

**GANGA INTERNATIONAL SCHOOL**  
**HOLIDAY HOMEWORK**  
**CLASS – XII (SCIENCE)**

**ENGLISH**

The students are suggested to regularize their study schedule during holidays, by allocating fixed time to every subject, completing 3 topics every day will let you enjoy the vacation without any stress. The holiday homework is to be submitted on the first day. Absolutely no extension will be given for submitting the home work. **HOLIDAY HOME WORK IS TO BE DONE IN A SEPARATE NOTE BOOK**

1. Read the novel ‘Invisible Man’, Make notes on each chapter using abbreviations.
2. Make a mind map of the novel by writing the chapter number, title and four main points on white sheet with bright sketch pens. It will help you to memorize the novel easily for the oral test/quiz.
3. Watch the following movies:
  - My Fair Lady
  - Sound of Music
  - Gravity and Theory of Everything
  - Evans Almighty
  - Life of Pie
  - Despicable Me.

Write a critical appreciation mentioning the moral of any two movies.

4. Cut and paste five Display Advertisements.
5. Cut and paste five Posters on Social issues.
6. Read the newspaper daily and cut and paste any five positive and negative reports and write them down in your notebook.
7. Read ‘Wings of Fire’ and in 200 hundred words write summary of it.
8. Being in a crucial year of your life, it becomes imperative for you to make a roadmap of the career you would like to pursue. Make a flow chart of highlighting the names of colleges/institutions offering the courses of your interest. Percentage required for admission. Future prospects and other relevant information.
9. Make a chart on the poems of the following poets.
  - Roll No. : 1-10- Robert Frost
  - Roll No. : 11-20 -William Wordsworth
  - Roll No. : 21-30- P B Shelly
  - Roll No. : 31- 40- S T Coleridge
10. Make working model on any topic of your choice from grammar.
11. Write a biography in 200-250 words on any writer from your text books.
12. Follow the new innovations and achievements by the youngsters trending on social medial.
13. Find the story of ‘Forest man of India write it in your own words.
14. Write a speech on the degrading moral situation of the present form of society.
15. “Animals in the zoos” – How far do you support this? Write a speech on this.
16. “Newspapers and Electronics media work as the face of different political parties”. Write a Speech either in for or against the topic.
17. Write a speech on the 5 things you want to change about your country.
18. Write a speech on the dire necessity of the change in present politics in India.
19. Write a character sketch of Mrs Hall, give examples from the text to illustrate that she is a mercenary.
20. Write a character sketch of Griffin, explaining whether he is a genius or a mad man.

21. Write a character sketch of Marvel, how does he prove to be smarter than anyone else, illustrate.
22. Kemp is an illustration of science with morality, explain.
23. Collect 20 inspiring quotations by great thinkers on success, aims humility, honesty, importance of reading, importance of education and importance of parents, with the name of the source, your name and admission no. and date of birth. These will be published in Akashganga.
24. Collect five inspiring short stories with moral lesson for publication in the school magazine.
25. Write/ collect inspiring poems on every day themes.

## PHYSICS

### I. ASSIGNMENT RAY OPTICS

1. When a monochromatic light travels from one medium to another, its wavelength change but frequency remain same. Explain.
2. Does the apparent depth of water change if viewed obliquely? If so, does the apparent depth decrease or increase?
3. For the same angle of incidence the angle of refraction in three different media A, B and C are 15, 25 and 35 respectively. In which medium is the velocity of light minimum?
4. A ray of monochromatic light passes from medium (1) to medium (2). If the angle of incidence in medium (1) is  $\theta$  and the corresponding angle of refraction in medium (2) is  $\theta/2$ , which of the two media is optically denser? Give reason.
5. The focal length of an equiconvex lens is equal to the radius of curvature of either face. What is the value of refractive index of the material of the lens?
6. An object is placed at the principle focus of a convex lens of focal length  $f$ . Where be the image be formed.
7. The refractive index of material of convex lens /concave lens is  $n_1$ . It is immersed in a medium of refractive index  $n_2$ . A parallel beam of light is incident on the lens. Trace the path of the emergent ray when (i)  $n_2 = n_1$  (ii)  $n_2 > n_1$  (iii)  $n_2 < n_1$ .
8. How does focal of a lens change when red light incident on it is replaced by violet light? Give reason for your answer.
9. A biconvex lens made of a transparent material of refractive index 1.25 is immersed in water of refractive index 1.33. Will the lens behave as a convergent lens? Give reason.
10. A glass lens of refractive index 1.5 is placed in trough of liquid. What must be the refractive index of liquid in order to make the lens disappear?
11. Under what condition does a biconvex lens of a glass having a certain refractive index act as a plane glass sheet when immersed in a liquid?
12. A converging lens of refractive index 1.5 is kept in a liquid medium having same refractive index. What is the focal length of the lens in this medium?
13. A diverging lens of focal length "F" is cut into two identical parts, each forming a Plano concave lens. What is the focal length of each part?
14. What type of lens is an air bubble inside water?
15. A concave mirror and a converging lens have same focal length in air which one of two will have greater

focal length when both are immersed in water?

