em}$.

ACTIVITY – 1.1

Can you check the accuracy of the measurements using parts of your body as a unit? In your Personal Contact Programme (PCP) you can perform this. Take a black board (or a table, a desk, a wall or any other suitable reasonably long object) with group of 4-5 learners.

S. No.	Name of the learner	Length of the black board in Hand span and digits e.g. 10 Hand spans and 3 digits
1.		
2.		
3.		
4.		
5.		

Q. 1. Can you check the accuracy of the measurements using parts of your body as a unit?

Ans. No.

Q. 2. Find measure length of atleast four things using your hand span

Ans.

S. No.	Name of the Object	Length of the objects in Hand span
1.	Table	4½ span
2.	Book	1½ span
3.	Cupboard	6 span
4.	Calender (Breadth)	2 span

ACTIVITY – 1.2

Take a thermometer at your home. Observe the measuring marks on a thermometer.

(i) Write down the two types of measuring marks indicating on the thermometer.

Ans. °C (degree celsius) and F (Fahrenheit).

(ii) Measure your temperature and record it in °C (degree celsius) and F (Fahrenheit)

Ans. 37 °C and 98.6 °F.

TERMINAL QUESTIONS

Q. 1. Which of the following is not an SI unit?

- (a) Metre (b) Pound
(c) Kilogram (d) Second

Ans. (b) Pound

Q. 2. If the mass of a solution in 10 µg it is the same as:

- (a) 10⁻⁶ g (b) 10⁻¹² g
(c) 10⁻⁹ g (d) 10⁻³ g

Ans. (c) 10⁻⁹ g.

Q. 3. Indicate whether the following statements are True or False. Write T for True and F for False.

- (i) SI units are arbitrary
(ii) 1 mm² = 10⁻³ m²
(iii) 10⁻¹⁵ g = 1 mpg
(iv) SI unit for pressure is Pascal

Ans. (i) False, (ii) True, (iii) True, (iv) True.

Q. 4. Represent the following measurements by using suitable SI prefixes:

- (i) 2 × 10⁻⁸ s
(ii) 1.54 × 10⁻¹⁰ m
(iii) 1.98 × 10⁻⁶ mol
(iv) 200 000 kg.

Sol. (i) 2 × 10⁻⁸ s = 0.2 × 10⁻⁹ s = 0.2 nm
(ii) 1.54 × 10⁻¹⁰ m = 15.4 × 10⁻⁹ m = 15.4 nm
(iii) 1.98 × 10⁻⁶ mol = 1.98 µmol
(iv) 200 000 kg = 0.2 × 10⁶ kg = 0.2 Mkg.

Q. 5. Give the SI units used while buying:

- A. Silk ribbon
B. Milk
C. Potatoes

Ans. A. Meter (m), B. Litre (L), C. Kilogram (kg).

Q. 6. Give the common unit to measure our body temperature and write its SI unit.

Ans. Commonly, body temperature is expressed in Fahrenheit, while the SI unit of temperature is Kelvin.

Q. 7. What are the advantages of SI units?

Ans. The greatest advantage of SI is that it has only one unit for each quantity (type of measurement). This means that it is never necessary to convert from one unit to another (within the system). The base SI units are independent of each other. The SI units for all other physical quantities such as area, density, velocity can be derived in terms of the base SI units. For example, the one and only SI unit of length is the meter (m). The SI units are commonly accepted by all and lead no confusion during calculations.

ADDITIONAL IMPORTANT QUESTIONS

OBJECTIVE TYPE QUESTIONS

Q. 1. Which of the following is not an SI unit?

- (a) Metre (b) Pound
(c) Kilogram (d) Second

Ans. (b) Pound.

Q. 2. If the mass of a solution is 10 µg, it is the same as:

- (a) 10⁻⁶ g (b) 10⁻¹² g
(c) 10⁻⁹ g (d) 10⁻³ g

Ans. (a) 10⁻⁶ g.

4 / NEERAJ : SCIENCE AND TECHNOLOGY (N.I.O.S-X)

Q. 3. A line segment was measured using a scale. One end of the line segment coincided with the 1.3 cm mark on the scale. The other end coincided with 7.2 cm mark. The length of the line segment is:

- (a) 1.3 cm (b) 7.2 cm
(c) 8.5 cm (d) 5.9 cm

Ans. (d) 5.9 cm.

Q. 4. Rajesh travelled from city A to city B by car. The average speed of the car was 70 km/h. It took 4 h 30 min to cover the distance. The distance between the two cities is:

- (a) 315 km (b) 280 km
(c) 2100 km (d) 17.5 km

Ans. (a) 315 km.

Q. 5. A metre scale is graduated in:

- (a) km and m (b) m and mm
(c) cm and mm (d) m and cm

Ans. (c) cm and mm.

Q. 6. Which of the following is not a fundamental unit?

- (a) Candela (b) Metre
(c) Newton (d) Ampere

Ans. (c) Newton.

Q. 7. Time is measured in:

- (a) Seconds (b) Hours
(c) Minutes (d) All of the above

Ans. (d) All of the above.

Q. 8. To measure the length roughly, we may use:

- (a) Hand-span (b) Foot-step
(c) Cubit (d) All of the above

Ans. (d) All of the above.

Q. 9. Which of the following is a fundamental unit ?

- (a) Newton (b) Second
(c) Pascal (d) Metre/Second

Ans. (b) Second.

Q. 10. Fill in the blanks:

- The standard unit of volume is _____.
- Any quantity which can be measured is called a _____.
- In the process of measurement the accepted reference standard which is used for comparison of a given quantity is called a _____.
- The S.I. unit of temperature is _____.
- The S.I. unit of length is _____.
- _____ is a basically a process of comparison and involves two things, a number and a unit.
- Area is measured in _____.

Ans. 1. litre 2. Physical quantity 3. Unit 4. ampere
5. metre 6. Measurement 7. square metre.

Q. 11. True/False-type Questions:

- A correct weight is made of metal.
- A quartz clock is much more accurate than a pendulum clock.
- The units of the fundamental or basic quantities that are independent of each other are called fundamental units.
- The S.I. unit of mass is Kelvin.
- The S.I. unit of electric current is Candela.
- The S.I. unit of amount is mole.
- The unit of area is metre³.
- The units, which are obtained by the combination of fundamental units are known as derived units.

Ans. 1. True 2. True 3. True 4. False 5. False
6. True 7. False 8. True.

VERY SHORT QUESTIONS AND ANSWERS

Q. 1. Define unit.

Ans. In the process of measurement the accepted reference standard which is used for comparison of a given quantity is called a unit.

Q. 2. Define fundamental units.

Ans. The units of the fundamental or basic quantities that are independent of each-other are called fundamental units.

Q. 3. Name the S.I. unit of length.

Ans. Metre.

Q. 4. What is the basis to measure time?

Ans. The repetition of events is a basis to measure time.

Q. 5. In which principle does a clock work?

Ans. A clock works on the principle of pendulum.

Q. 6. What are the fitted points on celsius scale?

Ans. 0 °C and 100 °C.

Q. 7. How can the measurement be specified accurately?

Ans. The measurement can be specified accurately if it is mentioned with uncertainty.

Q. 8. How was the time measured in ancient times?

Ans. The approximate time of the day was measured by the length of the shadows of trees or other objects in ancient times.

Q. 9. How was the metre defined?

Ans. One metre was defined as 1/10 millionth part of a quadrant of earth's meridian.

Q. 10. Which of the base units has not changed since the signing of the International Treaty of Metre?

Ans. Mass.