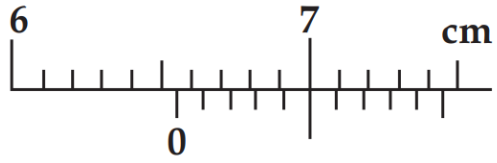
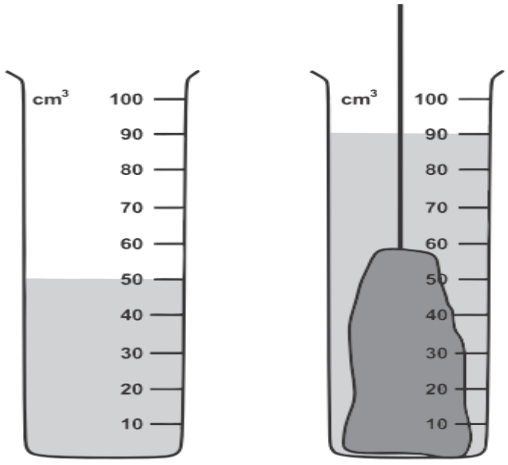
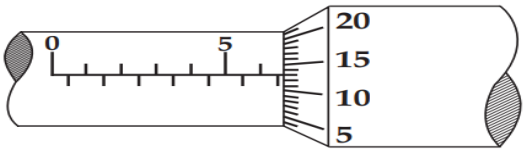
MODERN SCIENCE ACADEMY
CHATHA BAKHTAWAR, ISLAMABAD

1. "PHYSICAL QUANTITIES AND MEASUREMENT"

Sr.	Statements	A	B	C	D
1	The number of base units in SI are:	3	6	7	9
2	Which one of the following is not a derived unit?	pascal	kilogram	newton	watt
3	Amount of substance in terms of numbers is measured in:	gram	kilogram	newton	mole
4	An interval of 200 μs is equivalent to:	0.2 s	0.02 s	2×10^{-4} s	2×10^{-6} s
5	Which one of the following is the smallest quantity?	0.01 g	2 mg	100 μg	5000 ng
6	Which instrument is most suitable to measure the diameter of a test tube?	metre rule	vernier caliper	measuring tape	screw gauge
7	A student claimed the diameter of a wire as 1.032cm using vernier caliper. Upto what extent you agree with it?	1 cm	1.0 cm	1.03 cm	1.032 cm
8	A measuring cylinder is used to measure:	mass	area	volume	level of liquid
9	A student noted the thickness of a glass sheet using a screw gauge. On the main scale, it reads 3 divisions while the 8^{th} division on the circular scale coincides with index line. Its thickness is:	3.8 cm	3.08 cm	3.8 mm	3.08 mm
10	Which of the following is a base unit?	pascal	coulomb	m/s	mole
11	Ratio of millimeter to micrometer is:	1000 meter	0.01 meter	1000	0.001
12	Which of following prefix represent a largest value?	mega	pico	peta	kilo
13	Which of the following quantity can be measured using a micrometer?	current	force	length	mass
14	Least count of a screw gauge is 0.01 mm. If main scale reading of screw gauge is zero and third line of its circular scale coincides with datum line then the measurement on the screw gauge is:	0 mm	3 mm	0.03 mm	0.3 mm
15	9.483×10^{3} m is the standard form of:	94.83 m	9.483 m	948.3 m	9483 m
16	How many significant figures are in 0.00350 s?	2	3	5	6
17	Which of the following numbers show one significant digit?	1.1	6.0	7.1	6×10^{2}
18	Which of the following show 4 significant digits?	900.8	4	5174.00	0.001248
19	0.2 mm in units of meters is:	0.002 m	2×10^{-3} m	0.02 m	0.0002 m
20	How many millimeters are there in 10cm?	100 mm	200 mm	50 mm	10 mm
21	Which of the following is the smallest prefix?	nano	pico	atto	femto
22	A light year is the distance travelled by light in one year. It travels about 9.460×10^{15} m. How many significant numbers are there in this number?	6	2	3	4
23	Volume of 1 litre is equal to:	1 cm^3	10 cm^3	100 cm	1000 cm^3
24	One litre is equal to _____ millilitres.	10^2	10^3	10^4	10^5
25	One giga-gram is equal to:	10^3 g	10^{-6} g	10^{-9} g	10^9 g
26	0.00002 g is equivalent to how many micrograms?	2.0 g	0.20 g	20 μg	200 μg
27	Least count of vernier caliper is:	0.1 cm	0.01 mm	0.05 mm	0.00001 cm
28	Least count of metre rod is:	1 mm	0.1 mm	0.01 mm	0.001 mm
29	Least count of digital vernier calliper is:	0.01 m	0.01 mm	0.1 mm	0.001 mm
30	Least count of the screw gauge is:	1 mm	0.1 mm	0.01 mm	0.001 mm
31	0.027 have significant figures:	2	1	3	4

32	The figure shows part of a Vernier scale, what is the reading on the Vernier scale:- 	6.50 cm	6.55 cm	7.00 cm	7.45 cm
33	Ten identical steel balls each of mass 27g are immersed in a measuring cylinder having 20 cm^3 of water. The reading of water level rises to 50 cm^3. What is the density of the steel?	0.90 gm/cm^3	8.1 gm/cm^3	9.0 gm/cm^3	13.5 gm/cm^3
34	An object of mass 100g is immersed in water as shown in the figure, what is the density of the material from which object is made? 	0.4 gm/cm^3	0.9 gm/cm^3	1.1 gm/cm^3	2.5 gm/cm^3
35	What is the reading of micrometer in figure? 	7.43 mm	6.63 mm	7.30 mm	8.13 mm
36	A chips wrapper is 4.5 cm long and 5.9 cm wide. Its area upto significant figures will be:	30 cm^2	28 cm^2	26.55 cm^2	32 cm^2
37	If zero line of Vernier scale coincides with zero of main scale, then zero error is:	positive	zero	negative	one
38	zero error of the instrument is:	systematic error	human error	random error	classified error

"Important Short Questions"

1) What is the difference between base quantities and derived quantities? Give three examples in each case.
2) Estimate your age in seconds if you are fourteen years old.
3) What is meant by vernier constant?
4) What are prefixes? What is their use in measurements?
5) What is scientific notation? Give at least five examples.
6) What do you understand by the zero error of a measuring instrument?
7) What is a stopwatch? What is the least count of a mechanical stopwatch you have used in the laboratories?
8) What is meant by significant figures of a measurement?
9) Your hair grow at the rate of 1 mm per day. Find their growth nm s^{-1}.

10) “Physics have made our lives comfortable.” Justify this statement.
11) What base quantities are involved in these derived physical quantities: force, pressure, power and charge.
12) Show that prefix micro is thousand times greater than prefix nano.
13) Screw gauge can give more precise length than vernier calipers. Briefly explain why?
14) Differentiate between mechanical stop watch and digital stop watch.
15) How measuring cylinder is used to measure volume of an irregular shaped stone?
16) What precaution should be kept in mind while taking measurement using measuring cylinder?
17) Why do we need to consider significant digits in measurements?
18) Physics and Biology are considered different branches of science, how physics links with biology?
19) Why area is derived quantity?
20) Name any four derived units and write them as their base units.
21) Why in physics we need to write in scientific notation?
22) Find the number of significant figures in 0.00580 km. Also express it in scientific notation.
23) Write any three rules to find significant figures in a measurement.

Note: Usually theoretical long question is not given from this chapter but numericals of this chapter are important.