16. How does the power of a convex lens vary, if the incident red light is replaced by violet light?

17. How does the angle of minimum deviation of a glass prism vary if the incident violet light is replaced by red light?

18. You are given following three lenses .Which two lenses will you use as an eye piece and as an objective to construct an astronomical telescope ?

Lenses	Power	Aperture
L1	3D	8cm
L2	6D	1cm
L3	10D	1cm

19. State the condition for total internal reflection to occur.

Write the relation between the refractive index and critical angle for a given pair of optical media.

20. Write the thin lens formula for a convex lens and draw graph showing the variation of  $u$  and  $v$  for a convex lens.

21. 9. A convex lens of focal length 20 cm placed coaxially with a concave mirror of radius of curvature 20cm .The two are kept at 15cm from each other .A point object lies at 60 cm in front of convex lens.

Find the position of final image formed by this combination .Determine the nature and position of image formed.

22. How does angle of minimum deviation of a glass prism vary if the incident yellow light is replaced by red light ?

23 Derive lens maker formula for concave lens.

24. Derive the expression for refractive index of material of prism.

25. Draw ray diagram for image formation by compound microscope and telescope three times each.

**II. EVERY STUDENT HAS TO PREPARE ONE INVESTIGATORY PROJECT ON FOLLOWING TOPICS**

Roll no.1to 10- CURRENT ELECTRICITY

Roll no.11to 20-OPTICS

Roll no.21to 30-SEMICONDUCTORS

Roll no.31to 40-MAGNETIC EFFECT OF CURRENT

**III. WRITE 15 EXPERIMENT AND 5 ACTIVITY IN PRACTICAL FILE FROM LAB MANUAL AS DISCUSSED IN CLASS.**

**IV. PREPARATION OF INNOVATIVE EXHIBIT WITH WRITE UPS FOR SCIENCE EXHIBITION.**

## CHEMISTRY

1. Prepare investigatory project including front aim page, acknowledgement, and certificate, and index, theory of the topic, procedure, experiment, observation table, conclusion, bibliography and proof photograph of experiment.
2. Prepare a working science model for the upcoming science exhibition.
3. Prepare a flow chart table of all the monomer and polymer name with structure and use.
4. Find the latest 10 invention in science and their description and make a chart related to the same.
5. Prepare a sheet of all the formulas and their units use in the chapters solid state, solution, electrochemistry and chemical kinetics.
6. Form a table of all the group reagent use in the Basic radical test for cation.
7. List all the anion and cation of the salt analysis with their charges and category.
8. Prepare and learn at least one test with the reaction involved for all the syllabus cation and anion test.
9. List the functional group test with the reaction. (Unsaturated, alcohol, phenol, aldehyde, ketones, amines and carboxylic acid)
10. Go through the chapter Chemistry in everyday life and make table of all the classes of drugs with examples and uses.
11. Write and learn the Atomic number, name of the element, electronic configuration and the exception of d-block element from 21 to 30.
12. Compile the way of calculation of hybridization and structure of all the covalent compound studied in class XI.
13. Make a table of the p-block element with atomic number, group, period and variable oxidation state.
14. Write all the Name reaction from the organic chapter. (Halo alkane and arenes, Alcohol phenol and ether, aldehyde ketone and carboxylic acid and amines)
15. Write the basic principle behind the titration, salt analysis and chromatography.
16. Write the balance ionic and molecular reaction of titration of potassium permanganate with Mohr's salt and oxalic acid.
17. Account for the following on the basis of practical syllabus
  - (i) What is blue lake test and for which cation confirmation it is used.
  - (ii) Name the gas other than  $\text{CO}_2$  which turns lime water milky.
  - (iii) What is the formula of product when brown ring is formed during confirmation of nitrate ion?
  - (iv) Why we add ammonium chloride before adding ammonium hydroxide during analysis of group 3.
  - (v) What is the formula and molecular mass of thioacetamide, Mohr's salt, Potash alum and oxalic acid?
  - (vi) What is common ion effect and in which out of cation and anion analysis common ion effect is used.
  - (vii) What is flame test?
  - (viii) What is the difference between double salt and complex?
  - (ix) What is primary and secondary standard solution.  $\text{KMnO}_4$  solution is primary or secondary solution.
  - (x) Can we add dil  $\text{HNO}_3$  for acidification while titrating  $\text{KMnO}_4$  with Mohr's salt. Why?
  - (xi) Which indicator is used in titration of  $\text{KMnO}_4$  with oxalic acid.
  - (xii) Why the cations of d- block elements are generally colored.
  - (xiii) Why is dil. Sulphuric acid is used while preparing standard solution of Mohr's salt?
  - (xiv) Why heating is required while titrating  $\text{KMnO}_4$  with oxalic acid.
  - (xv) What is rinsing? Why titration flask is should not be rinsed.

