56. *Explain the basic principle, construction and working of Van de Graaff generator.*

Van de Graaff generator. *It is an electrostatic generator capable of building up high potential differences of the order of* 10^7 *volts.*

Principle. The working of a Van de Graaff generator is based on following two electrostatic phenomena :

(*i*) *Discharging action of sharp points (corona discharge) i.e., electric discharge takes place in air or gases readily at the pointed ends of conductors.*

(*ii*) *If a charged conductor is brought into internal contact with a hollow conductor, all of its charge transfers to the hollow conductor, howsoever high the potential of the latter may be.*

Construction. A large spherical conducting shell (of few metres radius) is supported at a height several metres above the ground on an insulating column. A long narrow belt of insulating material, like rubber or silk, is wound around two pulleys, P_1 at ground level and P_2 at the centre of the shell.

This belt is kept continuously moving by an electric motor attached to the lower pulley P_1. Near the bottom and the top of its run, the belt passes close to two sharply pointed brass combs B_1 and B_2, pointing towards the belt. The comb B_1, called *spray comb* is given a positive potential of 10 kV with respect to the earth by means of a battery ; while the comb B_2, called *collecting comb*, is connected to the spherical shell *S*.

Working. Due to the high electric field at the pointed ends of comb B_1, the air of the neighbourhood gets ionised and its positive charge repelled or sprayed on to the belt, which moves up into the shell *S*. As it passes close to comb B_2, it induces a negative charge at the pointed ends of comb B_2 and a positive charge on the shell *S*. The positive charge spreads uniformly on the outer surface of the shell *S*. The high electric field at the pointed ends of comb B_2 ionises the air there and repels the negative charges on to the belt which neutralise its positive charge. This process continues. As more and more positive charge is given to the shell, its potential continues to rise. In this way, a high potential of 6 to 8 million volts can be built upon the sphere.

A discharge tube is placed with its upper end inside the hollow sphere and lower end earthed. The ion source is placed at the upper end of the tube. The high potential on the sphere repels the charged particles downward with large acceleration, where they hit the target atoms to bring about the nuclear disintegration.

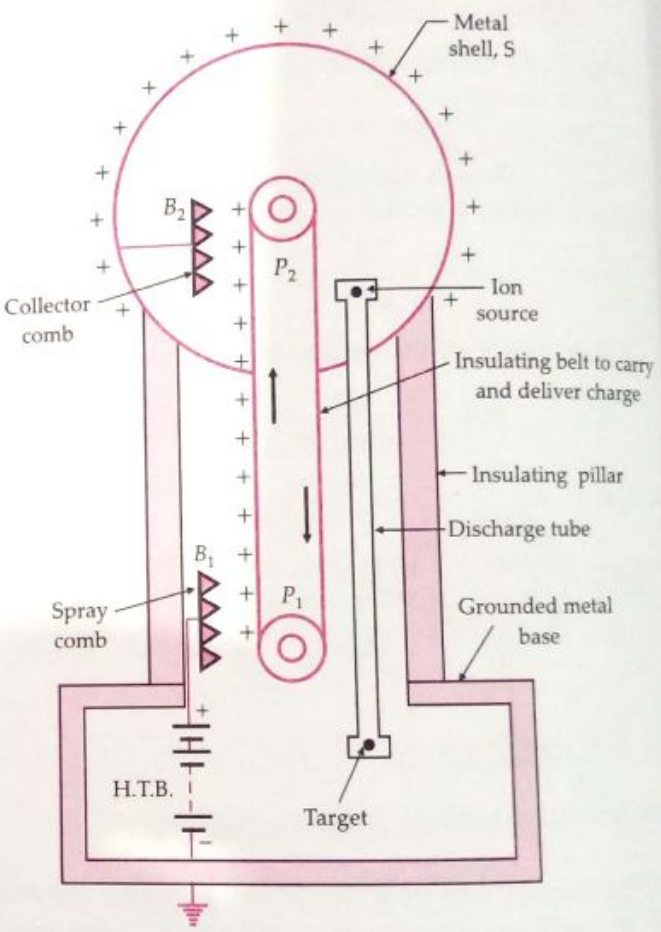

Fig. 2.130

Use. The high potential difference set up in a Van de Graaff generator is used to accelerate charged particles like protons, deutrons, α-particles, etc. to high energies of about 10 MeV, needed for experiments to probe the small scale structure of matter.

