



N. K. PUBLIC SCHOOL

ARYA NAGAR, MURLIPURA, JAIPUR

SUMMER HOLIDAY HOME WORK : 2023-24

CLASS : XI-SCIENCE

Hindi -

- निबन्ध लेखन:- निम्नलिखित निबन्धों में से कोई चार करें—
 - (i) समाचार पत्रों का महत्त्व
 - (ii) वरिष्ठ नागरिकों की समस्याएँ
 - (iii) खुला शौच-मुक्त गाँव
 - (iv) डिजिटल इंडिया
 - (v) लोकतंत्र में मीडिया का उत्तरदायित्व

English-

- Make a file of the life span, struggle and achievements of Indian poetess. (Kamla Das)

Chemistry-

- Atomic structure – Dalton theory, Rutherford Model, definition-Isotope, Isobar, unit conversions.

Mathematics-

- Basic fundamental Identities of trigonometric
- All algebraic identities
- All operations of set theory.

Biology-

- Biology practical project work. (Ranthambore National Park)
- NCERT Questions Chapter No. 15 and 16 (Respiration and blood circulatory system)
- Any one Biology working Model-
 - ❖ Blood Circulatory System
 - ❖ Respiratory System
 - ❖ Excretory System
 - ❖ Any other biology working model

Physics-

- Chapter-1 'Units and Dimensions' : The following notes to be written in Class Work Note book and learn the table also.

UNITS AND DIMENSIONS

PHYSICAL QUANTITIES: Those quantities which can be measured and can be expressed in number along with units, are called physical quantities. Types : (i) Fundamental (ii) Derived (iii) Supplementary.

FUNDAMENTAL QUANTITIES: Those which do not depend on other quantities (do not have formula). These are seven:

FUNDAMENTAL PHYSICAL QUANTITIES					
S. NO	NAME	letter used for dimensional formula	UNITS		
			S.I./M.K.S.	C.G.S.	F.P.S.
1	Mass	M	Kilo-gram (kg)	Gram (g)	Pound (lb)
2	Length	L	Meter (m)	cm	Foot (f)
3	Time	T	Second (s)	s	s
4	Temperature	K	Kelvin (K)		
5	Electric current	A	Ampere (A)		
6	Luminous intensity of light	Cd	Candela (Cd)		
7	Quantity of matter	mol	mole		

Numeric prefix			
pico (p)	10^{-12}	deca (da)	10^{+1}
nano (n)	10^{-9}	hect (h)	10^{+2}
micro (μ)	10^{-6}	kilo (k)	10^{+3}
mili (m)	10^{-3}	mega (M)	10^{+6}
centi (c)	10^{-2}	giga (G)	10^{+9}
deci (d)	10^{-1}	tera (T)	10^{+12}

Derived quantities : Those which depend on other quantities (these have formula). These are many:

DIMENSIONAL FORMULAE & UNITS OF DERIVED PHYSICAL QUANTITIES						
S.N o.	PHYSICAL QUANTITY	FORMULA/RELATION	DIMENSION	UNIT		
				S.I. / M.K.S.	C.G.S.	CONVERSION
1	area	$A = \text{length} \times \text{breadth}$	$L \times L = [M^0 L^2 T^0]$	m^2	cm^2	$1m^2 = 10^4 cm^2$
2	volume	$V = \text{length} \times \text{breadth} \times \text{height}$	$L \times L \times L = [M^0 L^3 T^0]$	m^3	cm^3	$1m^3 = 10^6 cm^3$
3	mass density	$d \text{ or } \rho = \frac{\text{mass}}{\text{volume}}$	$\frac{M}{L^3} = [M^1 L^{-3} T^0]$	$\frac{kg}{m^3}$	$\frac{g}{cm^3}$	$10^3 \frac{kg}{m^3} = 1 \frac{g}{cm^3}$
4	frequency	$f \text{ or } \nu \text{ or } N = \frac{1}{\text{time period}(T)}$	$\frac{1}{T} = [M^0 L^0 T^{-1}]$	s^{-1} or Hz	s^{-1} or Hz	
5	Speed / velocity	$v = \frac{\text{distance or displacement}}{\text{time}}$	$\frac{L}{T} = [M^0 L^1 T^{-1}]$	m/s	cm/s	$1m/s = 100 cm/s$
6	acceleration	$a = \frac{\text{change in velocity}}{\text{time}} = \frac{\Delta v}{\Delta t}$	$\frac{LT^{-1}}{T} = [M^0 L^1 T^{-2}]$	m/s^2	cm/s^2	$1m/s^2 = 100 cm/s^2$

