ENGLISH

1) Prepare a book review after reading any one of the books mentioned below:

Five Point Someone - by Chetan Bhagat   Wings of Fire - by Abdul kalam

Time Machine - by H. G. Wells

2) Write and learn 20 antonyms, synonyms and one word substitutions each.(words may be taken from he texts you have done till now).

3) Write a self-composed poem about your mother/ grandmother or the person you like the most in your family. Ornament your poem with the use of literary devices that you learnt in the poem 'My Mother at Sixty Six' and present beautifully on A. 4 size sheet.

4)Prepare a debate (for / against) on the given topic:

a)We are happier than our forefathers. (R.N.1 10)

b)Happiness is proportional to income ()R. N. 11 to 20)

c)Working mothers-A Boon or a Bane (20 to30)

d)Schools should promote the students to join coaching institutes (R. N. 30…till last)

5)Activity:(to be done on A.4 sheet)

a)poster making on any social problem(1o 10)   b)Slogan writing (11 to 20)

c)Literary devices(With pictures and examples) Simile, Metaphor,Personification(21to30)

d)Crossword Puzzle/ Riddles (31 till last roll no.)

6)write recapitulating points of all the chapters done in literature in the form of flow

chart,tabular form, bubbles form etc.

7)Draft notice on the given topics:

 i)Inter-house Debate competition   ii)Annual Sports Meet

 iii)Cultural Benefit Show   iv)Puppy lost in the park

 8)write letter to the editor on the following issues:

 i)Problem of Inflation   ii)Proliferation of coaching centers

9) Get the hard copy of unseen passages for comprehension to be shared in your respective whatsapp groups and write the answer in your HHW assignment notebooks.

PHYSICS

Electrostatics - I

1. Two charges each of + Q units are placed along a line. A third charge – q is placed between them. At what position and for what value of q, will the system be in equilibrium?

2. What kind of charges are produced on each, when (i) a glass rod is rubbed with silk and (ii) an ebonite rod is rubbed with wool?

3. Can a body have charge of $0.8 \; 10^{-19}$ C? Comment to justify your answer?

4. Name the experiment, which established quantum nature of electric charge.

5. How the mass of a body is affected on charging?

6. Force between two-point electric charges kept at a distance d apart in air is F. If these charges are kept at the same distance in water, how does the force between them change?

7. If the distance between two equal point charges is doubled and their individual charges are also doubled, what would happen to the force between them?

8. Ordinary rubber is an insulator. But the special rubber tires of aircrafts are made slightly conducting. Why is this necessary?

9. Vehicles carrying inflammable materials usually have metallic ropes touching the ground during motion. Why?

10. Can a charged body attract another uncharged body? Explain. Or

Why does a charged glass rod attract a piece of paper?

11. A charge q is placed at the center of line joining two equal charges Q. Show that the system of three charges will be in equilibrium, if $q = -Q/4$.

12. Two point charges of charge values Q and q are placed at a distance of x and $x / 2$ respectively from a third charge of charge value 4 q, all charges being in the same straight line. Calculate the magnitude and nature of charge Q, such that the net force experienced by the charge q is zero.

Electrostatics - II

1. The force acting between two-point charges q_1 and q_2 kept at some distance apart in air attractive or repulsive when (i) $q_1 q_2 > 0$ (ii) $q_1 q_2 < 0$.

2. Sketch the electric lines of force for two- point charges q_1 and q_2 $(q_1 > q_2)$ separated by a distance d.

3. Express dielectric constant in terms of capacitance.

4. What is the effect of introducing a dielectric slab between the plates of a parallel plate capacitor?

5. An electric dipole of dipole moment $20 \otimes 10^{-6}$ C is enclosed by closed surface. What is the net electric flux coming out of this surface?

6. Sketch graph to show how charge Q given to a capacitor of capacitance C varies with the potential difference.

7. A charged air capacitor has stored energy U_0. What will be the energy stored when air is replaced by a dielectric of dielectric constant K, charge Q remaining the same.