Topic → Dimensions :— Here we will calculate the dimensions of some physical quantities.

Momentum = mass × velocity

$= [M][LT^{-1}]$

$= [MLT^{-1}]$

Impulse = force × time $= [MLT^{-2}] \times [T]$

$\Rightarrow [MLT^{-1}]$

so momentum and impulse will have the same dimensions

Similary work = force × displacement

$W = [MLT^{-2}] \times [L]$

$W = [ML^2T^{-2}]$

And

Torque(τ) = force × lever arm

$= [MLT^{-2}] \times [L]$

actually lever arm is the length it is also called moment arm.

so $\tau = [ML^2T^{-2}]$

so work and torque are dimensionally same

Q) H.W. :- calculate the dimensions of at least 25 physical quantities.

Similarly dimensions of voltage

$$V = \frac{W}{q}$$ Since $W = [ML^2T^{-2}]$ and $q = [QT]$

so $V = \frac{[ML^2T^{-2}]}{[QT]}$

$$V = [ML^2Q^{-1}T^{-3}]$$

Dimensions of resistance $R = \frac{V}{I}$

$$R = \frac{[ML^2Q^{-1}T^{-3}]}{[QT]}$$

$$R = [ML^2Q^{-2}T^{-3}]$$

Dimensions of (G) gravitational constant

Since $F = \frac{Gm_1m_2}{d^2} \Rightarrow G = \frac{Fd^2}{m_1m_2}$

or $G = \frac{[MLT^{-2}] \times [L^2]}{[M] \times [M]} = [M^{-1}L^3T^{-2}]$

Energy, $E = mc^2$ here c = velocity

so $E = mv^2 = [M][LT^{-1}]^2$

so $E = [ML^2T^{-2}]$

ONLINE CLASS STUDY MATERIAL

Class : III

Sub : Hindi

Lesson : वर्ण वर्णमाला और शब्द (Revision)

Date : 15/05/2020

.....

* बच्चों, हमने सीखा है "वह सबसे छोटी ध्वनी जिसके टुकड़े नहीं हो सकते , वर्ण या अक्षर कहलाते हैं।

* वर्णो के क्रमबद्ध समूह को वर्णमाला कहते है।

* वर्णो के दो भेद हैं - स्वर और व्यंजन ।

* जिन वर्णों के उच्चारण में किसी अन्य वर्ण की सहायता नहीं ली जाती वे स्वर कहलाती हैं ।

* जिन वर्णों के उच्चारण स्वरों की सहायता से होती है उन्हें व्यंजन कहते हैं।

* एक निश्चित क्रम में लिखे गए वर्णों के समूह को वर्णमाला कहते हैं।

* अक्षर के सार्थक समूह को शब्द कहते हैं ।

* अर्थ के आधार पर शब्द के दो भेद हैं - १. सार्थक २. निरर्थक

* सार्थक शब्दों के समूह को वाक्य कहते हैं।

प्रश्नों के उत्तर लिखें

१. कथन को पढ़ो और(✓) या (×) चिह्न लगाओ ।

क . सार्थक अक्षर का समूह शब्द कहलाता है। _____

ख. शब्द के दो भेद होते हैं।_____

ग. निरर्थक शब्द से उचित अर्थ का बोध होता है।_____

घ. एक अथवा एक से अधिक शब्दो का समूह वाक्य होता है।___

२. खाली स्थान में उचित शब्द भरो -

क. एक या एक से अधिक अक्षरों का समूह_____ कहलाता है।

ख. जो शब्द किसी अर्थ का बोध कराते हैं_____कहलाते हैं

ग. अर्थ के आधार पर शब्द के_____ भेद हैं ।

घ. केवल_____ का वाक्य में प्रयोग करते हैं।

३.सार्थक शब्दों से वाक्य बनाओ :-

क. अखबार

ख. स्कूल

ग. आसमान

घ. कमल

४. Writing:- One page hindi writing

ONLINE CLASS STUDY MATERIAL

Class : V

Sub : Maths

Lesson : Time

Date : 15/05/2020

.....

