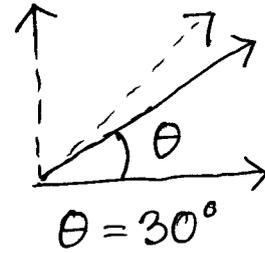
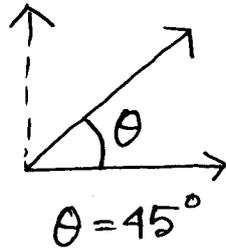
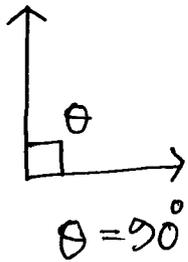
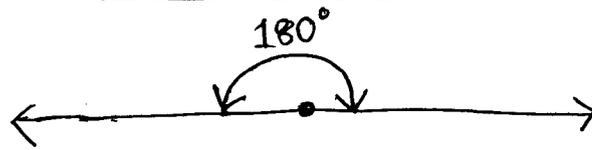


Degree Method



Radian Method



$$180 \text{ Degree} = \pi \text{ Radian}$$

$$90^\circ = \left(\frac{\pi}{180} \times 90\right) \text{ Radian}$$

$$= \frac{\pi}{2} \text{ ,,}$$

$$45^\circ = \left(45 \times \frac{\pi}{180}\right) \text{ ,,}$$

$$= \frac{\pi}{4} \text{ ,,}$$

$$30^\circ = \left(30 \times \frac{\pi}{180}\right) \text{ ,,}$$

$$= \frac{\pi}{6} \text{ ,,}$$

$$180^\circ = \pi^c$$

$$\therefore 1^\circ = \left(\frac{\pi}{180}\right)^c$$

$$\pi^c = 180^\circ$$

$$\therefore 1^c = \left(\frac{180}{\pi}\right)^\circ$$

$$\frac{\pi}{2} \text{ Radian} = \left(\frac{\pi}{2} \times \frac{180}{\pi}\right) \text{ Degree}$$

$$= 90 \text{ ,,}$$

$$\frac{\pi}{4} \text{ ,,} = \left(\frac{\pi}{4} \times \frac{180}{\pi}\right) \text{ ,,}$$

$$= 45^\circ \text{ ,,}$$

$$\frac{\pi}{6} \text{ ,,} = \left(\frac{\pi}{6} \times \frac{180}{\pi}\right) \text{ ,,}$$

$$= 30^\circ \text{ ,,}$$

Radian \rightarrow Degree

$$\left(\frac{\pi}{2}\right)^c = \left(\frac{\pi}{2} \times \frac{180}{\pi}\right)^\circ = 90^\circ$$

$$\left(\frac{\pi}{6}\right)^c = \left(\frac{\pi}{6} \times \frac{180}{\pi}\right)^\circ = 30^\circ$$

$$\left(\frac{2\pi}{3}\right)^c = \left(\frac{2\pi}{3} \times \frac{180}{\pi}\right)^\circ = 120^\circ$$

$$(3\pi)^c = \left(3\pi \times \frac{180}{\pi}\right)^\circ = 540^\circ$$

Degree \rightarrow Radian

$$15^\circ = \left(15 \times \frac{\pi}{180}\right)^c = \left(\frac{\pi}{12}\right)^c$$

$$360^\circ = \left(360 \times \frac{\pi}{180}\right)^c = (2\pi)^c$$

$$720^\circ = \left(720 \times \frac{\pi}{180}\right)^c = (4\pi)^c$$

$$60^\circ = \left(60 \times \frac{\pi}{180}\right)^c = \left(\frac{\pi}{3}\right)^c$$

For Practice

1. Express in Radians —

i) 270°

ii) 150°

iii) 45°

iv) 450°

v) $7\frac{1}{2}^\circ$

2. Express in Degree —

i) $\frac{3\pi}{2}$

ii) $\frac{2\pi}{5}$

iii) 4π

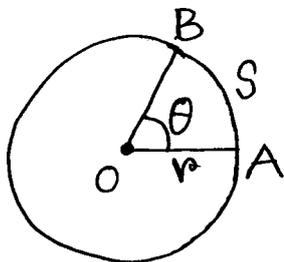
iv) $\frac{5\pi}{3}$

v) $\frac{2\pi}{3}$

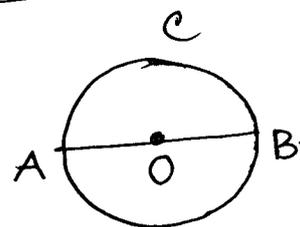
$60''$ (60 second) = $1'$ (1 minute)

$60'$ (60 minutes) = 1° (1 Degree)

90° (90 Degree) = 1 right angle



If $AB = s$
 $OA = r$
 $\angle AOB = \theta^\circ$
then, $s = r\theta$

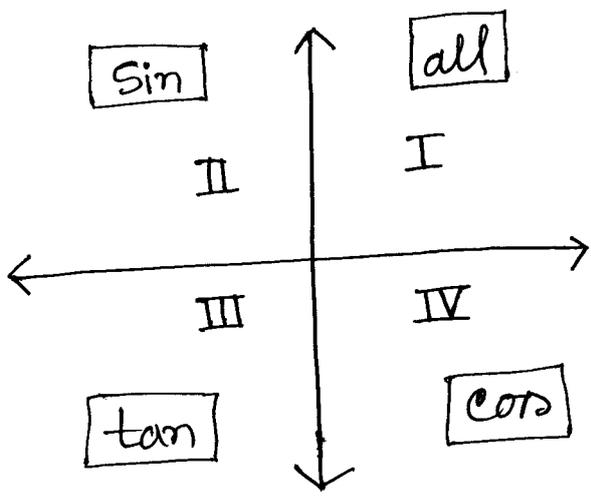


ABc = Circumference ($2\pi r$)

AB = Diameter ($2r$)

$AO = OB$ = Radius (r)

Exercise - 8.2



Structure: $n \cdot \frac{\pi}{2} \pm \theta$

If $n = \text{odd number}$.
 Then, $\text{Sin} \Leftrightarrow \text{Cos}$
 $\text{tan} \Leftrightarrow \text{cot}$
 $\text{Sec} \Leftrightarrow \text{cosec}$

(All Silver Tea Cup)

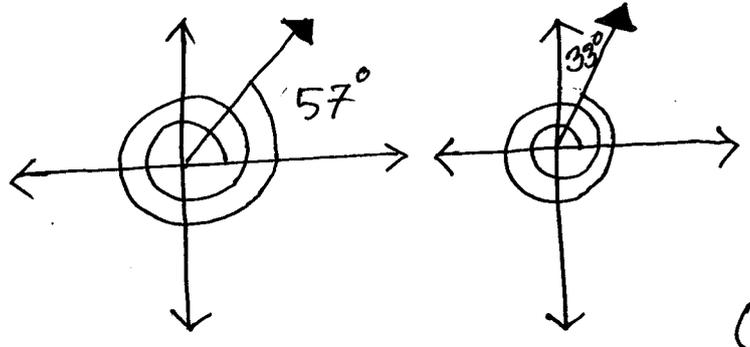
Conversion Steps

- Fall in structure ($n \cdot \frac{\pi}{2} \pm \theta$)
- Quadrant Identify (+/-)
- If $n = \text{odd number}$ ($\text{sin} \Leftrightarrow \text{cos}, \dots$)

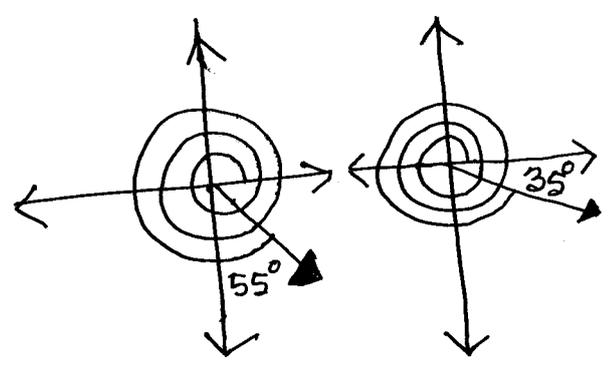
☐ Fall in Structure & Quadrant Identification:

1. 777°
2. 1045°
3. -720°
4. -1320°

☐ $777^\circ = (8 \times \frac{\pi}{2} + 57^\circ)$
 $= (9 \times \frac{\pi}{2} - 33^\circ)$



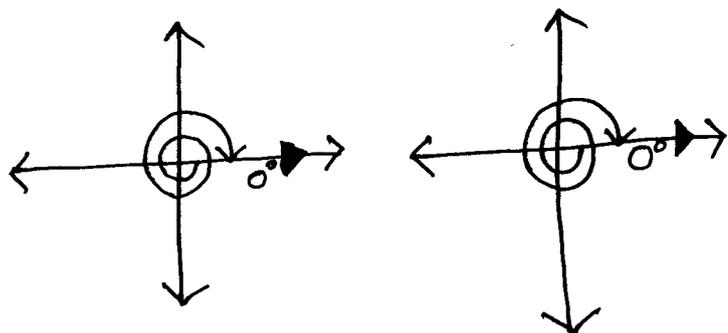
☐ $1045^\circ = (11 \cdot \frac{\pi}{2} + 55^\circ)$
 $= (12 \cdot \frac{\pi}{2} - 35^\circ)$



(4)

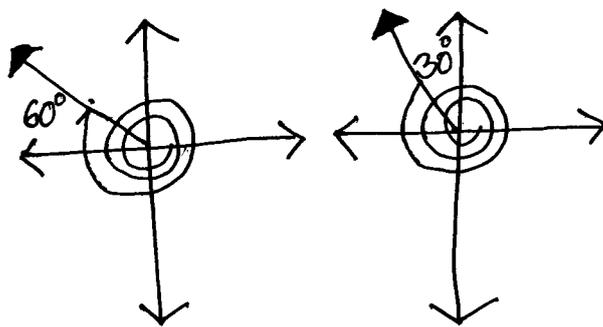
$$\boxed{3} \quad -720^\circ = -(8 \cdot \frac{\pi}{2} + 0^\circ)$$

$$= -(8 \cdot \frac{\pi}{2} - 0^\circ)$$



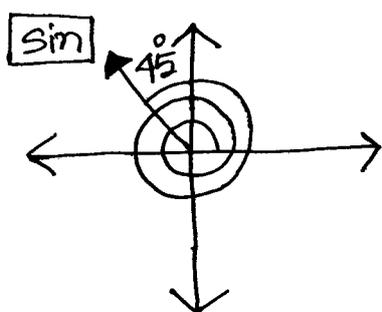
$$\boxed{4} \quad -1320^\circ = -(14 \cdot \frac{\pi}{2} + 60^\circ)$$

$$= -(15 \cdot \frac{\pi}{2} - 30^\circ)$$



Find the values in Degree:

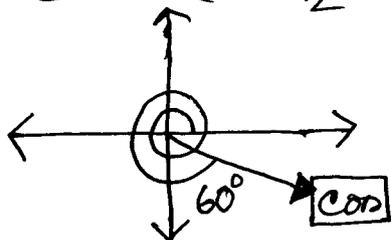
- $\tan 2655^\circ$
- $= \tan(29 \cdot \frac{\pi}{2} + 45^\circ)$



$$= -\cot 45^\circ$$

$$= -1$$

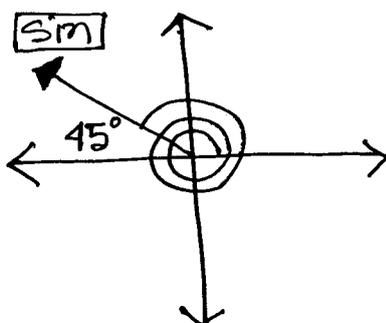
- $\operatorname{cosec} 3570^\circ$
- $= \operatorname{cosec}(39 \cdot \frac{\pi}{2} + 60^\circ)$



$$= -\operatorname{sec} 60^\circ$$

$$= -2$$

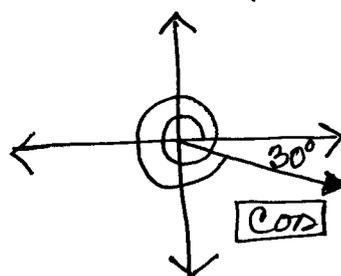
- $\tan 2655^\circ$
- $= \tan(30 \cdot \frac{\pi}{2} - 45^\circ)$



$$= -\tan 45^\circ$$

$$= -1$$

- $\operatorname{cosec} 3570^\circ$
- $= \operatorname{cosec}(40 \cdot \frac{\pi}{2} - 30^\circ)$



$$= -\operatorname{cosec} 30^\circ$$

$$= -2$$

For Practice:

Find the values: (Degree)

i) $\cos 75^\circ$

ii) $\operatorname{cosec} 1410^\circ$

iii) $\cot 2280^\circ$

iv) $\sin 1575^\circ$

v) $\sec 1890^\circ$

vi) $\tan 2370^\circ$

Exercise - 8.3

$$n \cdot \frac{\pi}{2} \pm \theta$$
$$n \cdot 90^\circ \pm \theta$$

$$\sin \frac{37\pi}{a}$$
$$= \sin \left(\square \cdot \frac{\pi}{2} \pm \frac{\square}{a} \right)$$
$$= \pm \sin \frac{\square}{a}$$