UNITS AND DIMENSIONS

S.N o.	PHYSICAL QUANTITY	FORMULA/RELATION	DIMENSION	UNIT		
				S.I. / M.K.S.	C.G.S.	CONVERSION
7	momentum	$p = \text{mass} \times \text{velocity} = mv$	$M.L.T^{-1} = [M^1 L^1 T^{-1}]$	Kg.m/s	g.cm/s	$1 \text{ Kg.m/s} = 10^5 \text{ g.cm/s}$
8	force	$F = \text{mass} \times \text{acceleration} = ma$	$[M^1 L^1 T^{-2}]$	$\text{kg} \cdot \frac{\text{m}}{\text{s}^2} = \text{N}$ (newton)	$\text{g} \cdot \frac{\text{cm}}{\text{s}^2} = \text{dyne}$	$1 \text{ N} = 10^5 \text{ dyne}$
9	impulse	$I = \text{force} \times \text{time} = F \cdot \Delta t$	$M^1 L^1 T^{-2} \cdot T$ $= [M^1 L^1 T^{-1}]$	N.s	dyne.s	$1 \text{ N.s} = 10^5 \text{ dyne.s}$
10	Work /energy	$W = \text{force} \times \text{displacement} = F \cdot \Delta x$	$M^1 L^1 T^{-2} \cdot L$ $= [M^1 L^2 T^{-2}]$	N.m = J (Joule)	dyne.cm =erg	$1 \text{ J} = 10^7 \text{ erg}$
11	power	$P = \frac{\text{work or energy}}{\text{time}}$	$\frac{M^1 L^2 T^{-2}}{T}$ $= [M^1 L^2 T^{-3}]$	J/s=Watt (W)	erg/s	$1 \text{ W} = 10^7 \text{ erg/s}$
12	pressure(p) /stress	$P = \frac{\text{force}}{\text{area}} = \frac{F}{A}$	$\frac{M^1 L^1 T^{-2}}{L^2}$ $= [M^1 L^{-1} T^{-2}]$	N/m ² =Pa (Pascal)	$\frac{\text{dyne}}{\text{cm}^2}$	$1 \text{ Pa} = \frac{\text{Dyne}}{\text{cm}^2}$
13	moment of inertia	$I = \text{mass} \times (\text{dist})^2 = m \cdot r^2$	$[M^1 L^2 T^0]$	Kg.m ²	g.cm ²	$1 \text{ Kg.m}^2 = 10^7 \text{ g.cm}^2$
14	strain	$= \frac{\text{change in length or volume}}{\text{original length or volume}}$	$\frac{L}{L} = [M^0 L^0 T^0]$ (dimensionless)	Unitless		
15	modulus of elasticity (E, Y, B)	$= \frac{\text{stress}}{\text{strain}}$	$[M^1 L^{-1} T^{-2}]$	N/m ² =Pa (Pascal)	$\frac{\text{dyne}}{\text{cm}^2}$	$1 \text{ Pa} = \frac{\text{Dyne}}{\text{cm}^2}$
16	trigometric ratio (sin, cos, tan)		$[M^0 L^0 T^0]$	Unitless		
17	universal constant of gravitation(G)	$F = G \frac{m_1 m_2}{r^2}$	$G = \frac{F \cdot r^2}{m_1 m_2} = \frac{M^1 L^1 T^{-2} \cdot L^2}{M \cdot M}$ $= [M^{-1} L^3 T^{-2}]$	N.m ² /kg ²	dyne.cm ² /g ²	$6.67 \times 10^{-11} \text{ N.m}^2/\text{kg}^2$ $= 6.67 \times 10^{-8} \text{ dyne.cm}^2/\text{g}^2$
18	gravitational potential(V)	$V = \frac{\text{work}}{\text{mass}}$	$\frac{M^1 L^2 T^{-2}}{M}$ $= [M^0 L^2 T^{-2}]$	J/kg	erg/g	$1 \text{ J/kg} = 10^4 \text{ erg/g}$
19	Angle /angular displacement	$\theta = \frac{\text{arc}}{\text{radius}}$	$\frac{L}{L} = [M^0 L^0 T^0]$	radian	radian	
20	angular velocity	$\omega = \frac{\text{angular displacement}}{\text{time}}$	$\frac{1}{T} = [M^0 L^0 T^{-1}]$	radian/s	radian/s	