In the previous classes we have learnt to convert the units of time .

Today we will practice questions which we have learnt in previous classes.

1.Change into seconds:

(A) 5 min 5sec **(B)** 15 min 35 sec

(C) 4 min 40sec **(D)** 12min 48 sec

2. Change into hours and minutes:

(A) 150 minutes **(B)** 265 minutes

(C) 110 minutes **(D)** 900 minutes

3.Change into hours:

(A) 7days5 hours **(B)** 3days 10hours

(C) 2days15hours

ONLINE CLASS STUDY MATERIAL

CLASS : IV

SUB : MATHS

LESSON : TIME

DATE : 15/05/2020

.....

In the previous class we have learnt the conversion of units of time .Today we will learn few new questions of conversion of time.

1.Change into minutes:

(a) 6 hours 15 min

Sol:- As 1hour=60 min

So, 6 hours 15 min= 6x60 min+15 min

=360 min+15min

= 375 min

(B) 7 hours10 min

Sol:- As 1 hour =60 min

So, 7 hours10min= 7x60min+10min

=420min+10 min

=430 min

(C) 4hours 40min (D) 8hours 25 min (E) 5hours 50 min (F) 10 hours 10 min

2.Change into seconds :

(A) 3min 10 sec

-> As,1min=60 sec

So, 3 min 10 sec= 3x60 sec +10 sec

= 180sec + 10 sec

=190 sec

(B) 2min 5 sec

->As, 1min= 60 sec

So, 2min 5 sec= 2x60 sec + 5sec

= 120 sec+ 5 sec

= 125 sec

(C) 8min 40 sec (D) 5min50 sec (E) 9min 15sec (F) 6 min 6 sec

3. Fill in the blanks:

(a) 4 hours=.....min (b) 6 days =.....hours

(c) 5weeks=.....days (d) 3years=.....days

15.5.20

X C, D

Ex. 5.1

X B,C,D Sajid 15/5

Q 3. (i) 3, 1, -1, -3 ...

Sol^n. First term (a) = 3

c.d = $a_2 - a_1$

$1 - 3 = -2$

HW

Do Q 3 all & Q 4 all ~~from Ex Sol~~

Q4. Which of the following are AP's. find the common difference (d) and write three more terms.

(i) 2, 4, 8, 16

(ii) a, $2a$, $3a$, $4a$

(iii) $\sqrt{3}, \sqrt{6}, \sqrt{9}, \sqrt{12}$ ...

Sol^n. 2, 4, 8, 16 ...

(i) $d_1 = a_2 - a_1$

$4 - 2 = 2$

$d_2 = a_3 - a_2$

$8 - 4 = 4$

$d_3 = a_4 - a_3$

$= 16 - 8 = 8$.

$\therefore d_1 \neq d_2 \neq d_3$.

$\therefore$ It is not A.P.

(ii) a, $2a$, $3a$, $4a$ ...

$d_1 = a_2 - a_1$

$2a - a = a$

$d_2 = 3a - 2a = a$

$d_3 = 4a - 3a = a$

$\therefore d_1 = d_2 = d_3$

$\therefore$ It is an A.P.

$a_5 = a_4 + d$

$4a + a = 5a$

$a_6 = a_5 + d$

$5a + a = 6a$

$a_7 = 6a + a = 7a$

Scanned with CamScanner

Estd : 15 May 1981

قائم شدہ: ۱۵؍مئی ۱۹۸۱ء

بزم قلم کار۔ گیا

BAZM-E-QALAMKAAR-GAYA

PATRON

Rai Madan Kishore
(Ex. Special Secretary to Govt. of Bihar)
9431416228

Prof. Aafaq Anzer
(President)
9334373679

Shakeel-Ur-Rahman
(Teasurer)
9431278260

Dr. Shakeel Olayee
(General Secretary)
9631050813

Ref.................... Date ....

