

APPENDIX A - UNITS DEFINITION

NO.	NAME OF QUANTITIES	UNITS	SYMBOLS	DEFINITION OF UNIT
1.	Mass	Kilogram	Kg	The mass of Platinum-iridium alloy cylinder which is kept at the international Bureau of weight and measures in severs near Paris is called one Kilogram.
2.	Length	Meter	M	The length of the path travelled by light in vacuum during a time of $1/299,792,458$ of a second is called one meter.
3.	Time	Second	Sec	The exactly equal to the time interval of 9,192,631,770 vibrations of atom of cesium-133 is called one second.(A/c to 1967 Definition)
4.	Electric charge	Coulomb	Col	If two identical charges are lying in vacuum at a distance of 1m and the force of repulsion in between them is $9 \times 10^9 \text{N}$ then the charge of each body will be 1 coulomb.
5.	Electric current	Ampere	A	If the flow of charge is 1 C in one second than the current is said to be one ampere.
6.	Temperature	Kelvin	K	The $1/273$ times of temperature of triple point of water is called Kelvin.
7.	Amount of substance	Mole	Mol	The amount of substance of a system which contains as many elementary entities as there are atoms in 0.012 kilogram of carbon-12.
8.	Luminous intensity	Candela	Cd	The light that emits monochromatic radiation of frequency $540 \times 10^{12} \text{Hz}$ and that has a radiant intensity in that direction of $1/683$ watt per steradian is called one Candela.
9.	Force	Newton	N	If the force produces an acceleration of 1m/s^2 in the body of mass 1Kg in the direction of applied force then it is said to be one Newton.
10.	Joule	Joule	J	Work done by a force of one Newton in moving a body through a distance of one meter in the direction of force is called one Joule.
11.	Power	Watt	W	If one joule of work is done in one second then the power is called one watt. OR If body maintains its velocity of 1m/s by applying force of one Newton than power is called one watt.
12.	Pressure	Pascal	Pa	If one Newton force acts normally on a unit area then the pressure exerted on that area is said to be

				<i>one Pascal.</i>
13.	Coefficient of viscosity	Poise	Poise	<i>The retarding force required to maintaining a velocity of 1m/s relative to the stationary layer is called one poise.</i>
14.	Frequency	Hertz	Hz	<i>If one wave or one vibration is generated in one second the frequency is said to be one hertz.</i>
15.	Power of lens	Diopter	Diopter	<i>If the focal length of a lens is one meter then its power will be one Diopter.</i>
16.	Capacitance	Farad	F	<i>If the capacity of the capacitor to store charge in it is one coulomb then capacitance is said to be one farad.</i>
17.	Potential difference	Volt	V	<i>If one joule of work is done to shift one coulomb charge from one point to another then potential difference between the two points will be 1Volt.</i>
18.	Resistance	Ohm	Ω	<i>If one ampere current pass through a conductor when potential difference across its end is one volt then the resistance of that conductor is one ohm.</i>
19.	Electrical energy	Kilowatt-hour	Kwh	<i>If one kilo watt electrical power is maintained for one hour than the energy is said to be 1Kwh.</i>

APPENDIX-B MATHEMATICAL SIGNS AND SYMBOLS

NO.	MATHEMATICAL SYMBOLS	NAMES	NO.	MATHEMATICAL SYMBOLS	NAMES
1.	=	Is equal to	7.	\geq	Greater than or equal to
2.	\cong	Approximately equal to	8.	\leq	Less than or equal to
3.	\neq	Is not equal to	9.	\pm	Plus minus
4.	\approx	Almost equal to	10.	\propto	Proportional to
5.	$> (\gg)$	Greater than (much greater than)	11.	Σ	Sum of
6.	$< (\ll)$	Less than (much less than)	12.	x_{avg}	Average value

APPENDIX-C SOME PHYSICAL CONSTANTS

NO.	CONSTANT NAMES	SYMBOLS	VALUES
1.	Speed of light in vacuum	C	3.00×10^8 m/s
2.	Newtonian Gravitational constant	G	6.67×10^{-11} Nm ² /Kg ²
3.	Acceleration due to gravity	G	9.8 m/s ²
4.	Universal gas constant	R	8.31 J/mol. K
5.	Electric constant	K	9×10^9 Nm ² /C ²
6.	Plank constant	H	6.63×10^{-34} J.S
7.	Elementary charge	E	1.60×10^{-19} C

8.	Mass of electron	M_e	9.11×10^{-31} Kg
9.	Mass of proton	M_p	1.67×10^{-27} Kg
10.	Charge on electron/Proton	Q	1.6×10^{-19} C

APPENDIX-D PROPERTIES OF WATER

NO.	SUBSTANCE (WATER)	PROPERTIES
1.	Density	1000 Kg/m ³
2.	Speed of sound	1460 m/s
3.	Specific heat capacity (at constant pressure)	4190 \cong 4200 J/Kg. K
4.	Latent heat of fusion of ice (at 0°C)	3.36×10^5 J/Kg
5.	Latent heat of vaporization (at 100°C)	2.26×10^6 J/Kg
6.	Index of refraction	1.33
7.	Molar Mass	0.0180 Kg/mol

APPENDIX-E COEFFICIENT OF FRICTION

No.	Object (Dry surface)	Coefficient of friction
1.	Between wood and wood	0.3
2.	Between wood and stone	0.4
3.	Between Metal and metal	0.2
4.	Between wood and leather	0.4