8. In a parallel plate capacitor, the capacitance increases from 4 ¡F to 80 ¡F on introducing the dielectric medium between the plates. What is the dielectric constant of the medium?

9. In an electric field an electron is kept freely. If a proton replaces this electron, what will be the relationship between the forces experienced by them?

10. What orientation of an electric dipole in a uniform electric field corresponds to its stable equilibrium?

11. The force between two point charges kept at a distance r apart in air is F. If the same charges are kept in water at same distance, how does the force between them change?

12. Two point electric charges of unknown magnitude and sign are placed at a distance 'd' apart. The electric intensity is zero at a point, not between the charges but on the line joining them. Write two essential conditions for this to happen.

13. What should be the work done if a point charge + q is taken from a point A to the point B on the circumference drawn with another point + q at the center?

14. A and B are two conducting spheres of the same radius, A being solid and B hollow. Both are charged to the same potential. What will be the relation between the charges on the two spheres?

15. How much work is done in moving a 500 μC charge between two points on an equi-potential surface.

16. Name the dielectric whose molecules have (i) non-zero (ii) zero dipole moment.

17. A positively charged particle is free to move in an electric field. Will it always move along the line of force?

18. A proton and an electron are placed freely in an electric field. Which of the particles will have greater acceleration and why?

Electrostatics and Capacitance

1. Electric charges q, q and -2q are placed at the corners of an equilateral triangle of side L.
   what is the magnitude of dipole moment of the system?

2. State Gauss's law in electrostatics. Show, with the help of a suitable example along with the figure, that the outward flux due to a point charge 'q', in vacuum within a closed surface, is independent of its size or shape and is given by q/ε_o.

3. Two parallel uniformly charged infinite plane sheets, '1' and '2', have charge densities + σ and – 2σ respectively. Give the magnitude and direction of the net electric field at a point (i) in between the two sheets and (ii) outside near the sheet '1'.

4. Three point charges q_1, q_2 and q_3 are kept respectively at points A, B and C as shown in the figure.

Derive the expression for the electrostatic potential energy of the system.

5. Depict the equipotential surfaces due to (i) an electric dipole, (ii) two identical

    positive charges separated by a distance.

6. Find the ratio of the potential differences that must be applied across the parallel and the series combination of two identical capacitors so that the energy stored, in the two cases, becomes the same.

7. Find the electric field intensity due to a uniformly charged spherical shell at a point (i) outside the shell (ii) inside the shell. Plot the graph of electric field with distance from the center of the shell.

8. A right circular cylinder of length '*a*' and radius '*r*' has its centre at the origin and its axis along the *x*-axis so that one face is at *x*=+*a/2* and *x*= *-a/2,* as shown in the figure. A uniform electric field is acting parallel to the x-axis such that $\vec{E} = \vec{E}$ for *x* > 0 and $\vec{E} = -\vec{E}$ for *x* < 0.
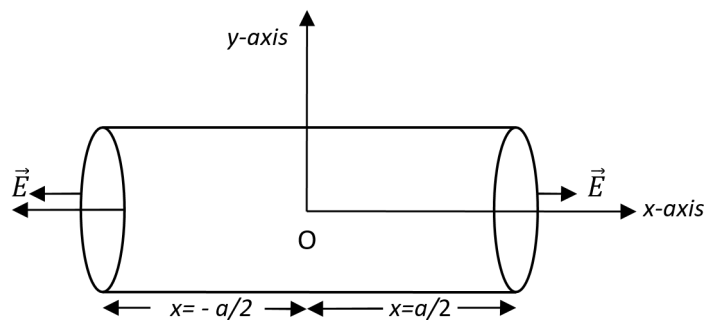

    Find (i) flux through each flat faces (ii) through the curved surface (iii) the net outward flux through the cylinder and the net charge inside the cylinder.