It is the foundation Day of the Bazm-e-Qalamkaar Gaya.

بزم قلم کار۔ گیا کی ۴۱ ویں سالگرہ :

تشکیل : ۱۵ مئی ۱۹۸۱ء ۔ جمعہ : شام ۷ بجے :

سرپرستوں کے نام : جناب سلام حیدری ۔ جناب مظفر نواب ۔ پروفیسر شکیل احمد (پرنسپل مرزا غالب کالج گیا) پروفیسر شوکت علی (پرنسپل جگجیون کالج گیا) اور اب سرپرستی رائے مدن کشور۔

صدور کے نام (سابق) : پروفیسر تاج انور ۔ پروفیسر سید محفوظ الحسن ۔ جناب معصوم کاظمی ۔ پروفیسر شوکت علی سید علیم الدین مشہدی (ایڈوکیٹ) مرحوم ۔ پروفیسر شوکت علی (مرحوم) ۔

موجودہ صدر : از ۲۸ اکتوبر ۲۰۱۸ء (اتوار) ۔ پروفیسر آفاق انظر (صدر شعبہ فزکس و ڈائریکٹر ٹوئنک ۔ گیا کالج گیا)

پہلا فنکشن : ۹ جون ۱۹۸۱ء : پروفیسر افتخار ظفر صاحب کی صدارت ۔ مقام : شمسی بلڈنگ گیا جلسہ

کل میٹنگیں (اب تک) ۹۳ (93) مع آج کی نشست ۔ کل فنکشن ۴۲ (42) (مع اعزازیہ) ۔ گزشتہ سال بھر میں 3 تین فنکشن ۔ نوٹ : کاش ! حالات اگر سازگار ہوتے تو ۴۱ ویں سالگرہ شایان شان طور پر منائی جاتی ..... افسوس ! کف افسوس !!

I am 'the' Shakeel Olayee.

Chapter 2 Class IX-A+B +C+D **Computer System** **Date: 15-05-20**

Topic: Types of Hardware

Introduction

In previous chapter, you got an overview of computer system- how does it work; what are main functional units; what are main constituents of a computer system etc. You also got to know that hardware and software are the pillars of a computer system. A computer system cannot work unless its hardware and software work in tandem.

This chapter is going to talk about various types of hardware a computer system can have and in what way that hardware contributes to computer.

Before we start talking about various types of hardware, let us recall what a computer system is. Have a look as Fig 2.1 that summarizes a computer system.

This chapter shall deal with Hardware part of a computer system.