Manual/Traditional Method

$$\cos \frac{37\pi}{18}$$
$$= \cos 370^\circ$$

↙ ↘

$$\cos(4 \times 90^\circ + 10^\circ)$$
$$= \cos \left(4 \cdot \frac{\pi}{2} + \frac{\pi}{18} \right)$$
$$= \cos \frac{\pi}{18}$$
$$\cos(5 \times 90^\circ - 80^\circ)$$
$$= \cos \left(5 \cdot \frac{\pi}{2} - \frac{4\pi}{9} \right)$$
$$= \sin \frac{4\pi}{9}$$

$$\frac{37\pi}{18} = \frac{37 \times 180}{18} = 370^\circ$$

$$10^\circ = 10 \times \frac{\pi}{180} = \frac{\pi}{18}$$

$$80^\circ = 80 \times \frac{\pi}{180} = \frac{4\pi}{9}$$

Higher Method

$$\cos \frac{37\pi}{a}$$
$$= \cos \left(\square \cdot \frac{\pi}{2} + \frac{\square}{a} \right)$$

$$\sin \frac{11\pi}{90}$$
$$= \sin \left(\square \cdot \frac{\pi}{2} - \frac{\square}{b} \right)$$

$$1. \cos \frac{37\pi}{18}$$
$$= \cos \left(4 \cdot \frac{\pi}{2} + \frac{\pi}{18} \right)$$
$$= \cos \frac{\pi}{18}$$

$$1. \sin \frac{11\pi}{90}$$
$$= \sin \left(1 \cdot \frac{\pi}{2} - \frac{34\pi}{90} \right)$$
$$= \cos \frac{34\pi}{90}$$

$$2. \sec \frac{25\pi}{6}$$
$$= \sec \left(8 \cdot \frac{\pi}{2} + \frac{\pi}{6} \right)$$
$$= \sec \frac{\pi}{6}$$

$$2. \tan \left[312 \cdot \frac{\pi}{2} - \left(\frac{\pi}{3} + \frac{7\pi}{6} \right) \right]$$
$$= -\tan \left(\frac{\pi}{3} + \frac{7\pi}{6} \right)$$
$$= -\tan \frac{9\pi}{6}$$
$$= -\tan \frac{3\pi}{2}$$
$$= -\tan \left(3 \cdot \frac{\pi}{2} + 0^\circ \right)$$
$$= \cot 0^\circ$$

For Practice

□ Find the values : (Radian)

i) $\cos \frac{37\pi}{18}$

iv) $\sin \frac{22\pi}{180}$

ii) $\sec \frac{25\pi}{6}$

v) $\cot 18\pi$

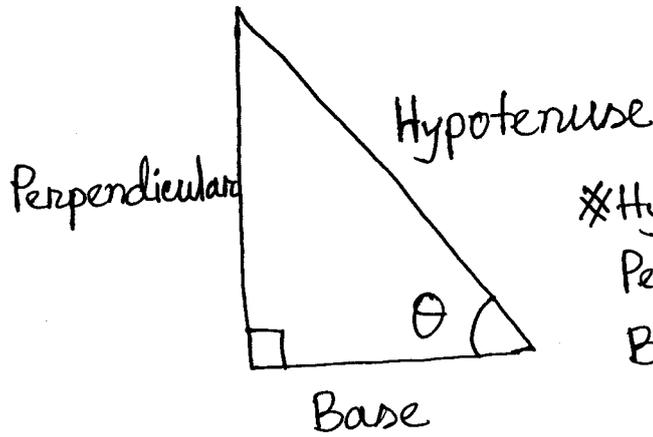
iii) $\tan \frac{47\pi}{30}$

vi) $\operatorname{cosec} \left(\frac{17\pi}{2} + \theta \right)$

$$\sin(-\theta) = -\sin\theta, \operatorname{cosec}(-\theta) = -\operatorname{cosec}\theta$$
$$\cos(-\theta) = \cos\theta, \sec(-\theta) = \sec\theta$$
$$\tan(-\theta) = -\tan\theta, \cot(-\theta) = -\cot\theta$$

Exercise - 8.1

$\sin \theta$
 $\cos \theta$
 $\tan \theta$
 $\cot \theta$
 $\sec \theta$
 $\operatorname{cosec} \theta$



$\sin =$ मणि
 $\cos =$ द्रुणि
 $\tan =$ मधु

\ast Hypotenuse = h
 Perpendicular = p
 Base = b

$$\sin \theta = \frac{1}{\operatorname{cosec} \theta}, \operatorname{cosec} \theta = \frac{1}{\sin \theta}$$

$$\cos \theta = \frac{1}{\sec \theta}, \sec \theta = \frac{1}{\cos \theta}$$

$$\tan \theta = \frac{1}{\cot \theta}, \cot \theta = \frac{1}{\tan \theta}$$

$$\sin^2 \theta + \cos^2 \theta = 1$$

$$\sec^2 \theta - \tan^2 \theta = 1$$

$$\operatorname{cosec}^2 \theta - \cot^2 \theta = 1$$

$$\sin \theta = \frac{p}{h}, \operatorname{cosec} \theta = \frac{h}{p}$$

$$\cos \theta = \frac{b}{h}, \sec \theta = \frac{h}{b}$$

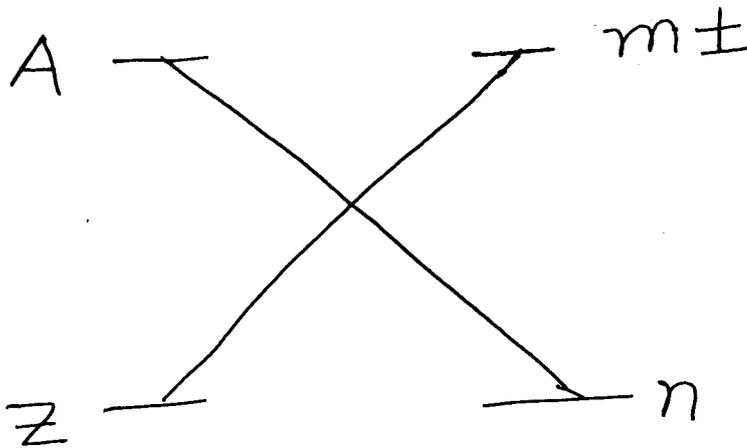
$$\tan \theta = \frac{p}{b}, \cot \theta = \frac{b}{p}$$

- $\sin (0, \frac{1}{2}, \frac{1}{\sqrt{2}}, \frac{\sqrt{3}}{2}, 1)$
- $\tan (0, \frac{1}{\sqrt{3}}, 1, \sqrt{3}, \text{Un.})$

	0°	30°	45°	60°	90°
$\sin \theta$	0	$\frac{1}{2}$	$\frac{1}{\sqrt{2}}$	$\frac{\sqrt{3}}{2}$	1
$\cos \theta$	1	$\frac{\sqrt{3}}{2}$	$\frac{1}{\sqrt{2}}$	$\frac{1}{2}$	0
$\tan \theta$	0	$\frac{1}{\sqrt{3}}$	1	$\sqrt{3}$	Un.
$\cot \theta$	Un.	$\sqrt{3}$	1	$\frac{1}{\sqrt{3}}$	0
$\sec \theta$	1	$\frac{2}{\sqrt{3}}$	$\sqrt{2}$	2	Un.
$\operatorname{cosec} \theta$	Un.	2	$\sqrt{2}$	$\frac{2}{\sqrt{3}}$	1

~~2~~

Show the different kinds of number's scientific marking around the symbol of an Element.



Here,

X = Symbol of the Element.

Z = Atomic Number (Proton number)

A = Mass " (Total Proton & Neutron number)

$m\pm$ = Charge " (After receive or release the electrons)

n = The atom's number during formation of the molecule.

~~3~~ What is Isotope, Isobar, Isotone, Isomer?

	Proton Number	Neutron Number	Electron Number	Mass Number
Isotope	Same	—	—	—
Isotone	—	Same	—	—
Isobar	—	—	—	Same



Chemistry

Structure of Matter

(Chapter-3)

For Class – Nine & Ten (Science Group)

Student's Name:..... ID:.....

Institution:.....

Class:.....Section:.....

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Teacher, DAPS, Dhaka**

We will learn about —

1. What are the fundamental particles? Give the short description of three fundamental particles.
2. What is Isotope? Describe it with examples.
3. Find out the numbers of Proton, Electron & Neutron which has given below —
4. Describe Rutherford's Atomic Model & limitations.
5. Describe Niels Bohr's Atomic Model, its importance & limitations.
6. Write the principles of Modern Electronic configuration of atom.
7. Show the orbital based electron configuration of the elements.
8. Draw the complete electron based configuration of ${}_{11}^{23}\text{Na}$ atom.

Extra Informations

1. What is Atomic Number?
What is Mass Number?
2. Show the different kinds of number's scientific marking around the symbol of an element.

Structure of Atom

1] What are the fundamental particles? Give short description of 3 fundamental particles.

Ans] The micro particles which forms atom, is called fundamental particles or principle particles.

Example: Electron, Proton, Neutron, Positron, Mason etc.

Moreover, till now there have discovered more than 200 particles in Atom. But within those particles, Electron (e^-), Proton (p^+) and Neutron are so stable. we may get those particles into almost the all atoms. Besides, other particles are not stable which does not get into the all atoms. So we may divide these fundamental atoms into 2 parts:

- i) Stable fundamental particles (3) — Electron, Proton and Neutron (Neutron absent in Hydrogen atom).
- ii) Unstable fundamental particles (Many) — Positron, Mason, Neutrino, Anti-neutrino etc.

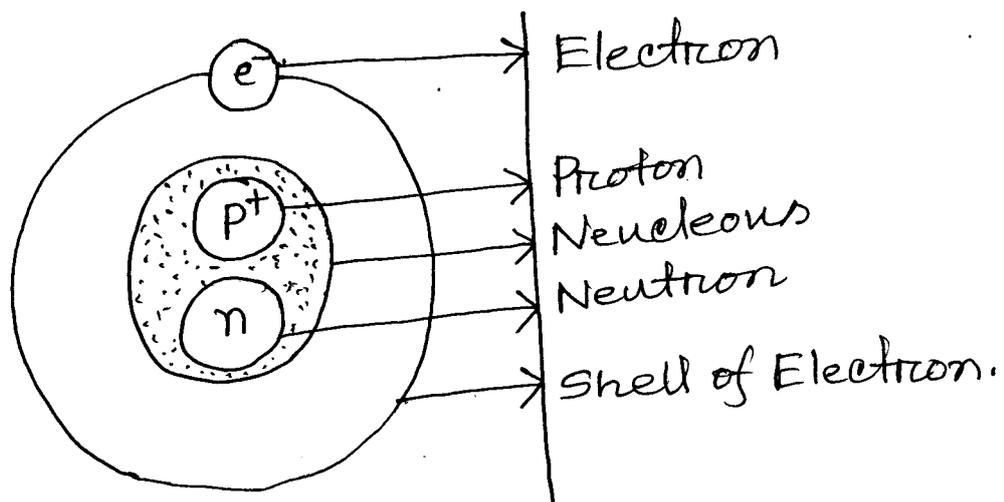


Fig: states of the particles in atom.

Description of 3 fundamental particles (Electron, Proton & Neutron):

- Electron: British scientist Sir. J. Thomson discovered the existence of Electron in 1897. This is more stable fundamental particle in atom.

Properties of Electron:

- The charge of Electron is negative. The value of this charge is (-1.602×10^{-19}) coulombs.
- Mass of Electron = 9.11×10^{-28} gram, which is equal to the $\frac{1}{1840}$ times than a Hydrogen atom.
- Electrons always moves around the nucleus through the specific shell of atom.
- Electrons mark with e^{-} symbol.
- Electrons can move from one atom to another atom during the chemical reaction.

- Proton: Nuclear Physicist Rutherford discovered the existence of Proton in nucleus in 1919. This is also another stable particle in atom.

Properties of Proton:

- i) Proton is positively charged fundamental particle. Which charge is (+) 1.602×10^{-19} coulombs
- ii) The mass of Proton is 1.673×10^{-24} gram, which is equal to the mass of Hydrogen atom.
- iii) Protons are unable to move within the atom. Protons stay into the nucleus of atom.
- iv) Protons marked by 'p⁺' or 'H⁺'.
- v) Protons can't move from one atom to another atom during the chemical reaction.

- Neutron: British Scientist Chadwick discovered the existence of Neutron in atom. This is also other fundamental particle in atom, which is almost equally stable with proton. There have the existence of Neutron into almost all the atoms just without the general Hydrogen atom

Properties of Neutron:

- i) There have no charge of Neutron. This particle is electro-chemically neutral. So it is call neutron (Neutral).
- ii) Mass of Neutron is 1.675×10^{-24} gram, which is slightly massed than Proton particle.

iii) Neutrons are also unable to move into atom. Neutrons stay into the nucleus in atom with proton.

iv) Neutrons marked by 'n'.

v) Neutrons can't move from one atom to another atom during chemical reaction. Neutron creates the mass of nucleus & Neutrons are the cause of mass of atom's nucleus.

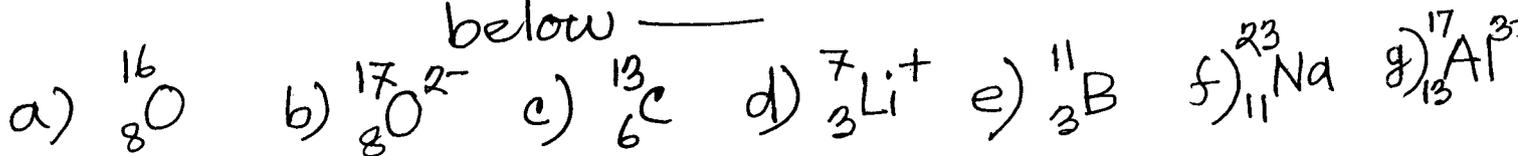
2 What is Isotope? Describe it with examples.