9. An electric dipole is held in a uniform electric field. (i) Using suitable diagram show that it does not undergo any translatory motion (ii) Derive an expression for torque acting on it and specify its direction.

10. A system has two charges $q_A = 2.5 \times 10^{-7}C$ and $q_B = -2.5 \times 10^{-7}C$ located at points A =(0,0, -15cm) and B = (0,0, +15cm) respectively. Calculate the total charge and dipole moment of the system.

11. Two capacitors of unknown capacitances C_1 and C_2 are connected first in series and then in parallel across a battery of 100 V. If the energy stored in the two combinations is 0.045 J and 0.25 J respectively, determine the value of C_1 and C_2. Also calculate the charge on each capacitor in parallel combination.

12. A parallel plate capacitor is charged to a certain potential difference. A dielectric plate

    is then inserted in the capacitor. In order to attain the initial potential difference, the charge on the plates has to be increased to three times. Determine the di-electric constant of the plate.

13. Calculate the potential difference and the energy stored in the capacitor C2 in the circuit shown in the figure. Given potential at A is 90 V, C1= 20μF, C2= 30μF and C3= 15μF.
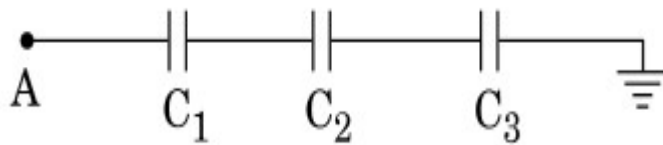

14. Three circuits, each consisting of a switch 'S' and two capacitors, are initially charged, as shown in the figure. After the switch has been closed, in which circuit will the charge on the left-hand capacitor (i) increase, (ii) decrease and (iii) remain same? Give reasons.

(a)   (b)   (c)
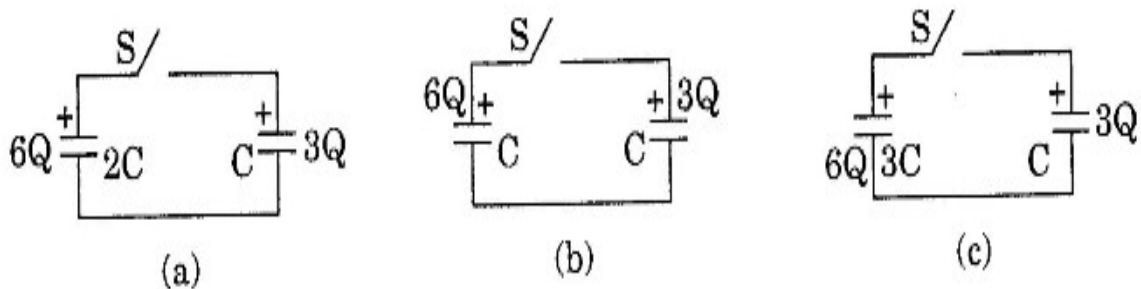
15. When two charged conductor having different capacities and different potentials are joined together, show that there is always a loss of energy.

16. Three different capacitors C1, C2 and C3 of capacitance 6μF each are connected to a 12V battery as shown. Find: (i) Charge on each

capacitor (ii) equivalent capacitance of the network (iii) energy stored in the network of capacitors.
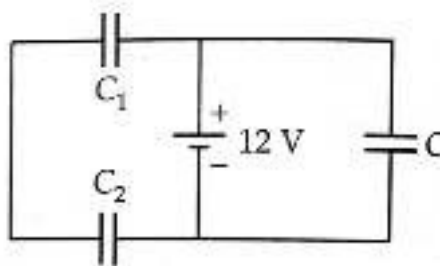
CHEMISTRY

Q.1 Solve Ncert exercise and intent questions of CH 2 , 10 ,11

Q.2 Solve questions of above chapters from CBSE question paper of 2019 to 2023.

Q.3 Make an Investigatory project on any topic of your choice (first confirm your project from me).