## BIOLOGY

1. Why is banana considered a good example of parthenocarpy?
2. In angiosperms, zygote is diploid while primary endosperm cell is triploid. Explain.
3. Why is emasculation of a bisexual flower necessary in crop improvement programme?
4. Explain any two ways by which apomictic seeds get developed.
5. Draw a diagram of mature embryo sac of an angiosperm and label the following parts in it: Filiform apparatus, Synergids, Central cell, Egg cell, Polar nuclei, Antipodal cells.
6. Differentiate between perisperm and endosperm giving one example of each. Mention the ploidy of the cells involved.
7. Mention any one application of pollen bank.
8. Differentiate between albuminous and non-albuminous seeds, giving one example of each.
9. What are chasmogamous flowers? Can cross pollination occur in cleistogamous flowers? Give reason.
10. What is self-incompatibility? Why does self pollination not lead to seed formation in self-incompatible species?
11. Describe the process of parturition in humans.
12. Describe the changes that occur in the ovaries and uterus in a human female during menstrual cycle.
13. How is oogenesis markedly different from spermatogenesis with respect to growth till puberty in humans.
14. When and where do chorionic villi appear in humans? State their function.
15. Draw a diagram of the structure of a human ovum surrounded by corona radiata. Label the following parts: Ovum, Plasma membrane, Zona Pellucida
16. Why are menstrual cycles absent during pregnancy?
17. Differentiate between 'ZZ' and 'XY' type of sex-determination mechanism.
18. When does a geneticist need to carry out a test cross? How is it carried out?
19. Why did T.H Morgan select *Drosophila melanogaster* to study sex-linked genes for his lab experiments?
20. Why is colourblindness and thalassemia categorised as Mendelian disorders? Write the symptoms of the diseases seen in people suffering from them.
21. State and explain the law of dominance proposed by Mendel.
22. With the help of one example, explain the phenomenon of co-dominance and multiple allelism in human population.
23. Define aneuploidy. How is it different from polyploidy? Describe the individuals having following chromosomal abnormalities:
  - (a) Trisomy of 21<sup>st</sup> chromosome
  - (b) XXY
  - (c) XO
24. Visit your nearby Hospital and collect the reports of the patients suffering from genetic disorders and find out the techniques and tests by which the disorders can be diagnosed. Interview the patients and note down the symptoms and treatment which they are going through.
25. Make an investigatory project and the PowerPoint presentation of 15 slides on the topic of your choice.

## MATHEMATICS

1. If  $A = \begin{pmatrix} 3 & -5 \\ -4 & 2 \end{pmatrix}$  Show that  $A^2 - 5A - 14I = 0$  and hence find  $A^{-1}$ .

2. If  $A = \begin{bmatrix} 2 & -1 \\ 3 & 4 \end{bmatrix}$ ,  $B = \begin{bmatrix} 5 & 7 \\ 2 & 4 \end{bmatrix}$ ,  $C = \begin{bmatrix} 2 & 5 \\ 3 & 8 \end{bmatrix}$  Find a matrix D such that  $CD - AB = 0$ .

3. If  $A = \begin{bmatrix} 3 & -2 \\ 4 & -2 \end{bmatrix}$ , find k so that  $A^{-1} = kA - 2I$

4. Find X and Y if  $3X - Y = \begin{bmatrix} 1 & 1 \\ -1 & 1 \end{bmatrix}$  and  $X - 3Y = \begin{bmatrix} 0 & -1 \\ 1 & -1 \end{bmatrix}$

5. Find B if  $\begin{bmatrix} 2 & 5 \\ -3 & 7 \end{bmatrix} B = \begin{bmatrix} 17 & -1 \\ 47 & -13 \end{bmatrix}$

6. If  $A = \begin{bmatrix} 3 & 1 \\ 7 & 5 \end{bmatrix}$ , find a and b such that  $A^2 + aI = bA$ , where I is unit matrix of order 2.

7. Express  $A = \begin{bmatrix} 6 & 1 \\ 3 & 4 \end{bmatrix}$  as a sum of a symmetric and a skew – symmetric matrix.

8. If  $A = \begin{bmatrix} 1 & 1 & 1 \\ 1 & 2 & -3 \\ 2 & -1 & 3 \end{bmatrix}$  find  $A^{-1}$  and use it solve the system of equations:  $x + y + 2z = 0$   
 $x + 2y - z = 9$   
 $x - 3y + 3z = -14$

9. If  $A = \begin{bmatrix} 2 & -1 & 1 \\ -1 & 2 & -1 \\ 1 & -1 & 2 \end{bmatrix}$  and  $B = \begin{bmatrix} 3 & 1 & -1 \\ 1 & 3 & 1 \\ -1 & 1 & 3 \end{bmatrix}$  find the product AB and use this result to solve the following system of equations:  $2x - y + z = -1$   
 $-x + 2y - z = 4$   
 $x - y + 2z = -3$

10. If  $A = \begin{pmatrix} 3 & 1 \\ -1 & 2 \end{pmatrix}$ , show that  $A^2 - 5A + 7I = 0$

11. If  $A = \begin{pmatrix} \cos \alpha & \sin \alpha \\ -\sin \alpha & \cos \alpha \end{pmatrix}$ , then verify that  $A \cdot A' = I$ .

12. Without expanding the determinant

$$\begin{vmatrix} a & b & c \\ b & c & a \\ c & a & b \end{vmatrix}$$

(i) show that  $a+b+c$  is a factor of the determinant

(ii) prove that 
$$\begin{vmatrix} x+y & x & x \\ 5x+4y & 4x & 2x \\ 10x+8y & 8x & 3x \end{vmatrix} = x^3$$

(iii) prove that 
$$\begin{vmatrix} 1/a & a^2 & bc \\ 1/b & b^2 & ca \\ 1/c & c^2 & ab \end{vmatrix} = 0$$

(iv) prove that 
$$\begin{vmatrix} b+c & c+a & a+b \\ q+r & r+p & p+q \\ y+z & z+x & x+y \end{vmatrix} = 2 \begin{vmatrix} a & b & c \\ p & q & r \\ x & y & z \end{vmatrix}$$

If  $A = \begin{pmatrix} 1 \\ -5 \\ 7 \end{pmatrix}$  and  $B = (3, 1-2)$ ,

13. verify that  $(AB)' = B'A'$ .