Ans Isotope: The atoms of two or more than two elements who contains the same atomic number but different mass numbers, the atoms of the elements each other called Isotope.

Example: There are 3 Isotopes of Hydrogen, which have given below —

Name of Isotope	Symbol	Atomic Number	Mass Number	Figure
Protium/ General Hydrogen	${}^1_1\text{H}$	(P) 1	(P+n) 1	
Deuterium	${}^2_1\text{H}$	1	2	
Tritium	${}^3_1\text{H}$	1	3	

3 Find out the numbers of Proton, Electron & Neutron which has given below —



	Atom/Ion	Atomic Number	Mass Number	p^+	e^-	n
a	${}^{16}_8\text{O}$	8	16	8	8	8
b	${}^{17}_8\text{O}^{2-}$	8	17	8	10	9
c	${}^{13}_6\text{C}$	6	13	6	6	7
d	${}^7_3\text{Li}^+$	3	7	3	2	4
e	${}^{11}_5\text{B}$	5	11	5	5	6
f	${}^{23}_{11}\text{Na}^+$	11	23	11	10	12
g	${}^{27}_{13}\text{Al}^{3+}$	13	27	13	10	14

4 Describe Rutherford's Solar Model & its limitations.

Ans: Follow the text book (Page no. 42-43)

5 Describe Neils Bohr's atomic model, its importance & limitations.

Ans: Follow the text book (Page no. 43-45).

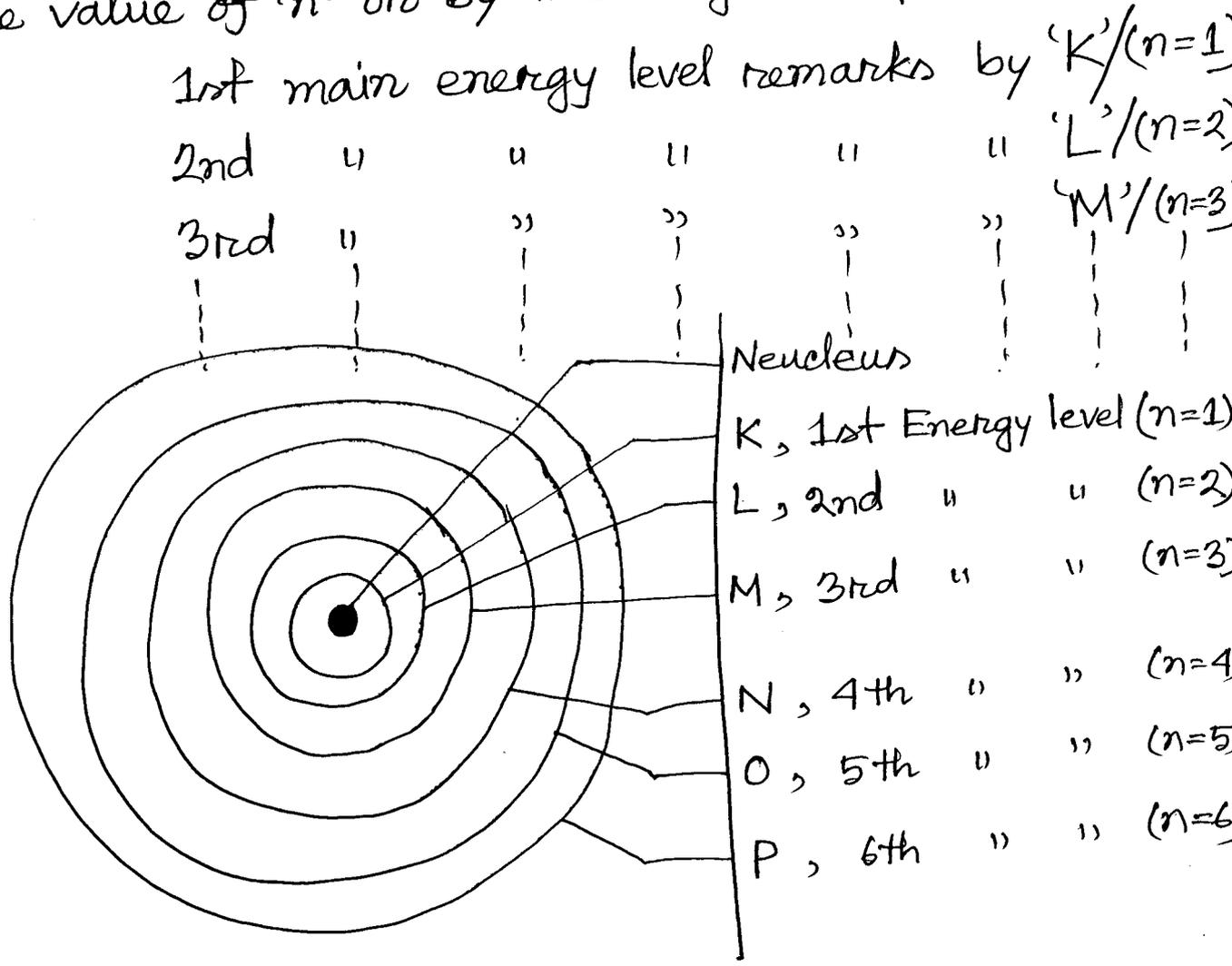
6 Write the principles of Modern Electronic Configuration in Atoms.

Ans Modern electronic configuration:

Actually the modern electronic configuration has established on basis of the theory of Neils Bohr. The principles are given bellow —

1. There have multi main energy levels in eae atoms. Each energy levels marked by 'n'. The value of 'n' is always are the natural numbers, such as $n = 1, 2, 3, \dots$ etc.

2. i) Generally the principal (main) et energy level is known as 'Shell'. The shells are remarks with the value of 'n' or by the English Alphabets. Such as



ii) Every main energy levels area are divided into some sub-energy levels.

According to the modern configuration of atom — the main energy levels are known as Orbit. and the sub-energy as Orbital.

Orbitals are such the area of Orbit, where the e^- density is high (highly densed by e^- cloud) and the electrons move around the orbit centered with the different pattern of movement. These highly electrons densed areas, ^(orbitals) are remarks as s, p, d, f.

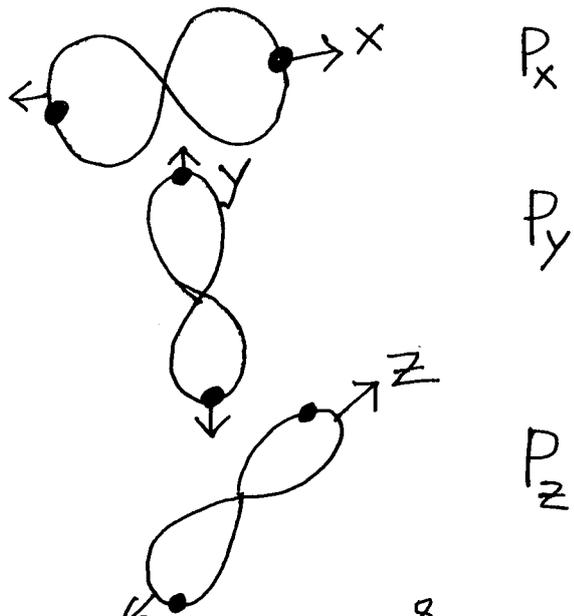
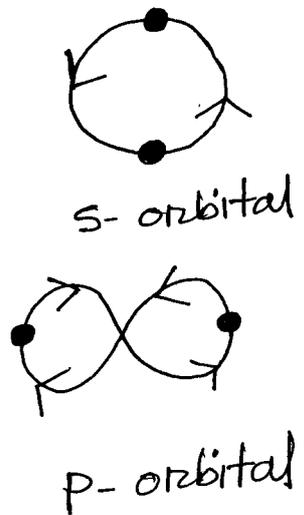
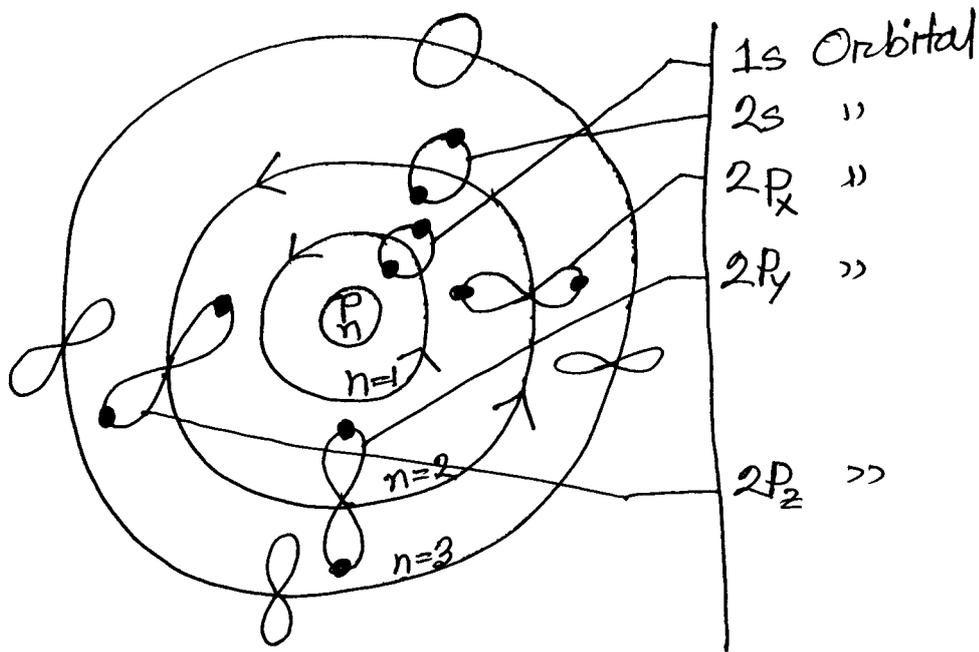


Fig: Orbital's sha

3. The nearest shell to the nucleus is comparatively less energetic. The remotest shell to the nucleus is more energetic. The energy of the orbit depends on the distance to the nucleus. It means, The energy of the orbit increases when the distance to the nucleus of electron ^{is high}. It's easier to move the electron in less energetic shell. But if electron like to move to the high energetic shell, electron must have to receive energy and the speed and vibration of the electron increases.

4. Highest electron capacity in Orbit for 'n' th shell is $2n^2$. That means —

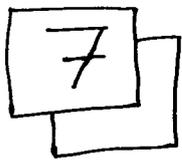
The highest capacity in 1 st shell	=	$2 \cdot 1^2 = 2 \times 1 = 2$
" " 2 nd " "	=	$2 \cdot 2^2 = 2 \times 4 = 8$
" " 3 rd " "	=	$2 \cdot 3^2 = 2 \times 9 = 18$
" " 4 th " "	=	$2 \cdot 4^2 = 2 \times 16 = 32$

But, the highest capacity in 's' orbital = 2
 'p' " = 6
 'd' " = 10
 'f' " = 14

5. Notice that, the value of energy in an orbital depends on the ' $n+l$ ' value. When, n = value of Shell number
 l = " of Orbital

Series of Orbitals according to the energy values

1s > 2s > 2p > 3s > 3p > 4s > 3d > 4p > 5s



Show the orbital based electron configuration of the elements —

- a) ${}_8\text{O}$ b) ${}_9\text{F}$ c) ${}_{10}\text{Ne}$ d) ${}_{11}\text{Na}$ e) ${}_{20}\text{Ca}$ f) ${}_{16}\text{S}$

a) Electron configuration of ${}_8\text{O}^\circ$:

Orbit Based : 2|6

Orbital Based : $\underbrace{1s^2}_2 \underbrace{2s^2 2p^4}_6$

b) Electron configuration of ${}_9\text{F}^\circ$:

Orbit Based : 2|7

Orbital Based : $\underbrace{1s^2}_2 \underbrace{2s^2 2p^5}_7$

c) Electron configuration of ${}_{10}\text{Ne}^\circ$:

Orbit Based : 2|8

Orbital " : $\underbrace{1s^2}_2 \underbrace{2s^2 2p^6}_8$

d) Electron configuration of ${}_{11}\text{Na}^\circ$:

Orbit Based : 2|8|1

Orbital Based : $\underbrace{1s^2}_2 \underbrace{2s^2 2p^6}_8 \underbrace{3s^1}_1$

e) Electron configuration of ${}_{20}\text{Ca}^\circ$:

Orbit Based : 2|8|8|2

Orbital Based : $\underbrace{1s^2}_2 \underbrace{2s^2 2p^6}_8 \underbrace{3s^2 3p^6}_8 \underbrace{4s^2}_2$