Q.4 Make one creative and attractive mind map of all the chapters(2,10 &11)

- Colligative Properties (Tagore House)
- Application of Henry's law(Subhash House)
- Osmotic Pressure (Tagore House)
- Name Reaction (Vivekananda House)

Q.5 Make one working or non working model either of your choice or from given topics.

1 Electrochemical cell   2. Osmotic pressure   3. Elevation in boiling point

4. SN1 and SN2 reaction   5. Ostwald dilution law

BIOLOGY

1 Write down previous years questions and answers in separate notebook of chapter 1 to 4.

2 Practice diagrams of chapter 1 and 2

3 Prepare charts on following topics

Mutational disorders (roll 1 to 5) , Biotechnology in medicine (6 to 10), Nucleosome (11 to 15), Sex linked inheritance (16 to 20), Pollination strategy (21 to 25), Splicing , capping and tailing of RNA (26 to 33)

4 Make working model using clay, threads, beads, stones etc on following topics , Bioreactor, Dustcollecter , Water treatment plant Or any other topic of your choice

5 Bring one medicinal plant with biological classification and write down your name as a scientist .

6 Complete your biology project (Investigatory)

INFORMATICS PRACTICES
MySQL

XII-B   **Make a presentation/Animation on Cyber safety**
XII-C   **Make a chart on Mysql Functions (full chart)**
XII-E   **Make a chart on Online Banking and Transaction Methods (full chart)**
XII-F   **Create a PPT /animated video on The impact of Artificial Intelligence on Sustainable   Development Goals to develop responsible citizenship**

Note: For making animated videos you can use canva.com, powerpoint, kinemaster + green screen characters from youtube etc.

Q1. Answer the following questions briefly:
   a) Write any two features/advantages of MySQL.
   b) What is a database ? What is a database management system? Give two examples of RDBMS. Write any two advantages of RDBMS.
   c) Write the full form of SQL? Explain the subcategories of SQL statements giving two examples in each category.
   d) Define the following by taking suitable examples wherever necessary :
            1.Primary Key   2. Candidate Key   3. Alternate Key   4. Foreign Key
   e) Differentiate between the following(Give examples to support your answer):
      ● CHAR and VARCHAR datatypes
      ● NUMERIC and NON NUMERIC datatypes
      ● Tuple and Attribute
      ● Degree and Cardinality of a relation
      ● DELETE and DROP TABLE
   f) After creating the "employee" database, you want to use it. Write the command that you should give.
   g) What is NULL value?
   h) What do % and _ mean inside a SELECT with LIKE statement ? Explain with the help of example of each.
   i) What are group/aggregate functions in MySQL? Explain the usage of any two group functions by taking example of each.
   j) Briefly explain the difference between single row functions and group functions by taking examples of each.
   k) Rama is not able to change a value in a column to NULL. What did she specify when she created the table?

*Q2. Write a SQL statement to create the following table **HOSPITAL**. (for practical file)*

Table: **HOSPITAL**

PNo	Name	Age	Department	DateofAdm	Charges	Sex
1	Sandeep	65	Surgery	23/02/98	300	M
2	Ravina	24	Orthopedic	01/01/98	200	F
3	Karan	45	Orthopedic	19/02/98	200	M
4	Tarun	12	Surgery	01/01/98	300	M
5	Zubin	36	ENT	12/01/98	250	M

6	Ketaki	16	ENT	24/02/98	300	F
7	Ankita	29	Cardiology	20/02/98	800	F
8	Zareena	45	Gynecology	22/02/98	300	F
9	Kush	19	Cardiology	13/01/98	800	M
10	Shailya	31	Medicine	19/02/98	400	M

Note: PNo is the primary key in the above table.