14. Using determinants, find the area of the triangle whose vertices are  $(-2,4)$ ,  $(2,-6)$  and  $(5,4)$ . Are the given points collinear?

15.  $A = \begin{pmatrix} 1-3 & 2 \\ 2 & 0 & 2 \end{pmatrix}$  and  $B = \begin{pmatrix} 2 & -1 & -1 \\ 0 & 1 & -1 \end{pmatrix}$ , find a matrix C such that  $A + B + C$  is a zero matrix.

16. Construct a  $2 \times 3$  matrix whose elements in the  $i$ th row and  $j$ th column are given by

(i)  $\frac{3i-j}{2}$  (ii)  $\frac{2i+3j}{2}$  (iii)  $\frac{(i-2j)^2}{2}$

17. If  $f(x) = x^2 - 4x + 1$ , find  $f(A)$ , when  $A = \begin{pmatrix} 2 & 3 \\ 1 & 2 \end{pmatrix}$ .

$A = \begin{pmatrix} -1 & 2 \\ 3 & 4 \end{pmatrix}$ , and  $B = \begin{pmatrix} 3 & -1 \\ 1 & 5 \end{pmatrix}$ .

18. Find a matrix X such that  $2A + B + X = 0$ , where

19. Using properties of determinants, show that:

(i) 
$$\begin{vmatrix} a+x & y & z \\ x & a+y & z \\ x & y & a+z \end{vmatrix} = a^2(a+x+y+z)$$

(ii) 
$$\begin{vmatrix} 1 & a & bc \\ 1 & b & ca \\ 1 & c & ab \end{vmatrix} = 0$$

(iii) 
$$\begin{vmatrix} x+4 & x & x \\ x & x+4 & x \\ x & x & x+4 \end{vmatrix} = 16(3x+4)$$

(iv) 
$$\begin{vmatrix} 1 & x & x^3 \\ 1 & y & y^3 \\ 1 & z & z^3 \end{vmatrix} = (x-y)(y-z)(z-x)(x+y+z)$$

$$(v) \begin{vmatrix} a+b+c & c & -b \\ -c & b+c+a & -a \\ -b & a & c+a+b \end{vmatrix} = 2(a+b)(b+c)(c+a)$$

$$(vi) \text{ Prove that } \begin{vmatrix} 1+a & 1 & 1 \\ 1 & 1+b & 1 \\ 1 & 1 & 1+c \end{vmatrix} = abc(a+1/a+1/b+1/c)$$

$$(vii) \begin{vmatrix} b+c & c+a & a+b \\ c+a & a+b & b+c \\ a+b & b+c & c+a \end{vmatrix} = 2(a+b+c)(ab+bc+ca-a^2-b^2-c^2)$$

20. Solve the following system of equations:

i.  $3x + 4y + 7z = 14, 2x - y + 3z = 4, x + 2y - 3z = 0$

ii.  $2x - z = 3, 5x + y = 7, y + 3z = -1$

iii.  $x + 2y - 3z = 6, 3x + 2y - 2z = 3, 2x - y + z = 2.$

iv.  $x + y + z = 1, x - 2y + 3z = 2, x - 3y + 5z = 3$

v.  $x - y + z = 3, 2x + y - z = 2, -x - 2y + 2z = -1.$

vi.  $x + y + z = 6, x + 2y + 3z = 14, x + 4y + 7z = 30$

vii.  $x + 2y - 3z = -4, 2x + 3y + 2z = 2, 3x - 3y - 4z = 11$

viii.  $5x + 3y + z = 16, 2x + y + 3z = 19, x + 2y + 4z = 25$

ix.  $2x + 6y = 2, 3x - z = -8, 2x - y + z + 3 = 0.$

x.  $2/x + 3/y + 10/z = 4, 4/x - 6/y + 5/z = 1, 6/x + 9/y - 20/z = 2$

$$A^{-1} \text{ if } A = \begin{pmatrix} 1 & 2 & 5 \\ 1 & -1 & -1 \\ 2 & 3 & -1 \end{pmatrix}$$

21. Find Hence, find the following system of equations:  $x+2y+5z=10, x-y-z+2=0, 2x+3y-z+11=0.$

22. If  $A = \begin{pmatrix} 3 & 2 \\ 1 & 1 \end{pmatrix}$ , find the values of a and b such that  $A^2 + Aa + b = 0$ . hence find  $A^{-1}$ .