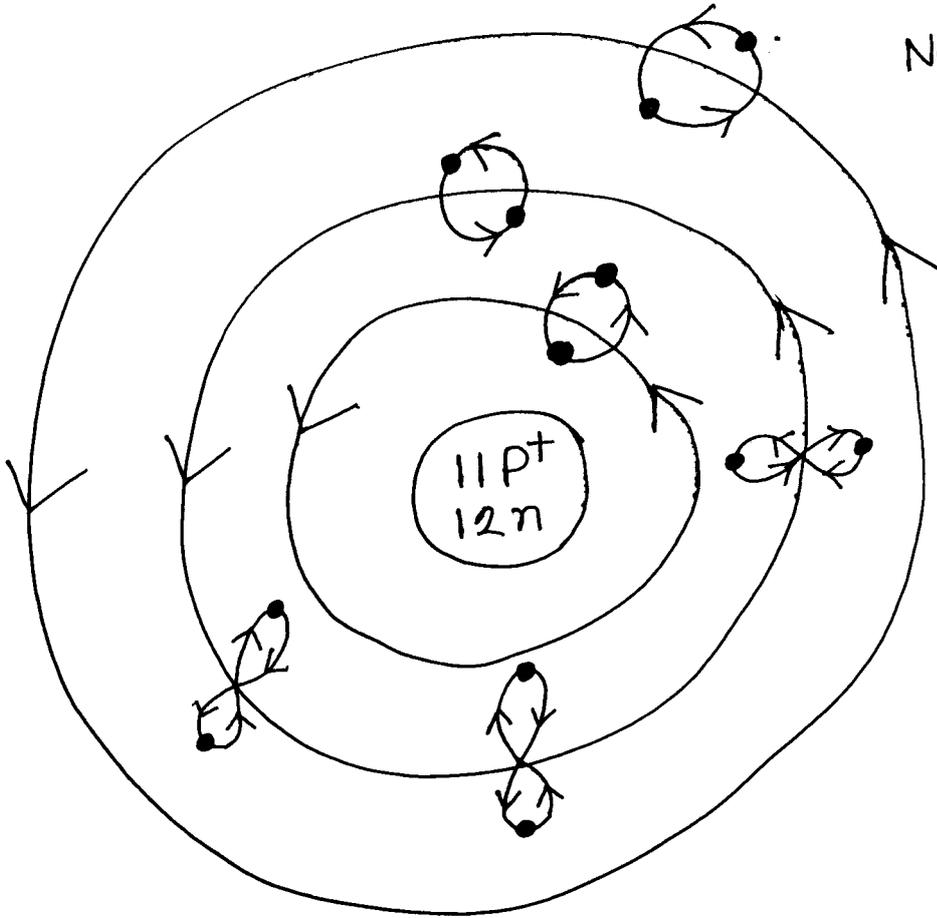
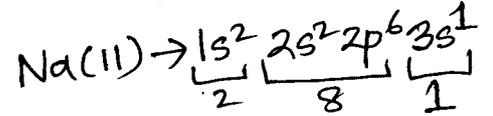
f) Electron configuration of ${}_{16}\text{S}^\circ$:

Orbit Based : 2|8|6

Orbital Based : $\underbrace{1s^2}_2 \underbrace{2s^2 2p^6}_8 \underbrace{3s^2 3p^4}_6$

8

Draw the complete orbital based electron configuration of $^{23}_{11}\text{Na}$ atom.



Extra Informations

~~Q~~ What is Atomic Number?
What is Mass Number?

Atomic Number: The number which contains the protons in the nucleus of an atom of the element, called the Atomic Number of that Element. Such as —

Atomic Number of Carbon = 6; There are 6 protons in the nucleus
" " of Sodium = 11; " " 11 " "

Mass Number: The number which contains the total proton & neutron numbers ($P+N$) in the nucleus of an atom of the element, called the Mass Number of that Element. Such as —

Mass Number of Chlorine = 35; There are 17 protons & 18 neutrons in the nucleus of Cl.

Electron Configurations

$H^2 - L - B^2 - CNOF - N^2 - MA - SiPS - ClAKCa - SeTi -$
 $\frac{1,2}{3} \frac{4,5}{6} \frac{7,8,9}{10,11} \frac{12,13}{14} \frac{15,16}{17,18} \frac{19,20}{21} \frac{22}{23}$

$VCM - FeCoNiCuZ$
 $\frac{23}{24} \frac{25}{26} \frac{27}{28} \frac{29}{30}$

Element	Atomic Mass	Symbol	Atomic Number	Shell				Electron in Outer shell	Valency
				K	L	M	N		
Hydrogen	1	H	1	1				1	1
Helium	4	He	2	2				2	2
Lithium	7	Li	3	2	1			1	1
Beryllium	9	Be	4	2	2			2	2
Boron	11	B	5	2	3			3	3
Carbon	12	C	6	2	4			4	4
Nitrogen	14	N	7	2	5			5	3,5
Oxygen	16	O	8	2	6			6	2
Fluorine	19	F	9	2	7			7	1
Neon	20	Ne	10	2	8			8	0
Sodium	23	Na	11	2	8	1		1	1
Magnesium	24	Mg	12	2	8	2		2	2
Aluminium	27	Al	13	2	8	3		3	3
Silicon	28	Si	14	2	8	4		4	4
Phosphorus	31	P	15	2	8	5		5	5
Sulfur	32	S	16	2	8	6		6	2,4
Chlorine	35.5	Cl	17	2	8	7		7	1
Argon	40	A	18	2	8	8		8	0
Potassium	39	K	19	2	8	8	1	1	1
Calcium	40	Ca	20	2	8	8	2	2	2
Scandium	45	Sc	21	2	8	9	2	2	2
Titanium	48	Ti	22	2	8	10	2	2	2
Vanadium	51	V	23	2	8	11	2	2	2
Chromium	52	Cr	24	2	8	13	1	1	1
Manganese	55	Mn	25	2	8	13	2	2	2
Iron	56	Fe	26	2	8	14	2	2	2

(Positive) Metal/Metallic Atoms & Radicals

Valency - 1		Valency - 2		Valency - 3		Valency - 4	
H ⁺	Hydrogen	Ca ²⁺	Calcium	Al ³⁺	Aluminium	Sn ⁴⁺	Tin
Na ⁺	Sodium	Sr ²⁺	Strontium	Au ³⁺	Gold (ic)	Pb ⁴⁺	Lead (ic)
K ⁺	Potassium	Ba ²⁺	Barium	Bi ³⁺	Bismuth	Pt ⁴⁺	Platinum (ic)
Hg ⁺	Mercury (ws)	Zn ²⁺	Zinc	Cr ³⁺	Chromium (ws)		
Cu ⁺	Copper (ws)	Mg ²⁺	Magnesium	Sb ³⁺	Antimony (ws)		
Ag ⁺	Silver	Pb ²⁺	Lead (ws)	As ³⁺	Arsenic (ws)		
Au ⁺	Gold (ws)	Cu ²⁺	Copper (ic)	Co ³⁺	Cobalt (ic)		
NH ₄ ⁺	Ammonium	Hg ²⁺	Mercury (ic)			Valency - 5	
PH ₄ ⁺	Phosphonium	Fe ²⁺	Iron (ws)			As ⁵⁺	Arsenic (ic)
		Sr ²⁺	Tin			Sb ⁵⁺	Antimony (ic)

Reactivity Series of Metal:

~~Li~~ ~~K~~ ~~Na~~ ~~Ca~~ ~~Mg~~ ~~Al~~ ~~Zn~~ ~~Fe~~ ~~Pb~~ ~~H~~ ~~Cu~~ ~~Hg~~ ~~Ni~~ ~~Sn~~ ~~Pb~~ ~~Ag~~ ~~Au~~

Periodic Table

Grp - IA (Its contains $1e^-$ in there outer shell)

নাম	সাদা	দুশ্চৈৰ	ৰঙে	সাজোনো	ফাগুন
↓	↓	↓	↓	↓	↓
Li	Na	K	Rb	Cs	Fr
3	11	19	37	55	87

Magic Number: $2 + 8 + 8 + 18 + 18 + 32$

Grp - IIA (It's contains $2e^-$ in their outter shell)

বাদলৈৰ	মনেৰ	কল্পনাম	শুধুই	বেবিৰ	ৰাজহু
↓	↓	↓	↓	↓	↓
Be	Mg	Ca	Sr	Ba	Ra
4	12	20	38	56	88

Magic Number: $8 + 8 + 18 + 18 + 32$

Grp - IIIA (Its contains $3e^-$ in their outter shell)

বোন	আমাৰ	ভান	ইন্দিয়া	ও	মাইন্যাডে
↓	↓	↓	↓		↓
B	Al	Ga	In		Tl
5	13	31	49		81

Magic Number: $8 + 18 + 18 + 32$

Grp - IVA (It contains $4e^-$ in their outter shell)

কাৰিনা	শিঙুই	জিনিয়াম	মাইফকে	পালে
↓	↓	↓	↓	↓
C	Si	Ge	Sn	Pb
6	14	32	50	82

Magic Number: $8 + 18 + 18 + 32$

Group-V A (It contains 5 e⁻ in their atom's outer shell)

নদীর পাড়ে আমি মানাই বাজিছি

↓	↓	↓	↓	↓
N	P	As	Sb	Bi
7	15	33	51	83

Magic Number: $8 + 18 + 18 + 32$

Group-VI A (It contains 6 e⁻ in their atom's outer shell)

অঙ্কুর সূর্যসরোত অর্ধদা টালে পঞ্চাড়ে

↓	↓	↓	↓	↓
O	S	Se	Te	Po
8	16	34	52	84

Magic Number: $8 + 18 + 18 + 32$

Group-VII A (It contains 7 e⁻ in their atom's outer shell)

স্বকির কন্যার বাড়িতে ইন্দিয়ানা আমল

↓	↓	↓	↓	↓
F	Cl	Br	I	At
9	17	35	53	85

Magic Number: $8 + 18 + 18 + 32$

Group-VIII (Zero) It contains 8 e⁻ in their atom's outer shell

হিরো নিরঙ্কুর আর কারিনা মেন রামিও-ভূমিগেট

↓	↓	↓	↓	↓	↓
He	Ne	Ar	Kr	Xe	Rn
2	10	18	36	54	86

Magic Number: $8 + 8 + 18 + 18 + 32$



Chemistry

Fundamental Ideas about the Elements

For Class – Nine & Ten (Science Group)

Student's Name:..... ID:.....

Institution:.....

Class:.....Section:.....

Niranjan Das

BSc.(Hon's),MSc.(Chemistry),JnU
Teacher, DAPS, Dhaka

Dhaka Adventist Pre-Seminary and School

Half Yearly Exam Suggestion

For Class: Nine, Total Marks: 100

Grammar Part: Marks: 60

- (1) Transformation of Sentences & Tenses
- (2) Use right form of Verbs
- (3) Preposition
- (4) Articles
- (5) Voice
- (6) Tag Questions
- (7) Capitalization & Punctuation
- (8) Narration
- (9) Prefix and Suffix

- Filling the Gaps with clues (Follow Advance book Exercises 1-10 & All Board Questions of 2018, 2019)
- Filling the Gaps without clues (Follow Advance book Exercises 1-10 & All Board Questions of 2018, 2019)

Writing Section. Marks: 40

Paragraphs	Compositions
First Day at School, A Good Citizen A railway Station A book Fair, A Winter Morning School Magazine, A Garment worker Road Accident Corona Virus	Future Plan of my life A Journey by Bus Duties of a Student E-learning A Village Doctor, Unemployment problem, Corruption in Bang. Food Problem in Bangladesh.

Formal Letters
(1) Write an application to the Headmaster of your school seeking permission to go on an excursion/study. (2) Write an application to your Headmaster about a Transfer Certificate. (3) Write an application to your Headmaster about a Testimonial.
CV with covering letter
(1) Write a CV with a cover letter for the post of a Teacher. (2) Write a CV with a cover letter for a Hotel Receptionist. (3) Write a CV with a cover letter for a Marketing Manager.

Punctuation		Meaning	Examples
apostrophe	'	An apostrophe is used as a substitute for a missing letter or letters in a word (as in the <u>contraction</u> cannot = can't), to show the possessive case (Jane's room), and in the plural of letters, some numbers and abbreviations. Note: groups of years no longer require an apostrophe (for example, the 1950s or the 90s).	I can't see the cat's tail. 100's of years.
colon	:	A colon is used before a list or quote. A colon is used to separate hours and minutes. A colon is used to separate elements of a mathematical ratio.	There are many punctuation marks: period, comma, colon, and others. The time is 2:15. The ratio of girls to boys is 3:2.
comma	,	A comma is used to separate phrases or items in a list.	She bought milk, eggs, and bread.
dash	—	A dash is used to separate parts of a sentence.	The dash is also known as an "em dash" because it is the length of a printed letter m — it is longer than a hyphen.
ellipsis	.. .	An ellipsis (three dots) indicates that part of the text has been intentionally been left out.	0, 2, 4, ... , 100
exclamation point	!	An exclamation point is used to show excitement or emphasis.	It is cold!
hyphen	-	A hyphen is used between parts of a compound word or name. It is also used to split a word by syllables to fit on a line of text.	The sixteen-year-old girl is a full-time student.
parentheses	()	Parentheses are curved lines used to separate explanations or qualifying statements within a sentence (each one of the curved lines is called a parenthesis). The part in the parentheses is called a parenthetical remark.	This sentence (like others on this page) contains a parenthetical remark.
period	.	A period is used to note the end of a declarative sentence.	I see the house.
question mark	?	A question mark is used at the end of a question.	When are we going?
quotation mark	"	Quotation marks are used at the beginning and end of a phrase to show that it is being written exactly as it was originally said or written.	She said, "Let's eat."
semicolon	;	A semicolon separates two independent clauses in a compound sentence.	Class was canceled today; Mr. Smith was home sick.

	A semicolon is also used to separate items in a series (where commas are already in use).	Relatives at the reunion included my older brother, Bob; my cousin, Art; and my great-aunt, Mattie.
--	---	---

Prefix

A **prefix** is a group of letters placed before the root of a word. For example, the word "unhappy" consists of the prefix "un-" [which means "not"] combined with the root (stem) word "happy"; the word "unhappy" means "not happy."