Write SQL commands for the statements (a) to (s) on the basis of the table HOSPITAL.
a) To show all the information of the patients of the cardiology department..
  b) To list the names of female patients who are either in the orthopedic or surgery department.
  c) To list the name of all the patients with their date of admission in ascending order.
  d) To display the patient's name, charges, age for male patients only.
  e) To count the number of patients with age > 20.
  f) To display various departments.
  g) To display the number of patients in each department.
  h) To display the number of male & female patients.
  i) To display the details of the patients admitted in first quarter of 1998.
  j) To display the names of the department where the number of patients is less than 2.
  k) To display the details of all the patients whose name starts with the alphabet 'Z'.
  l) To change the age of the patient Kush to 20.
  m) To increase the charges of all the patients by 5%.
  n) To remove the record of the patient whose Name is Tarun.
  o) To add another column WardNumber of the type Number in the above table.
  p) To change the column Charges such that it can allow NULL values.
  q) To set charges to NULL for all the patients in the Surgery department.
  r) To decrease the charges by 10% of all the patients admitted in the Cardiology department.
  s) To remove the primary key constraint in the above table.
  t) To insert a new row in the HOSPITAL table with the following data:
     11,'Mustafa',37,'ENT','1998-02-25',250,'M'.

Give the output of the following SQL statements based on the above table HOSPITAL:
  (i)   Select COUNT(DISTINCT Charges) FROM Hospital;
  (ii)   Select MIN(Age) From Hospital WHERE Sex='M';
  (iii)   Select AVG(Charges) FROM Hospital where DateofAdm < '1998-02-12';
  (iv)   Select SUM(Charges) FROM Hospital where Sex ='F';
  (v)   Select Left(Name ,4) FROM Hospital where Charges = 200;
  (vi)   Select RIGHT(Name,3) FROM Hospital where Deaprtment='ENT';
  (vii)   Select Length(Department) FROM Hospital where Department IN ('ENT','Orthopedic');
  (viii)   Select Name FROM Hospital where Sex='F' and Age <18;
  (ix)   Select LCASE(Department) FROM Hospital where Department Like '%y';
  (x)   SELECT SUBSTR(Deaprtment,2,3) FROM Hospital where Charges between 500 and 1000;
  (xi)   SELECT MONTH(DateofAdm) , DAY(DateofAdm) From Hospital where cost between 500 and 1000;
  (xii)   SELECT NOW( ), DAYNAME(now());
  (xiii)   SELECT DAYOFYEAR(NOW());

(xiv)   SELECT ROUND(2345.67,2) , ROUND(2345.67,1) , ROUND(2345.67,0) ;
(xv)   SELECT POWER(25,-1), MOD(56,7) ;

Q3. Write SQL queries based on the following two tables:
Table: **ACTIVITY**

Acode	ActivityName	Stadium	ParticipantsNum	PrizeMoney	ScheduleDate
1001	Relay 100x4	Star Annex	16	10000	23-Jan-2004
1002	High Jump	Star Annex	10	12000	12-dec-2003
1003	Shot Put	Super Power	12	8000	14-Feb-2004
1005	Long Jump	Star Annex	12	9000	01-Jan-2004
1008	Discuss Throw	Super Power	10	15000	19-Mar-2004

Table: **COACH**

Pcode	Name	Acode
1	Ahmed Hussain	1001
2	Ravinder	1008
3	Janila	1001
4	Naaz	1003

a) Display the names of all the activities with their Acodes in descending order.
b) Display the sum of PrizeMoney for the activities played in each of the stadium separately.
c) Display the coach's name and Acodes in ascending order of Acode from the table
    COACH.
d) Display the content of Activity table whose ScheduleDate is earlier than 01/01/2004 in
    ascending order of ParticipantsNum.
e) Display the names of coaches who are not associated with any activity at all.
f) Display the names activity and its corresponding coachname.