UNITS AND DIMENSIONS

S.N o.	PHYSICAL QUANTITY	FORMULA/RELATION	DIMENSION	UNIT		
				S.I. / M.K.S.	C.G.S.	CONVERSION
21	angular acceleration	$\alpha = \frac{\text{angular velocity}}{\text{time}}$	$\frac{M^0 L^0 T^{-1}}{T}$ $= [M^0 L^0 T^{-2}]$	radian/s ²	radian/s ²	
22	angular momentum	$L = r \times p = m v r$	$[M^1 L^2 T^{-1}]$	kg m ² s ⁻¹	g cm ² s ⁻¹	1 kg m ² s ⁻¹ = 10 ⁷ g cm ² s ⁻¹
23	torque	$\tau = \text{Force} \times \text{distance}$	$[M^1 L^2 T^{-2}]$	N.m	dyne.cm	
24	coefficient of viscosity(η)	$F = \eta A \frac{\Delta v}{\Delta x}$; F =force of viscosity, A =area, v =speed, x =distance	$\eta = \frac{F \cdot \Delta x}{A \cdot \Delta v}$ $= \frac{M^1 L^1 T^{-2} \cdot L^1}{L^2 \cdot L^1 T^{-1}}$ $= [M^1 L^{-1} T^{-1}]$	Pa.s	$\frac{\text{dyne}}{\text{cm}^2} \cdot \text{s}$ =poise	1 Pa.s=10 poise
25	Surface tension	$T = \frac{\text{force}}{\text{length}}$	$[M^1 L^0 T^{-2}]$	N/m	dyne/cm	1 N/m = 10 ³ dyne/cm
26	Force constant of spring(k)	$F=kx$; F =spring force, x =change in length of spring	$[M^1 L^0 T^{-2}]$	N/m	dyne/cm	1 N/m = 10 ³ dyne/cm
27	Specific heat capacity(C)	$Q=m \cdot C \cdot \Delta T$; Q =heat, m =mass, ΔT =change in temperature	$[M^0 L^2 T^{-2} K^{-1}]$	J kg ⁻¹ K ⁻¹		
28	Heat capacity	$= \frac{\text{heat}}{\text{change in temp.}}$	$[M^1 L^2 T^{-2} K^{-1}]$	J K ⁻¹		
29	Latent heat(L)	$Q=mL$; Q =heat, m =mass	$[M^0 L^2 T^{-2}]$	J Kg ⁻¹		
30	Gas constant (R)	$PV = nRT$	$R = \frac{PV}{nT} = \frac{M^1 L^{-1} T^{-2} \cdot L^3}{\text{mole} \cdot K}$ $= [M^1 L^2 T^{-2} \cdot \text{mole}^{-1} K^{-1}]$	$\frac{J}{\text{mole} \cdot K}$		
31	Stefan's constant (σ)	$E = \sigma T^4$; E =emissive- power= $\frac{\text{heat}}{\text{time} \cdot \text{area}}$, T =temp.	$\sigma = \frac{E}{T^4} =$ $[M^1 L^0 T^{-3} K^{-4}]$	$\frac{W}{m^2 \cdot K^4}$		
32	Boltzmann's const.(k)	$K.E. \text{ of molecule} = \frac{3}{2} kT$	$[M^1 L^2 T^{-2} K^{-1}]$	$\frac{J}{K}$		
33	Heat conductivity (K)	$\frac{\text{heat}}{\text{time}} = K \cdot \text{Area} \cdot \frac{\text{temp. difference}}{\text{length}}$	$[M^1 L^1 T^{-3} K^{-1}]$	$\frac{W}{m \cdot K}$		
34	Charge(q)	Current = $\frac{\text{charge}}{\text{time}}$	$[T^1 A^1]$	Coulomb(C)		
35	Electric field	$E = \frac{\text{force}}{\text{charge}}$				
36	Electric potential	$V = \frac{\text{work}}{\text{charge}}$				
37	Electrical resistance(R)	$V = IR$				

Rest see in book