A Short List of Prefixes:

PREFIX	MEANING	EXAMPLES
de-	from, down, away reverse, opposite	decode, decrease
dis-	not, opposite, reverse, away	disagree, disappear
ex-	out of, away from, lacking, former	exhale, explosion
il-	not	illegal, illogical
im-	not, without	impossible, improper
in-	not, without	inaction, invisible
mis-	bad, wrong	mislead, misplace
non-	not	nonfiction, nonsense
pre-	before	prefix, prehistory
pro-	for, forward, before	proactive, profess, program
re-	again, back	react, reappear
un-	against, not, opposite	undo, unequal, unusual

Suffix

A **suffix** is a group of letters placed after the root of a word. For example, the word flavorless consists of the root word "flavor" combined with the suffix "-less" [which means "without"]; the word "flavorless" means "having no flavor."

A Short List of Suffixes:

SUFFIX	MEANING	EXAMPLES
---------------	----------------	-----------------

-able	able to, having the quality of	comfortable, portable
-al	relating to	annual, comical
-er	comparative	bigger, stronger
-est	superlative	strongest, tiniest
-ful	full of	beautiful, grateful
-ible	forming an adjective	reversible, terrible
-ily	forming an adverb	eerily, happily, lazily
-ing	denoting an action, a material, or a gerund	acting, showing
-less	without, not affected by	friendless, tireless
-ly	forming an adjective	clearly, hourly
-ness	denoting a state or condition	kindness, wilderness
-y	full of, denoting a condition, or a diminutive	glory, messy, victory,

Bank of Prefixes				Bank of Suffixes			
dis-	im-	mis-	un-	-able	-ance	-ion	-ment
il-	in-	re-		-al	-ful	-ly	-y

Use the bank of prefixes and suffixes to complete each word. There may be more than one answer for some words.

Prefix - Root Word - Suffix	Prefix - Root Word - Suffix
___place___	___enforce___
___law___	___arrange___
___legal___	___develop___
___mature___	___taste___
___taken___	___finite___
___humane___	___act___
___assign___	___help___
___health___	___know___
___account___	___appear___
___live___	___avoid___

Change the sentences according to the directions.

1×10=10

- (a) Television is one of the most wonderful inventions of modern science. (Positive)
- (b) It was not invented overnight. (Active)
- (c) Scientists spent many years and worked hard to invent television. (Complex)
- (d) Nowadays, almost every family has a television set. (Negative)
- (e) People of all ages like to watch television. (Interrogative)
- (f) The programmes telecast by television are very interesting. (Complex)
- (g) Television should telecast educative programmes. (Passive)
- (h) If you watch television, you can learn many things. (Simple)
- (i) People spend their free time by watching television. (Compound)
- (j) Very few things are so useful as television. (Superlative)

Ans; (a) Very few inventions of modern science are as wonderful as television.

(b) Scientist did not invent it overnight.

(c) Scientists spent many years and worked hard so that they could invent television.

(d) Nowadays, there is no family without a television set.

(e) Don't the people of all ages like to watch television?

(f) The programmes which are telecast by television are very interesting.

(g) Educative programmes should be telecast by television.

(h) By watching television you can learn many things.

(i) People watch television and spend their free time.

(j) Television is one of the most useful things.

- (2) (a) My friend invited me to pay a visit to Cox's Bazar. (Complex)(b) I was very glad. (Negative)(c) I accepted the invitation. (Passive)(d) When I reached there, my friend received me cordially. (Simple)(e) I was excited to see the sea-beach. (Exclamatory) (f) It is the largest sea-beach in the world. (Comparative)(g) It is one of the most beautiful sea-beaches in the world. (Positive)(h) It is called the pleasure seekers' paradise. (Active)(i) Every year a lot of people come to visit it. (Compound)(j) If I could visit the sea-beach! (active)

Ans ; (a) My friend invited me so that I could pay a visit to Cox's Bazar.(b) Wasn't I very glad?(c) The invitation was accepted by me.(d) My friend received me cordially after my reaching there.(e) How excited I was to see the sea-beach!(f) It is larger than any other sea-beach in the world.(g) Very few sea-beaches in the world are as beautiful as it.(h) People call it the pleasure seekers' paradise.(i) Every year a lot of people come and visit it.(j) I wish i could visit the sea-beach.

(3) (a) A flower is a glowing gift of nature.(Interrogative)

(b) Isn't it the symbol of love and beauty?(Affirmative)

(c) Flowers are used on different occasions.(Active)

(d) We present flower to our nearest and dearest person.(Passive)

(e) We need flowers to decorate a place.(Complex)

(f) The rose is the best of all flowers.(Positive)

(g) Having sweet scent and beauty we love it very much.(Compound)

(h) It is lovelier than all other flowers.(Superlative)

(i) The rose is a very nice flower.(Exclamatory)

(j) As the demand for flowers is increasing day by day we should cultivate flower on commercial basis.(Simple)

Answer: (a) Isn't a flower a glowing gift of nature?

(b) It is the symbol of love and beauty.

(c) People use flowers on different occasions.

(d) Flower is presented to our nearest and dearest persons by us.

(e) We need flowers so that we can decorate a place.

- (f) No other flower is as good as the rose.
- (g) A flower has sweet scent and beauty and we love it very much.
- (h) It is loveliest of all flowers.
- (i) How nice a flower the rose is!
- (j) Because of increasing the demand for flowers day by day, we should cultivate flowers on commercial basis.

- (4) (a) Haji Mohammad Muhsin was not an unkind man at all.(Affirmative)
- (b) He inherited vast proerty from his father and sister.(Interrogative)
- (c) He was unmarried.(Negative)
- (d) During his lifetime, he spent money lavishly to help the poor.(Complex)
- (e) One night when he was saying his prayer, a thief broke into his room.(Simple)
- (f) Seeing Muhsin the thief cried.(compound)
- (g) The thief was caught.((Active)
- (h) How needy the thief was!(Assertive)
- (i) He gave the thief some food and money.(Passive)
- (j) Muhsin was one of the best philanthropists in the world.(Positive)

Answer: (a) Haji Mohammad Muhsin was a very kind man.

- (b) Didn't he inherit vast property from his father and sister?
- (c) He was not married.
- (d) As long as he was alive, he spent money lavishly to help the poor.
- (e) One night at the time of saying his prayer, a thief broke into his room.
- (f) The thief saw Muhsin and cried.
- (g) He caught the thief.
- (h) The thief was very needy.
- (i) The thief was given food and money by him.
- (j) Very few philanthropists in the world were as good as Muhsin.

- (5) (a) The students studying regularly can expect a good result.(Make it a complex sentence)
- (b) But most of our students are inattentive to their studies.(Make it a negative sentence without changing the meaning)
- (c) They waste their valuable time idly.(Use passive voice)
- (d) Wasting time is harmful for them.(Make it an interrogative sentence)
- (e) By repeating this activity they make a poor result.(Make it a complex sentence)
- (f) Who loves them then?(Make it a assertive sentence without changing the original meaning)
- (g) They are treated badly even by their family members.(Use active voice)
- (h) If a student fails in the examination, he suffers from inferiority complex.(Make simple sentence)
- (i) No other student in the class is as bad as a failed student.(Use superlative)
- (j) So a student should be aware of studying regularly and attentively so that he can do well in the examination.(Make it a simple sentence)

Answer: (a) The students who are studying regularly can expect a good result.

- (b) But most of our students are not attentive to their studies.
- (c) Their valuable time is wasted idly by them.
- (d) Isn't wasting time harmful for them?
- (e) By repeating this activity they make a result which is poor.
- (f) Nobody loves them then.
- (g) Even their family members treat them badly.
- (h) A student failing in the examination suffers from inferiority complex.
- (i) A failed student is the worst of all students in the class.
- (j) So a student should be aware of studying regularly and attentively to do well in the examination.

ঢাকা অ্যাডভেন্টিষ্ট প্রি-সেমিনারী অ্যাড স্কুল
অর্ধবার্ষিক পরিক্ষার জন্য পূর্ব প্রস্তুতি - ২০২১
৯ম শ্রেণি; বিষয়: বাংলা ১ম পত্র

পাঠ্যপুস্তক: ১। মাধ্যমিক বাংলা সাহিত্য

সৃজনশীল প্রশ্নের জন্য পড়তে হবে

গদ্য:

- ১। সুভা (রবীন্দ্রনাথ ঠাকুর)
- ২। অভাগীর স্বর্গ (শরৎচন্দ্র চট্টোপাধ্যায়)
- ৩। বই পড়া (প্রমথ চৌধুরী)
- ৪। আম-আঁটির ভেঁপু (বিভূতিভূষণ বন্দ্যোপাধ্যায়)

পদ্য:

- ১। বঙ্গবাণী (আব্দুল হাকিম)
- ২। কপোতাক্ষ নদ (মাইকেল মধুসূদনদত্ত)
- ৩। জীবন সঙ্গীত (হেম চন্দ্র বন্দ্যোপাধ্যায়)
- ৪। সেই দিন এই মাঠ (জীবনানন্দ দাশ)

বহুনির্বাচনি প্রশ্নের জন্য পড়তে হবে

গদ্য:

- ১। সুভা (রবীন্দ্রনাথ ঠাকুর)
- ২। অভাগীর স্বর্গ (শরৎচন্দ্র চট্টোপাধ্যায়)
- ৩। বই পড়া (প্রমথ চৌধুরী)
- ৪। পল্লিসাহিত্য (মুহম্মদ শহীদুল্লাহ)
- ৫। মানুষ মুহম্মদ (স.) (মোহা. ওয়াজেদ আলী)
- ৬। আম-আঁটির ভেঁপু (বিভূতিভূষণ বন্দ্যোপাধ্যায়)
- ৭। নিম গাছ (বনফুল)

পদ্য:

- ১। বঙ্গবাণী (আব্দুল হাকিম)
- ২। কপোতাক্ষ নদ (মাইকেল মধুসূদনদত্ত)
- ৩। জীবন সঙ্গীত (হেম চন্দ্র বন্দ্যোপাধ্যায়)
- ৪। জুতা আবিষ্কার (রবীন্দ্রনাথ ঠাকুর)
- ৫। মানুষ (কাজী নজরুল ইসলাম)
- ৬। ঝর্ণার গান (সত্যেন্দ্রনাথ দত্ত)
- ৭। সেই দিন এই মাঠ (জীবনানন্দ দাশ)

২। মাধ্যমিক বাংলা সহপাঠ

উপন্যাস- কাকতালুয়া (সেলিনা হোসেন)

এবং

নাটক - বহিপীর (সৈয়দ ওয়ালী উল্লাহ)

প্রশ্নের মান বণ্টন: পূর্ণমান-১০০

সৃজনশীল প্রশ্নের জন্য ৭০ নম্বর এবং বহুনির্বাচনি প্রশ্নের জন্য ৩০ নম্বর বরাদ্দ আছে।

প্রতিটি সৃজনশীল প্রশ্নের নম্বর ১০ এবং প্রতিটি বহুনির্বাচনি প্রশ্নের নম্বর ১।

(গদ্য থেকে ৪ টি, পদ্য থেকে ৩ টি এবং সহপাঠ থেকে ৪ টি মোট ১১টি প্রশ্ন থাকবে।

প্রতি অংশ থেকে ন্যূনতম ১টি করে মোট ৭টি প্রশ্নের উত্তর দিতে হবে।

$$১০ \times ৭ = ৭০$$

বহুনির্বাচনী প্রশ্ন

$$৩০ \times ১ = ৩০$$

মোট

$$= ১০০$$

সকল সৃজনশীল প্রশ্ন বই থেকে আসবে। বইয়ের প্রশ্ন ফলো কর।

ঢাকা অ্যাডভেন্টিস্ট প্রি-সেমিনারী অ্যান্ড স্কুল
শর্ট সিলেবাস- বাংলা দ্বিতীয় পত্র
৯ম শ্রেণি ২০২১

নির্মিতি অংশ-

১। অনুচ্ছেদ রচনা:

(ক) শীতের সকাল (খ) একুশের বইমেলা

২। পত্র -- ব্যক্তিগত- (ক) বন্ধুর বাবার মৃত্যুতে সমবেদনা জানিয়ে বন্ধুকে পত্র লেখ।

আবেদন পত্র- (ক) পানীয় জলে আর্সেনিক দূষণের ব্যাপারে যথাযথ কর্তৃপক্ষের দৃষ্টি আকর্ষণ করে সংবাদপত্রে প্রকাশের জন্য পত্র।

৩। সারমর্ম / সারাংশ

সারাংশ- (ক) আজকের দুনিয়াটা আশ্চর্যভাবে অর্থ বা বিত্তের ওপর নির্ভরশীল।-----

(খ) মানুষের জীবনকে একটি দোতলা ঘরের সাথে তুলনা করা যেতে পারে।

সারমর্ম- (ক) তরুণতলে বসি পাছ শ্রান্তি করে দূর,----- ধন্য তরুর মতোন।

(খ) কে তুমি খুঁজিছ জগদীশে ভাই আকাশ-পাতালজুড়ে---

৪। ভাবসম্প্রসারণ -

(ক) নানান দেশের নানান ভাষা/ বিনা স্বদেশী ভাষা মিটে কি আশা?