Give the output of the following queries:

(i)   SELECT COUNT(DISTINCT ParticipantsNum) FROM Activity;

(ii)   SELECT Max(ScheduleDate), MIN(ScheduleDate) FROM Activity;

(iii)   SELECT COUNT(*) FROM Coach;

(iv)   SELECT Name, Activityname FROM activity A, COACH C
         WHERE A.Acode = C.Acode AND A.ParticipantsNum =10;
(v)   SELECT DISTINCT Acode FROM Coach;

PHYSICAL EDUCATION

1. Labelled diagram of 400 metre track and explain 100 metre,200 metre, 400 metre,

800 metre, and 1500 metre races and show in 400 metre track.

2. Field Events

    Shot put , discus throw ,   javelin throw,   long jump,   High jump

3. Anyone game of your choice out of the list above. Labelled diagram of field and

equipment (rules, terminologies and skills) etc.

Football, Basketball, Kabaddi, Volleyball,Cricket, Hockey, Kho-kho
4.Pictorial presentation of any five asanas.

MUSIC

नोट - यह अवकाश गृह कार्य संगीत की प्रोजेक्ट फाइल पर ही करें ।

१. भारतीय संगीत के किन्ही पांच वाद्यों का सचित्र वर्णन कीजिए।

२. राष्ट्रीय गीत किसके द्वारा लिखा गया इसको पूरा कीजिए ।

३. तानपुरे का सचित्र वर्णन कीजिए और २/३ का चित्र बनाइए।

४. अब तक भारतीय संगीत में भारत रत्न ,पदम श्री और पदम विभूषण किस किसको मिला किन्हीं 12 कलाकारों के विषय में संक्षिप्त जानकारी दीजिए।

५. संगीत की देवी वीणा वादिनी की वंदना लिखें हे हंस वाहिनी ।

६. सरस्वती माता का एक सुंदर चित्र बनाएं।

७. राष्ट्रीय गीत राष्ट्रीय गान के रचयिता कौन कौन हैं राष्ट्रगीत और राष्ट्रगान को स्पष्ट कीजिए ।

८. किन्ही 12 राज्यों के लोक नृत्य का सचित्र वर्णन कीजिए ।

९. राष्ट्रीय वाद्य कौन सा है और अंतरराष्ट्रीय वाद्य कौन सा है सचित्र वर्णन कीजिए।

१०. संगीत में आपको कौन सा वाद्य अच्छा लगता है उसका चित्र बनाकर स्पष्ट करें ।

११. हमारे 3 देवी देवता कौन-कौन से हैं जिनके हाथों में संगीत का वाद्य यंत्र है उनका चित्र संलग्न करें ।

१२. भारतीय संगीत में प्रसन्नता का वाद्य और दुख का वाद्य कौन सा है सचित्र वर्णन करें और उसके विषय में दो-दो लाइन लिखें ।

१३. घन वाद्य , तंत्र विद्या, सुशीर वाद्य कौन-कौन से हैं इनके विषय में लिखें ।

१४. कोई एक एक भजन , देशभक्ति गीत और लोकगीत लिखें ।

१५. संगीत क्षेत्र में किन्हीं पांच ख्याति प्राप्त कलाकारों के विषय में लिखें।

HINDI

नोट :- सभी प्रश्नों के उत्तर ध्यानपूर्वक और सुंदर लेख में दीजिए।

प्रश्न 1) 'भक्तिन' और 'बाजार दर्शन' पाठ को पढ़कर 10 - 10 अतिरिक्त प्रश्नों के उत्तर 40 से 50 शब्दों में लिखिए।

प्रश्न 2) 'आत्म परिचय' 'एक गीत' और 'पतंग' कविता को पढ़कर 10 - 10 अतिरिक्त प्रश्न उत्तर 30 से 40 शब्दों में लिखिए।

प्रश्न 3 'सिल्वर वेडिंग' पाठ को पढ़कर 20 बहुविकल्पी प्रश्न - उत्तर का निर्माण कीजिए।

प्रश्न 4 समाचार लेखन की शैली 'उल्टा पिरामिड शैली' को स्पष्ट करते हुए ककारों के साथ एक सुंदर सचित्र चार्ट तैयार कीजिए।