23. If  $\begin{bmatrix} -1 & 3 & 4 \\ 5 & -1 & 2 \end{bmatrix}$  is additive inverse of  $\begin{bmatrix} 2x & -3 & y \\ x+t & -z & 2z \end{bmatrix}$ . Find x, y, z and t

24. Find value of x, (i) If matrix A is not invertible.  $A = \begin{vmatrix} 4 & -3 & 1 \\ -6 & 7 & -4 \\ 1 & -2 & x \end{vmatrix}$

(ii)  $\begin{bmatrix} 0 & x+2 & 2-x \\ 1-2x & 0 & 2x-1 \\ 3x-8 & x-8 & 0 \end{bmatrix}$  is a skew symmetric.

25. Classify the following system of equations as consistent or inconsistent. If consistent solve it.

$$x - y + 3z = 6, x + 3y - 3z = -4 \text{ and } 5x + 3y + 3z = 10$$

NOTE:

➤ Make notes of formulae of Trigonometry, Conic Sections, Straight Lines, Permutation and Combinations, Three Dimensional Geometry, Limits and Derivatives on separate sheets.

➤ To revise concepts learnt in previous classes and to be used in XII

(i) Find the image of the point (3,8) with respect to the line  $x + 3y = 7$  assuming the line to be plane mirror.

(ii) Write the equation of line passing through (5,4) and parallel to the line  $y = x + 1$ .

(iii) Prove that  $\cos^2 x + \cos^2 (x + \pi/3) + \cos^2 (x - \pi/3) = 3/2$

(iv) Find the general solution of the equation  $\sec^2 2x = 1 - \tan 2x$

(v) Solve the following system of inequalities graphically:

$$3x + 2y < 60; \quad y \geq 2x; \quad x < 15; \quad y > 0 \text{ and } x > 0$$

(vi) Show that  $\frac{\sin x - \sin 3x}{\sin^2 x - \cos^2 x} = 2 \sin x$

(vii) Find the domain and range of the function  $f(x) = [x]$  (Greatest Integer function). Also draw its graph.

(viii) Find the probability that when a hand of 6 cards is drawn from a well shuffled deck of 52 cards, it contains (i) at least 3 kings (ii) all kings.

(ix) Prove that:  $\cos 20^\circ \cos 40^\circ \cos 80^\circ = 1/8$

(x) Calculate the mean, variance and standard deviation for the following data:

Class	30-40	40-50	50-60	60-70	70-80	80-90	90-100
Frequency	3	7	12	15	8	3	2

(xi) Suppose  $f(x) = \begin{cases} a + bx, & x < 1 \\ 4, & x = 1 \\ b - ax, & x > 1 \end{cases}$  and if  $\lim_{x \rightarrow 1} f(x) = f(1)$

What are the possible values of a and b?

(xii) Evaluate  $\lim_{x \rightarrow 1} \frac{x^{15} - 1}{x^{10} - 1}$ .

(xiii) Find the derivative of  $\tan x$  using first principle.

(xiv) Find the derivative of (i)  $\frac{x^5 - \cos x}{\sin x}$  (ii)  $(2 - 5x) \sin^n x$

## COMPUTER SCIENCE

### REVISION TOUR

Q1 Which C++ header file(s) are essentially required to be included to run/execute the following C++ code :

```
void main()
{
    char name[]="MEGHA";
    int i=strlen(name);
    cout<<math.pow(i,2); }

```

Q2 Differentiate between call by value and call by reference with the help of suitable C++ code.

Q3 Rewrite the following program after removing the syntactical errors (if any), underline each correction :

```
#include<iostream.h>
void main
{
    int X[ ] = { 60, 50, 30, 40 },y ; count =4 ;
    cin>> y;
    for( I = count - I ; I >=0 ; I - -)
    Switch( I )
    {
        case 0 :
        case 2 :cout<<y * x[1]<endl ; break ;
        case 1 :
        case 3 :cout>> y + x[i];
    }
}

```

Q4 Rewrite the following program after removing the syntactical errors (if any), Underline each correction.

```
#include <iostream.h>
class PAYITNOW
{
    int Charge;
    public:
    void Raise(){cin>>Charge;}
    void Show{cout<<Charge;}
};
void main()
{
    PAYITNOW P;
    P.Raise();
    Show();
}

```

Q5 Find the output of the following program:

```
#include <iostream.h>
struct PLAY
{ int Score, Bonus;};
void Calculate(PLAY &P, int N=10)
{
    P.Score++;P.Bonus+=N;
}

```

```

}
void main()
{
    PLAY PL={ 10,15};
    Calculate(PL,5);
    cout<<PL.Score<<" ":"<<PL.Bonus<<endl;
    Calculate(PL);
    cout<<PL.Score<<" ":"<<PL.Bonus<<endl;
    Calculate(PL,15);
    cout<<PL.Score<<" ":"<<PL.Bonus<<endl;
}

```

Q6 Find the output of the following program

```

#include<iostream.h>
#include <ctype.h>
void ChangeIt (char Text[ ], char C)
{
    for (int K=0;Text [K]!='\0';K++)
    {
        if (Text[K] >='F' && Text[K] <='L')
            Text[K]=tolower(Text[K]);
        else if (Text[K]=='E' || Text[K]=='e')
            Text[K]=C;
        else if (K%2==0)
            Text[K]=toupper(Text[K]);
        else
            Text[K]=Text[K-1];
    }
}
void main( )
{
    char oldText[ ]= "pOwERALone" ;
    ChangeIt (oldText,'%');
    cout<<"New TEXT:"<<oldText<<endl;
}