(খ) আলো বলে, "অন্ধকার তুই বড় কালো"

অন্ধকার বলে, " ভাই তাই তুমি আলো"

৫। প্রতিবেদন রচনা :

(ক) বিদ্যালয়ের সাহিত্য ও সাংস্কৃতিক সপ্তাহ সম্পর্কে একটি প্রতিবেদন তৈরি কর।

(খ) তোমাদের বিদ্যালয়ে আন্তর্জাতিক মাতৃভাষা দিবস উপলক্ষে আয়োজিত অনুষ্ঠানমালার বিবরণ দিয়ে একটি প্রতিবেদন রচনা কর।

৬। রচনা- (ক) স্বদেশপ্রেম (খ) আন্তর্জাতিক মাতৃভাষা দিবস

ব্যাকরণ অংশ-

বাংলা ভাষার ব্যাকরণ ও নির্মিতি বই থেকে - পরিচ্ছেদ ১-৭।

নম্বর বন্টন: পূর্ণমান - ১০০

রচনা মূলক অংশের জন্য ৭০ নম্বর এবং বহুনির্বাচনি অংশের জন্য ৩০ নম্বর বরাদ্দ থাকবে।

রচনা মূলক অংশ:

অনুচ্ছেদ রচনা- (২টি প্রশ্ন থেকে ১টি) ১০

পত্র / দরখাস্ত/ মানপত্র / পত্রিকায় প্রকাশের জন্য চিঠি (২টির মধ্যে - ১টি) - ১০

সারাংশ বা সারমর্ম - (২টি প্রশ্ন থেকে ১টি) ১০

ভাবসম্প্রসারণ - (২টি প্রশ্ন থেকে ১টি) ১০

প্রতিবেদন প্রণয়ন - (২টি প্রশ্ন থেকে ১টি) ১০

প্রবন্ধ / রচনা লিখন - (৩টি বর্ণনামূলক রচনা থেকে ১টি) ২০

বহুনির্বাচনি প্রশ্ন:

বাংলা ভাষার ব্যাকরণ এবং নির্মিতি বই থেকে ৩০টি প্রশ্ন থাকবে।

প্রতিটি প্রশ্নের নম্বর - ১। সবকয়টি প্রশ্নের উত্তর দিতে হবে। ৩০

মোট =১০০

মিথিলা মিস- ০১৬৭২৬৯৭৩৯২

Dhaka Adventist Pre-Seminary and School
Bangladesh and Global Studies
Class: IX (EV)
Half Yearly Exam Suggestion
Types of questions and distribution of marks

➤ For Exam study CHAPTER- 1 to 7

Half Yearly/ Yearly Examination: Full Marks- 100

- | | |
|--|----|
| 1. Narrative question (Creative): 7 out of 11. | 70 |
| 2. Multiple choice questions: 30 | 30 |

Total= 100

- | | |
|----------------------------------|----|
| 1. Narrative question (Creative) | |
| (a) Knowledge stage | 01 |
| (b) Comprehension stage | 02 |
| (c) Application stage | 03 |
| (d) Higher order thinking stage | 04 |

Total= 10

- | | |
|--------------------------------------|-------|
| 2. Types of Multiple Choice question | |
| (a) General MCQ | 20/22 |
| (b) Multiple completion | 06 |
| (c) Situation set based | 2/4 |

Total= 30

Guide line for evaluating answer scripts of Bangladesh and Global Studies:

Narrative Question

1. a, b, c & d parts will be marked separately.
2. Number will be given for only for correctly answered parts.
3. No fraction mark shall be awarded.
4. Full marks will be given if knowledge and comprehension stage is correct.
5. Full mark shall be awarded according the type and standard of the answer of application stage.
6. Highest 3 marks shall be awarded in higher order thinking stage. 4 marks may be given depending on the question pattern.
7. The order of the stages of narrative question answer should be maintained.

MCQ:

1. Full mark shall be awarded for correct answer.
2. No number will be awarded for filling multiple circles (0) or giving multiple tick () marks in the MCQ.

Class: IX (EV)
Subject: English-I

Part A: Reading Test (Marks- 50) For Exam Follow Unit: One to Six

Seen Passage: (1)

- | | |
|---|---------|
| 1. MCQ | 1×7= 7 |
| 2. Open ended and close ended questions | 2×5= 10 |

Seen Passage: (2)

- | | |
|------------------------------|----|
| 3. Gap filling without clues | 05 |
|------------------------------|----|

Unseen Passage:

- | | |
|-------------------------|--------|
| 4. Information transfer | 1×5= 5 |
| 5. Summarizing | 10 |
| 6. Matching | 1×5=5 |
| 7. Rearranging | 08 |

Part B: Writing Test (Marks- 50) For Exam follow below items

- | | |
|--|----|
| a) Writing paragraph answering questions | 10 |
| b) Completing story | 10 |
| c) Describing graphs/ charts | 10 |
| d) Writing information letters/ E-mail | 10 |
| e) Dialogue writing | 10 |

Total= 100

1. Informal letters:

Writing a letter to your friend/ brother-

- a) describing about Covid-19
- b) describing a picnic you have recently enjoyed
- c) inviting your friend to attend your sister's marriage ceremony
- d) about the co-curricular activities of your school
- e) describing a street accident you have witnessed
- f) about your experiences and feelings of hostel life
- g) thanking him for hospitality
- h) describing a village fair.

E-mail Writing:

Write an e-mail to the authority concerned/ a friend/ father/ brother-

- a. informing your father about your result
- b. advising your brother to be attentive/ regular in studies
- c. reserving a seat in a train
- d. Inviting your friend to join your birthday party
- e. Advising him to give up smoking
- f. Cancelling a cheque.

2. Dialogue writing:

Writing a dialogue between two friends/ a student and his class teacher/ a customer and a salesman about-

- a) the necessity of learning English
- b) the necessity of reading newspaper
- c) his (student) late arrival
- d) buying a pair of shoes.
- e) the problem of illiteracy and how to curradicate
- f) what they will do after the SSC examination.
- g) advantages and disadvantages of city and village life.
- h) the effects and remedies of air pollution.
- i) about borrowing book from the school library.
- j) describe the annual prize giving ceremony of your school.

3. Writing Paragraph:

- a. The Celebration of Pahela Baishakh
- b. Water Pollution
- c. How to use Internet
- d. Our National Flag
- e. May Day
- f. Gender Discrimination
- g. Global Warming
- h. Your Visit to Ekushe Boi Mela
- i. Your Visit to Shat Gombuj Mosque
- j. A Moonlit Night
- k. Air Pollution
- l. Deforestation

4. Completing a Story:

- a. Unity is Strength
- b. A friend in need is a friend indeed
- c. Slow and Steady wins the race
- d. Byazid's devotion to his mother
- e. Who is to bell the cat?
- f. The foolish crow and the clever fox
- g. The ready wit of a boy
- h. Dividing the bread
- i. A liar cowboy
- j. A wonderful goose
- k. An honest woodcutter
- l. A lion and a muse
- m. The story of Robert Bruce
- n. A fox without a tail
- o. A grapes are sour

5. Describing graphs/ charts:

Analyzing graphs and charts: Serial no: 1, 2, 3, 4, 6 7, 9, 15, 17, 19 (From the prescribed book)

Dhaka Adventist Pre-Seminary and School (DAPS)

Important Formulas for Algebra, Trigonometry, Mensuration, Geometry and Statistics

[For class Nine and Ten]
English Version

Student's Name : _____ ID : _____ Class : _____ Section : _____

◆ Formulas of Square and Cube :

1. $(a + b)^2 = a^2 + 2ab + b^2 = (a - b)^2 + 4ab$
2. $(a - b)^2 = a^2 - 2ab + b^2 = (a + b)^2 - 4ab$
3. $a^2 + b^2 = (a + b)^2 - 2ab = (a - b)^2 + 2ab = \frac{(a+b)^2 + (a-b)^2}{2}$
4. $a^2 - b^2 = (a + b)(a - b)$
5. $2(a^2 + b^2) = (a + b)^2 + (a - b)^2$
6. $ab = \left(\frac{a+b}{2}\right)^2 - \left(\frac{a-b}{2}\right)^2$
7. $4ab = (a + b)^2 - (a - b)^2$
8. $(x + a)(x + b) = x^2 + (a + b)x + ab$
9. $(a + b + c)^2 = a^2 + b^2 + c^2 + 2ab + 2bc + 2ca$
10. $a^2 + b^2 + c^2 = (a + b + c)^2 - 2(ab + bc + ca)$
11. $2(ab + bc + ca) = (a + b + c)^2 - (a^2 + b^2 + c^2)$
12. $(a + b)^3 = a^3 + 3a^2b + 3ab^2 + b^3 = a^3 + b^3 + 3ab(a + b)$
13. $(a - b)^3 = a^3 - 3a^2b + 3ab^2 - b^3 = a^3 - b^3 - 3ab(a - b)$
14. $a^3 + b^3 = (a + b)^3 - 3ab(a + b) = (a + b)(a^2 - ab + b^2)$
15. $a^3 - b^3 = (a - b)^3 + 3ab(a - b) = (a - b)(a^2 + ab + b^2)$

◆ Formulas of Exponents and Logarithms :

1. $a^m \times a^n = a^{m+n}$
2. $a^m \div a^n = a^{m-n}$
3. $(a^m)^n = a^{mn}$
4. $a^{-n} = \frac{1}{a^n}$
5. $\sqrt[n]{a} = a^{\frac{1}{n}}$
6. $a^0 = 1$
7. If $x = \log_a N$ then, $a^x = N$
8. $\log_a MN = \log_a M + \log_a N$
9. $\log_a \frac{M}{N} = \log_a M - \log_a N$
10. $\log_a r^n = n \log_a r$
11. $\log_a b = \frac{1}{\log_b a}$ Or, $\log_b a = \frac{1}{\log_a b}$
12. $\log_a a = 1$
13. $\log_a 1 = 0$

◆ **Trigonometric Formulas:**

1. $\sin \theta = \text{Opposite/Hypotenuse} = \frac{\text{বিপরীত বাহু (লম্ব)}}{\text{অতিভুজ}}$
 $, \text{cosec } \theta = \text{Hypotenuse/Opposite} = \frac{\text{অতিভুজ}}{\text{বিপরীত বাহু (লম্ব)}}$
2. $\cos \theta = \text{Adjacent/Hypotenuse} = \frac{\text{সন্নিহিত বাহু (ভূমি)}}{\text{অতিভুজ}}$, $\sec \theta = \text{Hypotenuse/ Adjacent} = \frac{\text{অতিভুজ}}{\text{সন্নিহিত বাহু (ভূমি)}}$
3. $\tan \theta = \text{Opposite/ Adjacent} = \frac{\text{বিপরীত বাহু (লম্ব)}}{\text{সন্নিহিত বাহু (ভূমি)}}$, $\cot \theta = \text{Adjacent/Opposite} = \frac{\text{সন্নিহিত বাহু (ভূমি)}}{\text{বিপরীত বাহু (লম্ব)}}$
4. $\sin \theta = \frac{1}{\text{cosec } \theta}$ বা, $\text{cosec } \theta = \frac{1}{\sin \theta}$
5. $\cos \theta = \frac{1}{\sec \theta}$ বা, $\sec \theta = \frac{1}{\cos \theta}$
6. $\tan \theta = \frac{1}{\cot \theta}$ বা, $\cot \theta = \frac{1}{\tan \theta}$
7. $\sin^2 \theta + \cos^2 \theta = 1$ বা, $\cos^2 \theta = 1 - \sin^2 \theta$
8. $\sec^2 \theta - \tan^2 \theta = 1$ বা, $\sec^2 \theta = 1 + \tan^2 \theta$
9. $\text{cosec}^2 \theta - \cot^2 \theta = 1$ বা, $\text{cosec}^2 \theta = 1 + \cot^2 \theta$

◆ **Formulas of Series:**

1. For the Arithmetic Series-

If first term is 'a' and common difference is 'd', then

☑ The Series : $a + (a + d) + (a + 2d) + \dots$

☑ n th Term = $a + (n - 1)d$

☑ Sum of n terms, $S_n = \frac{n}{2} \{2a + (n - 1)d\}$

2. For the Geometric Series-

If first term is 'a' and common ratio is 'r', then

☑ The Series : $a + ar + ar^2 + \dots$

☑ n th Term = ar^{n-1}

☑ Sum of n terms, $S_n = \frac{a(r^n - 1)}{r - 1}$; When $r > 1$

And, $S_n = \frac{a(1 - r^n)}{1 - r}$; When $r < 1$

3. $1 + 2 + 3 + \dots + n = \frac{n(n+1)}{2}$ [Sum of the first 'n' natural numbers]

4. $1^2 + 2^2 + 3^2 \dots + n^2 = \frac{n(n+1)(2n+1)}{6}$ [Sum of Squares of the first 'n' natural numbers]

5. $1^3 + 2^3 + 3^3 \dots + n^3 = \left\{ \frac{n(n+1)}{2} \right\}^2$ [Sum of Cubes of the first 'n' natural numbers]

◆ Formulas of Mensuration :

☑ For Triangle :

i. Area = $\frac{1}{2} \times \text{Base} \times \text{Height} = \frac{1}{2}ah$

ii. = $\frac{1}{2}ab \sin C$ [When $\angle C$ is the angle between a and b]

iii. = $\sqrt{s(s-a)(s-b)(s-c)}$ [When, Half Perimeter, $s = \frac{a+b+c}{2}$]

☑ For the Right-angled Triangle :

$$\text{Area} = \frac{1}{2} \times \text{Base} \times \text{Height} = \frac{1}{2}ab$$

☑ For the Equilateral Triangle :

$$\text{Area} = \frac{\sqrt{3}}{4}a^2$$

$$\text{And Height , } h = \frac{\sqrt{3}}{2}a$$

☑ For the Isosceles Triangle :

$$\text{Area} = \frac{b}{4}\sqrt{4a^2 - b^2} \quad (\text{When Base is 'b' and the Equal side is 'a'})$$