प्रश्न 5 'सिल्वर वेडिंग' पाठ के आधार पर पीढ़ी के अंतराल को दर्शाते हुए एक सचित्र मॉडल अथवा चार्ट तैयार कीजिए।

प्रश्न 6)बाजार एक जादू है वह आंखों के माध्यम से लोगों को अपने आकर्षण में फसाता है इस आकर्षण से हम अपने आप को कैसे बचा सकते हैं यह संदेश देते हुए चित्र सहित एक सुंदर चार्ट अथवा मॉडल तैयार कीजिए

प्रश्न 7 निम्नलिखित विषयों पर 100 से 120 शब्दों में फीचर लेखन लिखें।

i) युवाओं के लिए मतदान का महत्व।   ii) कृत्रिम बुद्धिमत्ता (आर्टिफिशियल इंटेलिजेंस) का दौर (iii) कर्म ही पूजा है (iv) आत्मनिर्भरता की ओर बढ़ते हमारे कदम।

प्रश्न 8 निम्नलिखित विषयों में से किसी एक विषय पर वार्षिक परीक्षा के लिए प्रायोगिक पुस्तिका (प्रोजेक्ट फाइल (15 से 20 पृष्ठों) तैयार कीजिए:-

i)छायावाद के आधार स्तंभ 'जयशंकर प्रसाद', 'सूर्यकांत त्रिपाठी निराला' सुमित्रानंदन पंत' और ' महादेवी वर्मा' आदि कवियों पर सचित्र एक प्रायोगिक पुस्तिका (प्रोजेक्ट फाइल) तैयार कीजिए (अथवा)

ii) हिंदी साहित्य की गद्य विधाएं (कहानी, नाटक, उपन्यास, रेखाचित्र, संस्मरण आदि पर एक सचित्र प्रायोगिक पुस्तिका तैयार कीजिए

iii) वर्तमान में जनसंचार माध्यम कितनी महत्वपूर्ण भूमिका निभा रहे हैं इसे प्रदर्शित करते हुए सचित्र एक प्रायोगिक पुस्तिका तैयार कीजिए

iv) आपके पाठ्यक्रम में दिए गए किसी भी लेखक अथवा लेखिका के संपूर्ण जीवन पर ,साहित्यिक रचनाओं पर अपने विचार व्यक्त करते हुए सचित्र एक प्रायोगिक पुस्तिका तैयार करेंगे।

प्रश्न :-9) अप्रैल और मई के महीने में करवाए गए पाठ्यक्रम को याद कीजिए।

1. What is the number of reflexive relation on a set A consisting of n elements?

2. Let A= { 1,2,3,4}. Then how many symmetric relations will be there on set A?

3. For real numbers x and y , define xRy iff x -y+ $\sqrt{2}$ is an irrational number. Check this relation for reflexive,symmetric and transitive.

4. If the set A contains 5 elements and set B contains 6 elements, then what is the number of one-one and onto mappings from A to B?

5. Which of the following function from Z to Z is a bijection?

   (i) $F(x) = x^3$ (ii) $f(x) = x + 2$ (iii) $f(x) = 2x+1$ (iv) $f(x) = x^2 + 1$

6. The domain of $f(x) = \cos^{-1}(x^2 - 4)$?

7. If $\cos^{-1}\alpha + \cos^{-1}\beta + \cos^{-1}\gamma = 3\pi$, then find value of $\alpha(\beta + \gamma) + \beta(\gamma + \alpha) + \gamma(\alpha + \beta)$

8. What is one branch of $\cos^{-1} x$ other than the principal value branch?

9. If A and B are square matrices of the same order such that AB = 5I , then what is A^{-1}?

10. If $A^3 = O$, then $I + A + A^2$ equals to ?

11. If A = $\begin{matrix} x & 5 & 2 \\ 2 & y & 3 \\ 1 & 1 & z \end{matrix}$, xyz = 80 , 3x + 2y+ 10z = 20 and A(adjA) = k I , then k equals?