```

Q7 Find the output of the following program:

```

#include<iostream.h>
#include<ctype.h>
void secret (char msg[],int n);
void main()
{
    char sms[]="rEPorTmE";
    secret(sms,2);
    cout<<sms<<endl;
}
void secret(char msg[],int n)
{
    for(int c=0;msg[c]!='\0';c++)
        if(c%2==0)
            msg[c]=msg[c]+n;
        else if(isupper(msg[c]))
            msg[c]=tolower(msg[c]);
        else
            msg[c]=msg[c]-n;
}

```

```
}
```

Q8 Find the output of the following program:

```
#include<iostream.h>
#include<ctype.h>
void Encode(char Info[ ], int N);
void main( )
{
    char Memo[ ] = "Justnow";
    Encode(Memo,2);
    cout<<Memo<<endl;
}
void Encode(char Info[ ], int N)
{
    for (int I=0;Info[I]!='\0';I++)
        if (I%2==0)
            Info[I]=Info[I]-N;
        else if (islower(Info[I]))
            Info[I] = toupper(Info[I]);
        else
            Info[I]=Info[I]+N;
}
```

Q9 Find the output of the following program:

```
#include<iostream.h>
struct point
{
    int x , y ;
};
void show( point p )
{
    cout<< p. x << ' : ' <<p.y<<endl ;
}
void main( )
{ point u = { 20, 10 }, v , w ;
  v =u;
  v.x += 20 ;
  w = v ;
  u.y += 10 ;
  u.x += 5 ;
  w.x -= 5 ;
  show( u ) ;
  show( v ) ;
  show( w ) ;
}
```

Q10 Find the output of the following program:

```
#include<iostream.h>
#include<string.h>
#include<ctype.h>
void convert(char str[],int len)
{
    for(int count =0;count<len; count++)
        { if(isupper(str[count]))
            str[count]=tolower(str[count]);
        }
```

```

else if(islower(str[count]))
    str[count]=toupper(str[count]);
else if(isdigit(str[count]))
    str[count]=str[count]+1;
else str[count]='*';
} }
void main()
{
    char text[]="CBSE Exam 2005";
    int size=strlen(text);
    convert(text,size);
    cout<<text<<endl;
    for(int c=0;r=size-1;c<=size/2;c++,r--)
    {
        char temp=text[c];
        text[c]=text[r];
        text[r]=temp;
    } cout<<text<<endl; }

```

Q11 Find the output of the following program:

```

#include<iostream.h>
Struct three_d
{
    int x,y,z;
};
void movein(three _d &t,int step=1)
{
    t.x+=step;
    t.y+=step;
    t.z+=step;
}
void moveout(three _d &t,int step=1)
{
    t.x-=step;
    t.y+=step;
    t.z-=step;
}
void main()
{
    three_d t1={ 10,20,5},t2={ 30,10,40};
    movein(t1);
    moveout(t2,5);
    cout<<t1.x<<" "<<t1.y<<" "<<t1.z<<endl;
    cout<<t2.x<<" "<<t2.y<<" "<<t2.z<<endl;
    movein(t2,10);
    cout<<t2.x<<" "<<t2.y<<" "<<t2.z<<endl;
}

```

Q12 The following code is from a game .which generates a set of 4 random numbers :Sumit is playing this game .help him to identify the correct option(s)out of the four choices given below as the possible set of such numbers generated from the program code so that he wins the game. Justify your answer.

```

#include <iostream.h>
#include <stdio.h>
const int LOW = 15 ;

```

```

void main( )
{
    randomize( );
    int POINT =5, Number ;
    for (int I = 1 ; I <= 4 ; I ++ )
    {
        Number = LOW + random(POINT) ;
        cout << Number << “:” ;
        POINT-- ;
    }
}

```

- (i) 19:16:15:18:
- (ii) 14:18: 15:16:
- (iii) 19:16:14:18:
- (iv) 19:16:15:16:

Q13 Observe the following program SCORE.CPP carefully, if the value of num entered by the user is 5, choose the correct possible output(s) from the options from (i) to (iv) , and justify your option.

```

#include<stdlib.h>
#include<iostream.h>
void main()
{
    randomize();
    int num,rndnum;
    cin>>num;
    rndnum=random(num)+5;
    for(int n=1;n<=rndnum;n++)
    cout<<n<<” “;
}

```

Output options:

- i) 1 2 3 4
- ii) 1 2
- iii) 1 2 3 4 5 6 7 8 9
- iv) 1 2 3

Q14 Observe the following program and find out, which output(s) out of (i) to (iv) will not be expected from the program? What will be the minimum and the maximum value assigned to the variable Chance?

```

#include<iostream.h>
#include<stdlib.h>
void main( )
{
    randomize( );
    int Arr[ ]={9,6},N;
    int Chance=random(2)+10;
    for(int I=0; I<2;I++)
    {
        N=random(2);
        cout<<Arr[N]+Chance<<”*”;
    }
}

```

- (i) 9\*6\*
- (ii) 19\*17\*
- (iii) 19\*16\*
- (iv) 20\*16\*

Q15 Write a Get1From2( ) function in C++ to transfer the content from two arrays FIRST[] and SECOND[] to array ALL[]. The even places (0,2,4,...) of array ALL[] should get the content from the array FIRST[] and odd places(1,3,5,...) of the array ALL[] should get the content from array SECOND[].