☑ Rectangular Area-

If two sides are 'a' and 'b'----

- Area = ab
- Perimeter = $2(a + b)$
- Diagonal = $\sqrt{a^2 + b^2}$

☑ Square :

||

If one side is 'a'----

- Area = a^2
- Perimeter = $4a$
- Diagonal = $a\sqrt{2}$

☑ Rhombus :

If diagonal is d_1 and d_2

- Area = $\frac{1}{2}d_1d_2$

☑ Trapezium :

If two sides are 'a' and 'b' and distance is 'h'----

- Area = $\frac{1}{2}(a + b)h$

☑ Equaled Multi sided Area:

- Area = $\frac{na^2}{4} \cot\left(\frac{180^\circ}{n}\right)$

- Half Area = $\frac{1}{2}\pi r^2$

☑ If angle of the center is 'θ'

- Length of Circular segment, $s = \frac{\theta}{360} \times$

$$2\pi r = \frac{\theta\pi r}{180}$$

- Area of Circular segment, = $\frac{\theta}{360} \times \pi r^2$

☑ Circle :

If Radius of Circle is 'r'----

- Diameter = $2r$
- Circumference = $2\pi r$
- Area = πr^2

☑ **Rectangular Solid :**

- Diagonal = $\sqrt{a^2 + b^2 + c^2}$
- Area of the total surface = $2(ab + bc + ca)$
- Volume = abc

☑ **Cube**

- Diagonal = $\sqrt{3}a$
- Area of the total surface = $6a^2$
- Volume = a^3

☑ **Cylinder :**

- Area of Base = πr^2
- Area of Curved surface = $2\pi rh$
- Area of total surface = $2\pi r(r + h)$
- Volume = $\pi r^2 h$

☑ **Circular Cone :**

- Area of Base = πr^2
- Area of Curved surface = πrl [When curved Height , $l = \sqrt{h^2 + r^2}$]
- Area of total surface = $\pi r(l + r)$
- Volume = $\frac{1}{3}\pi r^2 h$

◆ **Formulas of Statistics :**

		Non-arranged Data	Arranged Data
Central Tendency	Arithmetic Means	$\frac{\Sigma x_1}{n}$ <p>Σx_1 = Sum of Data n = Numbers of Data</p>	$\frac{1}{n} \Sigma f_i x_i$ <p>x_i = f_i = n = $\Sigma f_i x_i$ =</p>
	Median	<p>If the numbers of the Data (n) is odd number, then Median = the value of $\left(\frac{n+1}{2}\right)$ th term If the numbers of the Data (n) is even number, then Median = the arithmetic average value mean of $\frac{n}{2}$ $\left(\frac{n}{2} + 1\right)$ th term</p>	<p>Median = $L + \left(\frac{n}{2} - F_c\right) \times \frac{h}{f_m}$ L = n = F_c = f_m = h =</p>
	Mode	<p>The highest frequent numbers of data</p>	<p>Mode = $L + \frac{f_1}{f_1 + f_2} \times h$ L = f_1 = f_2 = h =</p>

Dhaka Adventist Pre-Seminary & School

CLASS: NINE (EV) Subject: ICT

Half Yearly Exam Suggestion

Total Marks- 50

1. How can ICT be helpful for building up our career? Explain.

Answer: in future not even at day cannot be image and without ICT. So to build our own career we have to be conscious enough to develop the ICT skills. Because in future without primary skill in the elements of ICT such as a computer internet email office software social communication system achieving a job will be much difficult. To build a career the main components of ICT are computer and internet to build the career in in necessary information can be quickly received reserved as necessary managed and distributed by using computer and internet due to ICT the speed of our daily works in trees through silencing sites we get the opportunities to work for the world famous companies staying in our countries the students can participate in the clash remaining at their homes online which is an important factor in building our careers as a result our skill is increased and there is less wastage of time and works that is the role of ICT as much in building our Carriers so to build a skilled here from now the use of ICT is to be increased.

2. Now it is impossible to study without the help of the internet explain with supporting argument.

Answer: in the whole world the numbers of internet users are increasing day by day at present internet has brought and free seat dented opportunity e in the field of education because by using internet the students can collect the important part of the relations are necessary information data and elements related to the lessons through internet the students staying at their homes can collect different information regarding colleges and universities of several countries of the world besides the students can enter the big libraries of different countries online and within seconds they can get the list and number of copies 20 of those books and they can collect the costly books and study those at present there is a facility to participate in different important courses of famous universities in the world through online staying at home many educational institutions contact classes through video conferencing by using internet as a result the students can participate in the crash staying at home so it is difficult now a days to study without internet.

3. What do you understand by digital content?

Answer: if any content remains in the shape of digital data published or transmitted and received is called digital content that means the published information picture sound or video is sitting in the digital system all maybe digital contents but still now the written information is in large quantities in the digital system besides photos hand drawn pictures decorations cartoons infographics animated pictures its extra all are included in digital content digital contents may be preserved generally in digital analogue or any other system digital conference may be transmitted in the shape of files on the computer or in the digital system.

4. Discuss the importance of the internet in education.

Answer: at present there are computers laptops tablets and smartphones with the students of our country that quantity of content sweet Bull for reading online by the students is increasing so if any student wants to read online the internet connection is a must many subjects oath of learning are available on the Internet while studying if any student does not understand anything he can surely get the answer from the internet after searching by any means if any student wants to learn anything specifically he can use the skills search engines on the Internet and can find out the necessary information on the internet there are groups of mathematics science and almost all other subjects and so they can answer any questions as such we can say that in the field of education the internet is an important part.

5. What is word processing? Write names of some popular word processor.

Answer: The meaning of word processing is to process the written through a computer and then to make a document and the machine by which the word processing is done is called word processor that means a word processor is a medium or element of the processing of words so it can be say that the machine by which any writing can be made sweet table for printing according to the demand of the user is called a word processor generally the word processor which are extensively used in computers are Microsoft word, world perfect, latex, notepad, WordPad.

6. What is editing? Discuss the importance of editing documents.

Answer: after typing a document it does not become a whole document there may be some errors during typing any line may be omitted or any line can be written twice or there is spelling mistake or to make any particular information especially noticeable the writing to be in some blocks or hydraulic it may require numbering doing all this jobs after typing of the document is called editing of document to present the document in a complicated shape many types of words are informed editing of document is to entry the dates studies them in different ways thereafter and present those in proper way in editing the documents some special jobs are involved those are discussed below

Number 1: To correct errors in spelling

Number 2: how to realign the size and shape of the letters if necessary.

Number 3: error in the paragraphs serial e according to the text of subjects.

Number 4: to add, subtract or correct new matters in the document.

7. Explain the importance of presentation software to present anything.

Answer: present time is the age to determine the welfare of mankind by creating exchange of information and its flow accessible now among the national and international resources educationist social worker and professionals the necessity of exchange or receive and transmit of information has become very important to make all kinds of stories of information easily available to all regular arrangements of meeting symposium team workshop are being done by this all related to their own field of work get the opportunity to achieve up to date information to present information actively and actively with the help of computer in making seminar symposium workshop its different presentation software also are used with this writings pictures or due video graph etc. are combined with information and can be presented actively and attractively as a matter of fact the software can be used very easily and nicely to present information actively in meeting, seminar symposium, workshop etc. for this it can be said that this software has no alternative for this reason to present information in meeting seminar symposium workshop etc. presentation software is very important.

8. What is multimedia?

Answer: the word multi means many and the word media means medium so the literal meaning of the word multimedia is many medium multimedia is such as synthesized arrangement by which an active lively and attractive computer word can be made by using more than one media such as TV, computer, telephone and some other developed technologies generally by attaching some hardware and software additional with the computer job of weaving pictures listening of songs etc. can also be done with parallel to working in computer multifunctional works can be done with the same equipment and so it is called multimedia.

9. Write use of multimedia in 3 field of works.

Answer: with the development of information technology the use of multimedia is increasing in large rate reading use of multimedia in the fields are detailed below

Number 1: **entertainment:** multimedia has brought a new horizon in entertainment in this field especially computer games listening to music and viewing pictures are mentionable.

Number 2: **education:** combination of sound, colour, picture etc. has created a colorful education system with the help of multimedia use of multimedia has user rate and New horizons in different kinds of educational training and receiving education through online or running of crosses computer aided learning is the application of multimedia.

Number 3: **commerce:** now a days advertisement for any commodity or detailed information are published in multimedia software besides through E-Commerce any organization can take and give the supply order of his organization.

10. Highlight the role of e-Learning in upgrading the standard of education.

Answer: e- learning plays a very significant role in the great addition of the standard of education what comes first in the visual perception of relevant information on as scientific topic teachers find it easier to teach their students while the students also find their lessons much is here and interesting taking our class teacher can demonstrate and Idea with the help of multimedia IT results in the practical experience of the students who have they no more likely to forget the lesson e learning in the learners of any institution to experience the videos of the lectures delivered by the expert features of other institutes only using in learning the students of a medical college can experience a very complex surgical operation done by expert surgeons of some other medical college or university may it belong to a foreign country at present online courses are available in a great many simply by saying at his residence even at the most remote village in the country besides whenever there is any form of confusion or there arises the necessity of learning and relevant information students can use the search engine through the internet.

CREATIVE MCQ/Short question answer

1. Link which year was London science museum successful in making the engine capable of calculating mechanically?

Answer: 1991

2. Which scientist made it possible for us to do office from home?

Answer: Charles Babbage

3. Who is the inventor of Facebook?

Answer: Mark Zuckerberg

4. Which technology played a vital role for the treatment of people?

Answer: computer

5. In which century the concept of wealth was changed?

Answer: 21st.

6. Which of the following is accelerated by information and communication technology?

Answer: internationalization

7. Which one is the wealth of modern world?

Answer: information

8. How many expatriates do we have?

Answer: 8 million

9. Which one of the following is regarded as the key wealth of the 21st century?

Answer: knowledge

10. What lies next to ICT in the process of globalization?

Answer: language

11. Which of the following inventions initiated the industrial revolution?

Answer: steam engine

12. The theory of electromagnetic force was revealed by- **James clerk Maxwell**
13. Started the Apple company- **Steve Jobs**
14. Charles Babbage is regarded as- **father of the modern computer**
15. Emailing was launched by- **Raymond Samuel Tomlinson**
16. John Tim Berners-Lee is known as- **The pioneer of World Wide Web www.**
17. Apple computer begin his journey on- **1st April 1976**
18. In which year the father of modern computer was born- **1791**
19. In which date Facebook was first launched- **4 February 2004**
20. In which year was microprocessor invented- **1971**
21. What kind of programming Idea did Ada Lovelace put forward- **algorithm**
22. In which year email was introduced- **1971**
23. Who is the first programmer in the world- **Ada Lovelace**
24. Microprocessor was first invented by which company- **IBM**
25. In which year did babies deliver a letter about his engine- **1842**
26. Who is the father of www- **Tim Berners Lee**
27. Raymond Samuel Tomlinson is the pioneer of- **email**
28. Who introduces the process of sending the message without wire- **Jagdish c Bose**
29. Who success first in sending signals to far off distance- **G Marconi**
30. Invented radio- **Guglielmo Marconi**
31. What is the full form of http- **hypertext transfer protocol**
32. Transistor was invented in- **1948 ad**
33. Desktop publishing was introduced in- **1975**
34. The production of personal computers is not possible without- **microprocessor**
35. Who owns Microsoft- **Bill Gates**
36. In which year did http come into being- **1989**
37. Which one is a bill payment method in e-commerce is- **COD**
38. Full form of COD- **cash on delivery**
39. Which use industry has been created worldwide is- **e commerce**
40. E-Commerce stands for- **electronic commerce**
41. In which year was e commerce introduced in our country- **2011**
42. Tweet message must not exceed- **140 words**
43. Social networking refers to- **interaction among people using virtual communication**
44. Virtual communication is- **the outcome of ICT**
45. What is the position of Bangladesh in the world as the owner of a satellite- **57**
46. Which one is behind the spreading of the network- **internet**
47. U N I V A C is- **universal automatic computer**

48. Software is installed_ **to make software usable**
49. What is the binary value of 10- **1010**
50. Which of the devices ensures the easiest uninstallation_ **Android**
51. Virus is_ **one kind of software**
52. Virus was named in - **1980**
53. Virus is the acronym of - **vital information and resource under seize.**
54. Virus was named by - **professor Fred Cohen**
55. Booting virus attacks - **the booting sector of the hard disk**
56. Vienna, C1H, stone and Trojan horse are- **some of the most familiar virus**
57. Antivirus is the preventive measure for - **virus**
58. Antiviral utility is applied for - **ensuring safety from the attack of virus**
59. AVG is - **a Worth mentioning antivirus program**
60. The website for downloading of vast antivirus program is - www.avast.com

WISH YOU ALL THE BEST

Dhaka Adventist Pre – Seminary & School (DAPS)
Half Yearly Suggestion -2021
Class: 9 English Version
Sub: Islam and Moral Education

1, Mr. Karim is a Muslim. He kept the photo of a Saint at one corner of his house. He greets the photo every day. On the other hand, his brother Khalil is an officer. He often drinks alcohol and extorts money by holding files. When his brother forbids him to do such things, Mr. Karim says, “I do not think these are illegal. I say my prayers and fast as well.”

- a. What is Shafaat?
- b. Why belief in the revealed books is indispensable?
- c. What has been expressed through the activities of Karim? Explain.
- d. Analyse the consequences of the activities of Mr. Khalil.

2. Shafiur Rahman teaches Islam in Sathiya High School. He told his favourite student Zubayer to bring a poster writing the signs of Munafiq. Zubayer made a poster and brought it. He wrote in it-

1. When he speaks he tells a lie.
2. When he promises he breaks it.
3. When something is kept in his custody he grabs it.