12. If A = $\begin{matrix} 0 & 1 & 3 \\ 1 & 2 & x \\ 2 & 3 & 1 \end{matrix}$ and $A^{-1} = \begin{matrix} 1/2 & -4 & 5/2 \\ -1/2 & 3 & -3/2 \\ 1/2 & Y & 1/2 \end{matrix}$, then find value of x and y.

13. Using determinants prove that the points (a,b) , (a1,b1) , (a-

a1,b-b1) are collinear if ab1=a1b

14. If $A = \begin{matrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ a & b & -1 \end{matrix}$, then find A^{20}.

15. If $\begin{matrix} \cos 2\pi/7 & -\sin 2\pi/7 \\ \sin 2\pi/7 & \cos 2\pi/7 \end{matrix} = \begin{matrix} 1 & 0 \\ 0 & 1 \end{matrix}$, then find the least positive integral value of k.

Questions based on limits

16. Evaluate : $\lim_{x \to 0} \dfrac{\sqrt{a+2x}-\sqrt{3x}}{\sqrt{3a+x}-\sqrt{4x}}$.

17. $\lim_{x \to 0} \dfrac{\tan x - \sin x}{\sin^3 x}$

18. (i) $\lim_{x \to \pi/6} \dfrac{\sqrt{3}\sin x - \cos x}{x - \pi/6}$ (ii) $\lim_{x \to \pi/2} \dfrac{1+\cos 2x}{(\pi - 2x)^2}$

1. **PROJECT WORK : BEAUTY OF MATHEMATICS : WITHOUT MATHEMATICS , THERE IS NOTHING YOU CAN DO. EVERYTHING AROUND YOU IS MATHEMATICS .MATHEMATICS IS THE MOST BEAUTIFUL AND MOST POWERFUL CREATION OF THE HUMAN SPIRIT.**

SO STUDENTS LOOK AROUND AND SEE THE FOLLOWING MATHEMATICAL CONCEPTS. CLICK PHOTOGRAPHS OR YOU MAY DOWNLOAD THE PICS FROM INTERNET PASTE THEM ON A FILE AND PREPARE A SHORT NOTE ON THEM.

(I) ARITHMETIC PROGRESSION(GANDHI HOUSE STUDENTS)

(II) QUADRATIC EQUATION(SUBHASH HOUSE STUDENTS)

(III) SYMMETRY(TAGORE HOUSE STUDENTS)

(IV) FIBONACCI SEQUENCE (VIVEKANAND HOUSE STUDENTS)

2. **PREPARE A BEAUTIFUL CHART ON ANY OF THE FOLLOWING TOPICS :**

(I) TRIGONOMETRIC FORMULAS

(II) INVERSE TRIGONOMETRIC FORMULAS

(III) BEAUTY OF NUMBER PATTERENS

(IV) GRAPHS OF INVERSE TRIGONOMETRIC FUNCTIONS

3. TAKE A CARDBOARD SHEET AND USING MATERIALS LIKE COLOURED THREADS,DRAWING PINS, GLUE ETC PREPARE THE FOLLOWING ACTIVIES :

(I) TO VERIFY THE RELATION R in the set L of all lines in a plane,defined by R ={ (l , m): l is parallel to m} is an equivalence relation.(ROLL NO : 2,4,6,8,10,12,14,16,18,20)

(II) To demonstrate a function which is one-one but not on-to.(ROLLNO : 1,3,5,7,9,11,13,15,17,19)

(III) To demonstrate a function which is onto but not one-one.(21,23,25,27,29,31,33,35,37,39,41)

(IV) To verify that the relation R in the set L of all lines in a plane, defined by R= { (l,m) : l is perpendicular to m} is symmetric but neither reflexive nor transitive.(22,24,26,28,30,32,34,36,38,40,42)

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