Example:

If the FIRST[] array contain : 30,60,90

And the SECOND[] array contain : 10,50,80

The ALL[] array should contain : 30,10,60,50,90,80

Q16 Write a function in C++, which accepts an integer array and its size as parameters and swaps the array elements with their consecutive element.

Example: if an array of eight elements initially contains the elements as :

4, 2, 5, 1, 6, 7, 8, 12

Then the function should rearrange the array as :

2, 4, 1, 5, 7, 6, 12, 8

Q17 What do you understand by function overloading ? Give an example illustrating its use in c++ program.

## CLASSES

Q18 What is the difference between an ordinary function and a member function.

Q19 How abstraction and encapsulation implemented in C++.

Q20 Write down some differences between class and structures.

Q21 Differentiate between public and private visibility modes in context of object oriented programming using a suitable example.

Q22 Define a class car in C++ with the following specifications:

Private members of class car

hpower // Data Member to store horse power in numbers  
name // Data members to store name of the car  
price // Data Member to store price of the car  
modelno // Data Member to store modelno of the car in characters

public members of class car

car() //A function to initialize hpower as 130 and price as 0.  
getdata( ) // A function to accept values for hpower,name and modelno from the user and call function "calc()"  
calc( ) // A function to assign the values of price, as per the following condition.

modelno	price
101	350000
104	500000
106	450000

dispdata( ) // Afunction to display all the data members on the screen.

Q23 Define a class medical in C++ with the following descriptions:

4

Private Members:

Patient\_id of type string  
name of type string  
disease\_type of type string  
disease of type string  
consultation\_charge of type float  
medicine\_charge of type float

total\_bill                      of type float

- A function assign() which calculates and assigns the values of consultation\_charge as follows:  
For the value of disease\_type as “normal” consultation\_charge=500Rs.  
For the value of disease\_type as “critical” consultation\_charge=1500Rs.  
total\_bill should be calculated automatically by adding consultation\_charge and medicine\_charge.

Public Members:

- A constructor to assign initial values of Patient\_id, name, disease\_type, disease with the word “NOT KNOWN” and consultation\_charge, medicine\_charge, total\_bill with 0.
- A function Input() to input the values of the data members Patient\_id, name, disease\_type, disease, medicine\_charge and invoke the assign function.
- A function display() which displays the content of all the data members for a patient.

## **CONSTRUCTORS AND DESTRUCTORS**

Q24 Answer the question (i) and (ii) after going through the following class :

```
class WORK{
    int WorkId; char WorkType;
public:
    ~WORK() //Function 1
    {
        cout<<“Un-Allocated”<<endl;
    }
    void Status() // Function 2
    {
        cout<<WorkId<<“:”<<WorkType<<endl;
    }
    WORK() // Function 3
    {
        WorkId=10;
        WorkType='T';
    }
    WORK (WORK &W) // Function 4
    {
        WorkId = W.WorkId+12;
        WorkType=W.WorkType+1;
    }
};
```

(i) Which member function out of Function 1, Function 2, Function 3 and Function 4 shown in the above definition of class Work is called automatically, when the scope of an object gets over? Is it known as Constructor or Destructor or Overloaded Function or Copy Constructor?

ii) WORK W;     //Statement 1

WORK Y(W);    // Statement 2

Which member function out of Function 1, Function 2, Function 3 and Function 4 shown in the above definition of class Work will be called on execution of statement written as Statement 2? What is this function specifically known as out of Destructor or Copy Constructor or Default Constructor?

## **Q25. PROJECT**

- 1.For your final board project, finalize topic and try to do complete case study. Try to collect all the information regarding your project, make data flow diagrams, screen flow diagram, finalize your data file structure, and finalize functions, validations and bring all such things in a File.

2. For your final board PRACTICAL FILE make following programs in C++ and take snap shots of outputs in a word file.
- 2 programs on classes
  - 2 programs on constructors
  - 2 programs on pointers
  - 4 programs on single dimension array
  - 2 programs on two dimensional array

### INFORMATICS PRACTICES

#### Write answers in your fair copy:-

1. For your final board project, finalize topic and try to do complete case study. Try to collect all the information regarding your project, make data flow diagrams, screen flow diagram, finalize your data file structure, and finalize functions, validations and bring all such things in a File.
2. Prepare a 3 D chart/Model on any one topic from the following list:
  - Different Networking Topologies
  - Different Transmission Media
  - Different great inventions in Computer field
  - Famous IT personalities
  - Famous IT companies and their details
  - Few popular Computer/Mobile operating systems
  - Detail explanation of any free software
  - Future trends in IT Industry
3. Compare radio waves and micro waves.
4. Write down any two differences between HUB and SWITCH.
5. Explain the following protocols:-
  - i) TCP/IP
  - ii) SMTP
  - iii) PPP
  - iv) FTP
  - v) SQL
  - vi) OSS
6. What is the role of repeater in networking?
7. What do you mean by gateway?
8. Give atleast two differences between MAC address and IP address.
9. Explain the concept of Domain Name.
10. Explain the use of firewall in networking.
11. Write down the role of bridge in networking.
12. Expand the term modem and also explain its use in networking.
13. Name two encodings that are used for Indian language computing.
14. Name any four Indian scripts included in Unicode.
15. What do you mean by open standards?
16. Write down the name of any three:
  - Open Source software.
  - Freeware software.
  - Shareware software.
17. Explain the term proprietary software.
18. What is Cyber Law?
19. Anjali is a programmer at MagicBricks. To calculate wages to be paid to labourers she has developed the following GUI in NetBeans:  
Male and Female labourers are respectively paid at the rate of Rs. 140./- per day and Rs. 160/- per day. Skilled laborers are paid extra at the rate of Rs. 50/- per day.
  - i. User must be able to select only one of the two radio buttons (Male and Female) at a time.
  - ii. Write code to calculate and display the Total wages in the corresponding label when the "Calculate Wages" button is clicked. Here total wages= no. of days worked \*(wages+extra).
  - iii. Write code to Clear all the text fields for Clear button and exit the application when clicks on STOP button.
20. Globus Garments has developed a GUI application for their company as shown below:

The company accepts payments in 3 modes: cheque, cash and credit cards. The discount given as per mode of payments. The details are as follows:

Mode of payment	discount
Cash	8%
Cheque	7%
Credit Card	Nil

If the bill amount is more than 15000, then the customer gets an additional discount of 10% on Bill amount.

- i. Write the code to make the textfields for discount (named txtDisc) and Net Amount (named txtNetAmt) uneditable.
  - ii. Write code to do the following:
    - a) When Calculate Discount button is clicked the discount should be calculated as per the given criteria and it should be displayed in the discount textfield. Calculate NetAmount button (named btnCalcNetAmt) should also be enabled.
    - b) When “Calculate Net Amount” button is clicked the net amount should be calculated and it should be displayed in the net amount textfield.
    - c) When STOP button is clicked then application is closed.
21. In a table ‘Employee’, a column ‘Occupation’ contains many duplicate values. Which keyword would you use if you wish to list only different values.
22. Charvi wants to delete the records where the “FirstName” is “Rama” in ‘Emp’ table. She has entered the following SQL statement. An error is being displayed. Rewrite the correct statement..
23. Consider the Table “Infant” shown below:

**Table: Infant**

ItemCode	Item	DatePurchase	UnitPrice	Discount
101	Frock	2016-01-23	700	10
102	Cot	2015-09-23	5000	25
103	Soft Toy	2016-06-17	800	10
104	Baby Socks	2014-10-16	100	7
105	Baby Suit	2015-09-20	500	5

**Note: Discount column stores discount %**

- i. To display the details about the Cot.
- ii. To list the names of items and their unit price that have price less than 800 and discount more than 5%.
- iii. To list the names of items and their date of purchase that were purchased after 31st december, 2015.
- iv. To display the number of items that have more than 10% discount.
- v. To display Item code and unit price in decreasing order of unit price.
- vi. To increase the unit price of each item by 10% of their unit price.
- vii. To display the highest unit price of items.
- viii. To display the names of items that have ‘Baby’ anywhere in their item names.
- ix. Select MID(Item,1,2) From Infant;
- x. Select Avg(UnitPrice) From Infant Where DatePurchase>’2015-01-01’;

24. Consider the tables given below and answer the questions that follow:

**Table: Workshop**

WorkshopId	Title	NumSpeakers	MeantFor	Fee
551	Time Management	3	Senior Manager	7000
553	App Development	1	Computer Programmer	9000
554	Planning	2	Senior Manager	8000
556	Marketing Strategies	2	Junior Manager	9000

**Table: Participant**

ParticipantId	Name	WorkshopId
100	Prabhu Shankar	551
101	Dev Sen	554
102	Fauzia Khan	551
103	Tom Winters	553

Write commands in SQL for I to iii given below:

- i. To display names of Participants along with workshop titles for only those workshops that have more than 2 speakers.
- ii. To display ParticipantId, Participant's name, WorkshopId for workshops meant for Senior Managers and Junior Managers.
- iii. To display WorkshopId, Title, ParticipantId for only those workshops that have fees in the range of 5000 to 8000.

25. Write SQL query to create a table 'Event' with the following structure:

Field	Type	Constraint
EventId	Varchar(50)	Primary Key
EventName	Varchar(30)	Not Null
Location	Varchar(50)	
ClientId	Integer	
EventDate	Date	

## **PHYSICAL EDUCATION**

### **UNIT 3: YOGA AND LIFE STYLE**

1. Elements of yoga.
2. Benefits of yoga.
3. Explain various types of yoga asana.
4. Treatment for various types of diseases by yoga.
5. Benefits of different asana.

### **UNIT 4: PHYSICAL EDUCATION & SPORTS FOR DIFFERENTLY ABLED**

6. Concept of disabilities.
7. Explain types of disabilities.
8. Types of disorder, its causes and nature.
9. Advantage of physical activities for children.
10. Explain about ADHD, SPD, ASD, ODD, OCD.

### **UNIT 5: CHILDREN & SPORTS**

11. Define motor development. What are the factors affecting motor development.
12. How is exercise beneficial for the development of children?
13. Why are physical activities so important in life?
14. Write about the safety concerns of food supplements for children and teen.
15. What are the advantages and disadvantages of weight training?