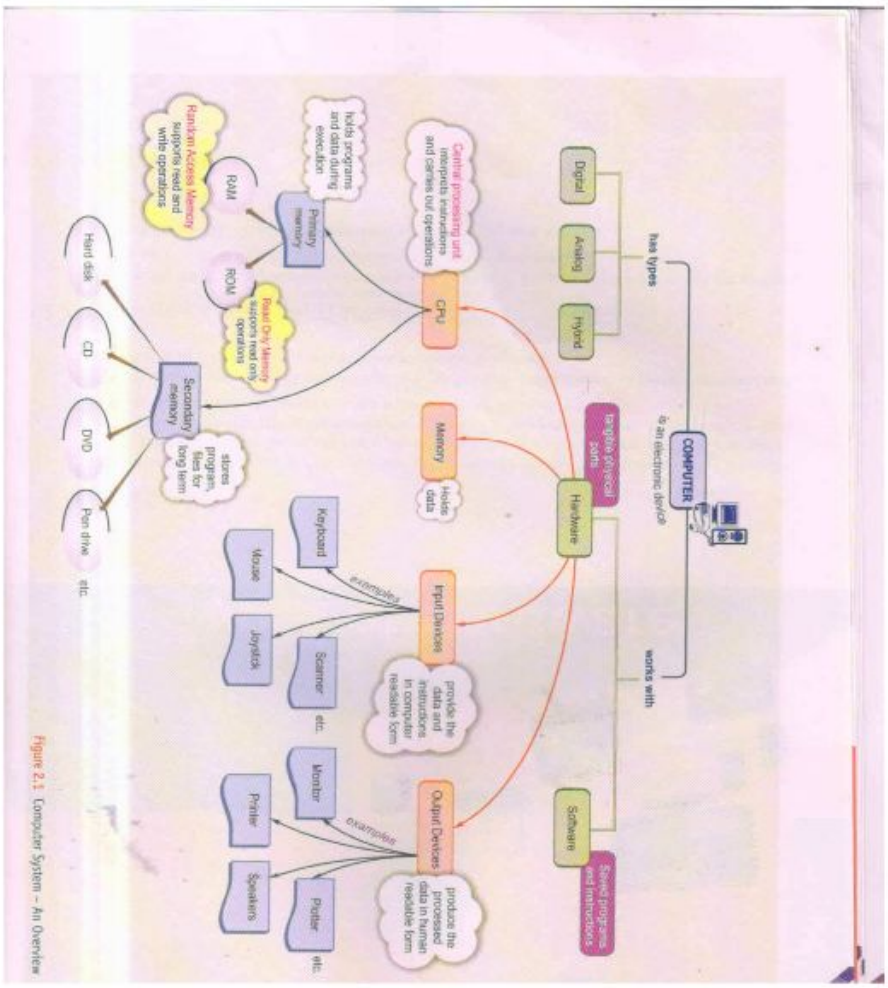

Figure 2.1 Computer System – An Overview

H.W.

1. What are the four basic components of a computer system?

2. What is computer? How is it a useful device?

Shatabdi Public School, Gaya

Class-IV

Section-A&B

Subject-English

Date-15/5/2020

English course book

Unit-3

Nasiruddin's Aim

1.New words

1.chatting:-talk in a friendly way

Eg:-She was chatting with my best friend in the classroom.

2.archery:-shooting with a bow and arrows

Eg:-I took part in an archery competition in school.

3.string:-a thread that can be twisted

Eg:-The sting of my purse is of blue colour.

4.bang:-a sharp noise

Eg:-I banged on the door ,but nobody answered.

5.target:-the aim of an attack

Eg:-It was a very tough target to aim for.

6.defending:-to protect from harm or danger
Eg:-The man was defending himself against theft.

7.amezment:-a feeling of great surprise or wonder
Eg:-I answered the question in amazement.

8.triumphantly:-having achieved victory
Eg:-She shouted triumphantly after winning the match.

2.Reading is fun

1.What did Nasruddin boast about?
Ans. Nasruddin boasted about his skill in archery.

2.Why did Nasruddin take someone else's name each time he missed the target?
Ans.Nasruddin took someone else's name each time he missed the target because he didn't want to accept defeat in front of his friends. To save himself from the shame, he took someone else's name each time he missed the target.

3.Why did Nasruddin say,"it was my aim,"the third time?
Ans. Nasruddin said," it was my aim" the third time because this time, the arrow had hit the target accurately.

4.Do you think Nasiruddin was good at archery?

Ans. No , Nasruddin was not good at archery, instead, he was good at fooling others.

Homework

1. Learn new words and write in your notebook.
2.Learn answer the following questions and write in your notebook.
3.Do pg no 50&51 in your notebook.
4.Write one page writing.

Shatabdi Public School, Gaya

Class-IV

Section-A&B

Subject-English

Date-15/5/2020

English course book

Unit-3

Nasiruddin's Aim

1.New words

1.chatting:-talk in a friendly way

Eg:-She was chatting with my best friend in the classroom.

2.archery:-shooting with a bow and arrows

Eg:-I took part in an archery competition in school.

3.string:-a thread that can be twisted

Eg:-The sting of my purse is of blue colour.

4.bang:-a sharp noise

Eg:-I banged on the door ,but nobody answered.

5.target:-the aim of an attack

Eg:-It was a very tough target to aim for.