- a. What is Nifaq?
- b. Explain the concept of Nifaq.
- c. Describe the introduction of a person who possesses the signs mentioned in the poster of Zubayer.
- d. Analyze the consequence of the signs that mentioned in the poster of Zubayer.

3. There were acute works of kufr in ancient Arabian people. They were in the dark. They did crimes continuously. It is Muhammad(Sm) who warned them about the punishment of kufr. He showed them simple way of life through which they could get the way to Allah who created this universe. If a Kafir repents and does the works Allah has imposed on them, he or she may hope for being pardoned.

- a. what does Kufr mean?
- b. Why would Kafir get severe punishment?
- c. Mention the ways how a man become a Kafir?
- d. “Kufr is a great sin.”- Explain.

4. Mr. Riasat believes that Allah is the creator and the protector. He sometimes performs Salat and Sawm. However, he believes that a man is responsible for his deeds. A person will receive the results according to his work. His friend Mr. Asgar remains very busy with that it is not wrong taking drugs.

- a. What is Shirk?
 - b. Why are Munafiqs harmful for Islam and the Muslims?
 - c. Which Islamic belief does the concept of Mr. Riasat contradict with? Explain.
 - d. Analyse the belief of Mr. Asgar and explain the demerits of it according to the textbook.
5. Hasib bought 5 kg rice from the market. He returned home and found 4 kg rice. He told that the soap keeper is a Munafiq. Munafiq is more dangerous than Kafir.
- a. How many symbols of Munafiq are there?
 - b. What do you mean Munafiq?
 - c. Why did Hasib mention the shop keeper as Munafiq? Explain it.
 - d. Analyze that “Munafiq is more dangerous than Kafir.”
6. Mr. Rafiq is an employee of the government office. He follows all the rules of the four sources of Shariat. He turns to the Quran first for solving any problem.
- a. What is Shariat?
 - b. Why are the rules of Shariat unbreakable?
 - c. Explain the importance of Shariat in leading Mr. Rafiq’s life?
 - d. Explain the sources of Shariat mentioned in the stem.
7. Mr. Rafiq besides maintaining the rules of Islam does a lot of charity to others. He also behaves well with the orphan. On the other hand, his brother Mr. Saju does various sinful activities despite of knowing the fate of the races disobeying their own prophets.
- a. What is Matan?
 - b. Explain the principles of Qiyas.
 - c. Which Sura has an impact on Mr. Rafiq to behave well with the orphan?
 - d. Analyze the consequences of the activities of Mr. Saju in light of the relevant Sura.
8. One day religious teacher Mr. Milton explained the source of Shariat in the class. He said, “Al-Quran is the first source of Shariat. This book has been revealed in Arabic language where described in a very decent and simple language. This holy book revealed on Prophet(Sm) in his prophetic era of 23 years.
- a. What is the most prominent source of Shariat?
 - b. Why has Al-Quran been revealed in simple language?
 - c. Describe the process of revealing the Al-Quran?
 - d. “Al-Quran is the first source of Shariat”- Justify this statement.

9. Mr. Jia is a very respectable and popular man of his area. One day he saw some criminals chasing Zarif who is from his area. When Zarif asked for shelter to Mr. Jia, he gave him shelter. When criminals asked him to give them Jia he refused to hand over Jia. Mr. Jia's friend Mr. Mizan follows the rules of Islam and helps the distressed people. He behaves well with the orphans and beggars.

- a. What is Izma?
- b. Why is Islam called dynamic code of life?
- c. Which Sura's teaching has been observed in the activities of Mr. Mizan? Explain.
- d. Mention the Hadith that is related to the activities of Mr. Jia and analyse the teachings of it?

10. On one Friday of the Month of Rabiul Awal, Mr. Taha participated in two Sirat congregation. In the first congregation, Mowlana Mizan pronounced the Ayat- "Lakad Kana Lakum fi Rasulillha Aswatun Hasanah." In the second congregation, Mowlana Zami recited the Ayat- "Ikra Bismeh Rabikallazi Khalaq." In both the congregations, the attendees attentively listened to the recitations.

- a. In what year the Hudaibiah Treaty was signed?
- b. What do you understand by Charter of Madinah?
- c. Which ideals were expressed through the Ayat by Mowlana Mizan? Explain.
- d. Explain the Ayat pronounced by Mowlana Zami in light of Islamic education and ideal lives.

11. Immediately after being elected as city Mayor, Sadiqur Rahman in an important speech told. You all will stay strict on the path of Islam and safeguard the wealth deposited by others. On the other hand, his Mr. Shadat councilor is very judicious and always strictly holds the truth, does not mix truth with lies. He even punished his own son for being addicted in his own hand.

- a. What is Ayyam-e Jahiliyan?
- b. "No, Never. By Allah! He will humiliate you"-Explain.
- c. Which great man's speech is similar to Mayor Sadiqur Rahman's speech? Explain.
- d. Which Chlip's ideal has been reflected in councilor Shahadat's character? Identify and analyze.

Solve the all extra creative questions by yourselves.

Including Chapter 1 and 2 all the creative questions are from textbook.



Physics

Motion (Chapter-2)

Mathematical Problems

For Class – Nine & Ten (Science Group- EV)

Student's Name:..... ID:.....

Institution:.....

Class:.....Section:.....

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Physics Chapter-2 (Motion)
Mathematical Problems for Practice

Type- A

1. The velocity of a body increases from 3ms^{-1} to 31ms^{-1} in 7s. What is the acceleration of the body? Ans: 4ms^{-2} .
2. A body of mass 5kg is falling by the effect of gravity. Which values of force activated here? What is the velocity after 4s? Ans: 49 N, 39.2ms^{-1} .
3. The velocity of a car increases from 5ms^{-1} to 45ms^{-1} with uniform acceleration in 10s. Find the acceleration. Ans: 4ms^{-2} .
4. The velocity of a car decreases from 20ms^{-1} to 4ms^{-1} with uniform retardation. Find the deceleration. Ans: -4ms^{-2} .
5. A car starts from rest after the velocity becomes 20ms^{-1} by 2ms^{-2} acceleration. Find the activated acceleration during movement. Ans: 10s.
6. A train starts from rest and become velocity 30ms^{-1} after 1 minute. What is the acceleration? Ans : 0.5ms^{-2} .

Type- B

7. A train crosses 240m distance of a station in 10s by 4ms^{-2} acceleration. What was the velocity of the train during crossing the station? Ans: 4ms^{-1}
8. A car is moving with a velocity 36kmh^{-1} . By applying brakes it comes to rest after 50 s. Find the retardation of the car. Which distance passed in this time? Ans: -0.20ms^{-2} , 250m.
9. An aeroplane run 2km from rest on the runway at uniform acceleration of 10ms^{-2} before takeoff. How long will it take to run over the runway? Ans: 20s
10. A piece of stone felled down from an up going balloon. The height of the balloon was 200m during the stone was falling and the stone felled to the ground in 8s. What was the velocity of the balloon when it leaved the stone? Ans: 14.2ms^{-1}
11. Show that, if we through a body to straight perpendicular in the air with the half of g initial velocity, then it will fall on the ground after 1s. Ans: $h=0\text{m}$.
12. Which distance it passes in 32s with 0.5ms^{-2} uniform acceleration if a body moves from the rest? Ans: 256m.
13. Two cars of same mass run with velocity accordingly 6ms^{-1} and 9ms^{-1} , reach the same destination within same time. The acceleration of the car is accordingly 5ms^{-2} and 3ms^{-2} . What time passed to reach the destination? Ans: 3s.

14. Show graph the when the car runs with uniform acceleration.
- | | | | | |
|--------------|---|---|---|---|
| Time (s) | 0 | 1 | 2 | 3 |
| Distance (m) | 0 | 1 | 4 | 9 |

Type- C

15. The velocity of a car becomes 10ms^{-1} after travelling 9m by pressing the accelerator pressing the acceleration of 2ms^{-2} . What was the velocity of the car at the moment of pressing the acceleration? Ans: 8ms^{-1} .
16. A bus runs by the straight road from rest with 10ms^{-2} uniform acceleration. Which acceleration will it be there when bus will pass a man who are standing 80m far from the bus? Ans: 40ms^{-1} .
17. What will be the final velocity on ground of a falling body from 50m height? Ans: 31.3ms^{-1} .

18. Mukul thrown up a cricket ball in the air perpendicularly from the ground with 20ms^{-1} initial velocity. What was the highest height of the ball? Ans: 20.40m.
19. How many planks of wood will a bullet of 15g mass with 600ms^{-1} initial velocity is able to pass? Ans: $n=4$.

Type- D

20. The radius and mass of the Earth are accordingly 6371km and $5.975 \times 10^{24}\text{kg}$. If the highest height of the mount averest is 8.848km, then what is the value of acceleration over there? Ans: 9.79ms^{-2}
21. If the radius of the Earth is $6.4 \times 10^6\text{m}$ and the gravitational acceleration on ground is 9.8ms^{-2} , What is the mass of the Earth? $G= 6.673 \times 10^{-11}\text{Nm}^2\text{kg}^{-2}$. Ans: $6 \times 10^{24}\text{kg}$
22. If the radius of the Earth is $6.4 \times 10^6\text{m}$ and the gravitational acceleration on ground is 9.8ms^{-2} , What is the density of the Earth? $G= 6.673 \times 10^{-11}\text{Nm}^2\text{kg}^{-2}$. Ans: $5.464 \times 10^3\text{kgm}^{-3}$.

Type- E

23. A bullet of 10g with 300ms^{-1} initial velocity stopped into a piece of wood after entered 4.5cm. What is the binding force? What time it take to be stopped? Ans: $3 \times 10^{-4}\text{s}$.
24. A bullet after penetrating 0.04m of a wall losses half of its speed. How far will it penetrate into wall afterwards? Ans: 0.0133m.
25. A person vertically throws a ball at 48ms^{-1} speed . How long will the ball stay in the air and how far will it rise? Ans: 117.55m.

26. A bullet was fired horizontally from a tower with a velocity of 980ms^{-1} and it touched the ground after 2 second. Find the height of the tower. Ans: 19.6m.

27. Ratul passed 500m in 2 minutes and Nuha passed 750m in 5 minutes. Both of them run with uniform velocity. Draw a data and data based graph for both of them according to 5 minutes time interval.

28. If we through up a body to straight in the air perpendicularly with 196ms^{-1} initial velocity, is it possible to reach 2 km height ? Give the mathematical calculation. Ans: No ($1.96\text{km} < 2\text{km}$).

29. A running car with 54kmh^{-1} initial velocity was accelerated 5s with 4ms^{-2} uniform acceleration. What is the final velocity? What distance did it passed during acceleration? Ans: 35ms^{-1} , 125m.

30. A train travelling at the velocity of 36kmh^{-1} is stopped in 50s by applying brake. What is the acceleration of the train? What distance will the train travel in this time? Ans: 0.2ms^{-2} , 250m.

Physics Chapter-3 (Force)

Mathematical Problems for Practice

Type- A

1. Which acceleration creates when apply 105N force on a body of 15 kg mass? Ans: 7ms^{-2} .
2. 100 N force applies during 2s on a rest body of 50 kg. What is the velocity after this time? Ans: 4ms^{-1} .
3. A boy collised with a box of 20 kg with 50N force. What is the acceleration? Ans: 2.5ms^{-2} .
4. 2000N force applies on a body of 20kg mass during 0.1s time. What is the change of momentum? Ans: 200kgms^{-1} .
5. What will be the acceleration of a body of mass 15kg when a force of 105N is applied? Ans: 7ms^{-2} .
6. A force of 100N acts on a stationary body of mass 50kg for 2 seconds. What will be the velocity of the body at the end of this time? Ans: 4ms^{-1} .

7. A bullet of mass 10g having a velocity of 300ms^{-1} stops after piercing 4.5cm within a piece of wood. Find the piercing force. How long did the bullet take to pierce this distance? Ans: $-10\ 4\text{N}$, $3\times 10^{-4}\text{s}$.

Type- B

8. A car mass 600 kg is moving with a velocity of 20ms^{-1} on a straight path collides with a stationary truck of mass 1400 kg gets locked with it. What will be velocity of two combined vehicles? Ans: 6ms^{-1} .
9. A body of mass 3kg moves eastward with a velocity of $2\ \text{ms}^{-1}$. Another body of mass 1 kg moves westward with velocity of 2ms^{-1} . At a certain time the two bodies collide with each other and becomes a single body. What will be the velocity and direction of motion of the combined body? Ans: 1ms^{-1} .
10. A bullet of mass 10g leaves the barrel of a gun of mass 6kg at the velocity of 300ms^{-1} . Determine the backward velocity of the gun? Ans: -0.5ms^{-1} .

Type- C

11. A car is moving with velocity 36kmh^{-1} . By applying brake it comes to rest after 50s. Find the retardation of the car. Ans: -0.2ms^{-2}
12. A car of 60kg is moving with a velocity 20ms^{-1} on a straight path collides with a stationary body of mass 140kg and gets locked with it. What will be the velocity of the two combined vehicles? Ans: 6ms^{-1} .
13. A force of $1.82\times 10^{-16}\ \text{N}$ acts on an electron of mass $9.1\times 10^{-31}\ \text{kg}$ at rest for 10^{-9}s . Find the final velocity of the electron. Ans: $2\times 10^5\text{ms}^{-1}$
14. An aeroplane runs a distance of 2km in the runway at uniform acceleration of 10ms^{-2} starting from rest before leaving ground. How long it take to pass over the runway? Ans: 20s.