APPENDIX-F YOUNG'S MODULUS AND ELASTIC LIMITS

No.	Material	Young's Modulus (N/m ²)	Elastic limit (N/m ²)
1.	Aluminum	7.0×10^{10}	1.3×10^8
2.	Brass (Cast)	13.1×10^{10}	3.8×10^8
3.	Copper	11.5×10^{10}	8.0×10^8
4.	Iron	19.4×10^{10}	7.7×10^8
5.	Lead	1.6×10^{10}	-----
6.	Steel	20.0×10^{10}	2.7×10^8
7.	Rubber (vulcanized)	14.0×10^4	-----
8.	Tungsten	36.0×10^{10}	-----
9.	Crown glass	7.1×10^{10}	1.5×10^9

APPENDIX-G COEFFICIENT OF VISCOSITY

No.	Material	Viscosity (in centipoises) at 30°C
1.	Air	0.019
2.	Acetone	0.295
3.	Benzene	0.562
4.	Ethanol	1.000
5.	Methanol	0.510
6.	Glycerin	629.00
7.	Water	0.801

APPENDIX-H COEFFICIENT OF LINEAR THERMAL EXPANSION

NO.	Substances	$^{\circ}\text{C}^{-1}$	K^{-1}
1.	Aluminum	24×10^{-6}	2.4×10^{-5}
2.	Brass and Bronze	19×10^{-6}	1.9×10^{-5}
3.	Copper	17×10^{-6}	1.7×10^{-5}
4.	Glass (ordinary)	9×10^{-6}	0.9×10^{-5}
5.	Glass (Pyrex)	3.2×10^{-6}	0.32×10^{-5}
6.	Hard Rubber	80×10^{-6}	8.0×10^{-5}
7.	Ice	51×10^{-6}	5.1×10^{-5}
8.	Invar (Ni-Cr-Alloy)	0.9×10^{-6}	0.09×10^{-5}
9.	Lead	29×10^{-6}	2.9×10^{-5}
10.	Steel	11×10^{-6}	1.1×10^{-5}
11.	Concrete	12×10^{-6}	1.2×10^{-5}

APPENDIX-I SPECIFIC HEAT

No.	Substances	Specific heat in J/Kg. K	No.	Substances	Specific heat in J/Kg. K
1.	Water	4200	7.	Tungsten	135
2.	Mercury	140	8.	Silver	230
3.	Ethyl alcohol	2430	9.	Copper	390
4.	Methylated spirit	250	10.	Carbon	502
5.	Brass	380	11.	Iron	450
6.	Lead	130	12.	Aluminum	900

APPENDIX-J BOILING POINT AND MELTING POINT

NO.	Substances	Normal melting point	Normal boiling point
1.	Mercury	-39	357
2.	Sulphur	119	444.60
3.	Lead	327.3	1750.0
4.	Antimony	630.5	1440.0
5.	Silver	960.8	2193
6.	Gold	1063	2660.0
7.	Copper	1083	1187.0
8.	Hydrogen	-259.31	-252.89
9.	Nitrogen	-209.00	-195.8
10.	Oxygen	-218.79	-183.0

APPENDIX-K REFRACTIVE INDEX

No.	Substances	Index of refraction	No.	Substances	Index of refraction
1.	Vacuum	1.0000	8.	Glycerin	1.47
2.	Air	1.0003	9.	Crown glass	1.52
3.	Water	1.33	10.	Flint glass	1.62
4.	Ethyl Alcohol	1.36	11.	Ruby	1.54
5.	Quartz	1.46	12.	Diamond	2.42
6.	Sodium Chloride crystals	1.53	13.	Sulphuric acid	1.43
7.	Benzene	1.50	14.	Carbon dioxide	1.00045

APPENDIX-L RADIOACTIVE ISOTOPES AND THEIR HALF LIFE

No.	Elements	Radioactive isotopes	Radiations emitted	Half life
1.	Hydrogen	${}^3_1\text{H}$	β ,	$1.22 \times 10^{+1}$ Yr
2.	Lithium	${}^8_3\text{Li}$ ${}^9_3\text{Li}$	β, γ β	8.44×10^{-1} S 1.8×10^{-1} S
3.	Krypton	${}^{89}_{36}\text{Kr}$	β, γ	3.16 min
4.	Carbon	${}^{14}_6\text{C}$	β	5.73×10^3 Yr
5.	Iodine	${}^{131}_{53}\text{I}$	β	8.04 Days
6.	Polonium	${}^{214}_{82}\text{Po}$	α, γ	1.64×10^{-4} Yr
7.	Radium	${}^{256}_{88}\text{Ra}$	α, γ	1.6×10^3 Yr
8.	Indium	${}^{115}_{49}\text{In}$	β	4.41×10^{14} Yr
9.	Uranium	${}^{238}_{92}\text{U}$	α, γ	4.47×10^9 Yr
10.	Radon	${}^{222}_{86}\text{Rn}$	α, γ	3.83 Days

APPENDIX-M GREEK SYMBOLS

NO.	SYMBOLS	SYMBOLS NAMES
1.	τ	Tau
2.	Δ	Delta
3.	Σ	Summation
4.	π	Pie
5.	λ	Lambda
6.	ρ	Rho
7.	η	Eta
8.	Ω	Omega
9.	μ	Meu
10.	α	Alpha
11.	∞	Infinity
12.	ϵ	Epsilon
13.	γ	Gamma
14.	β	Beta
15.	σ	Sigma
16.	ω	Omega (Lower case)
17.	θ	Theta