M.R. Citi Public School

Class: XI Science

"Summer: A time to recharge, rediscover, and rise high "

Dear Parents,

Your child is entering a crucial stage of self-discovery, discipline, and academic growth. **Summer holidays offer a golden chance to shape not just their minds** but also their habits. Here are some Parenting Tips to make this journey rewarding:

Kindly note that the **summer vacation** for your ward will be from **30th May 2025 to 2nd July 2025.** The school will **reopen on 3rd July 2025** at the usual time.

Parenting Tips

1. Talk regularly with your child—ask open-ended questions about their day.
2. Help them plan a daily routine balancing study, screen, and rest.
3. Be available emotionally—adolescents need calm support, not judgment.
4. Encourage self-learning—guide them to find answers, not give them directly.
5. Monitor social media and screen time without invading privacy.
6. Let them fail and learn—mistakes are lessons, not labels.
7. Appreciate effort more than results—this builds inner confidence.
8. Involve them in home management—budgeting, cooking, or organizing.
9. Model discipline and reading—your actions teach louder than words.
10. Promote gratitude and humility through real-life stories.
11. Celebrate small wins—be it fitness, projects, or learning a new skill.
12. Discuss real-life decisions—current events, career paths, etc.
13. Reinforce values of respect, kindness, and time management.
14. Support their individuality—not all children are the same.
15. Maintain open communication with teachers.

Dear Students,

Your future is built by how you use your time today. This summer, relax, reflect, and grow stronger in mind, body, and spirit. Follow these tips to make your holidays meaningful:

Student Tips

1. Design your daily schedule—include 2–3 hours of focused study.
2. Revise key topics of each subject—use mind maps or flashcards.
3. Read at least 2 good books—fiction, biographies, or self-help.
4. Write a daily diary or blog to improve expression and thinking.
5. Practice meditation or yoga—it improves focus and calmness.
6. Limit phone/gaming time—use screen for learning, not addiction.
7. Learn a new skill—coding, cooking, creative writing, or music.
8. Help around the house—teamwork begins at home.
9. Watch educational documentaries or TED Talks weekly.
10. Maintain a fitness routine—walk, skip, dance, or any sport.
11. Spend time in nature—disconnect to reconnect.
12. Set SMART goals (Specific, Measurable, Achievable, Relevant, Time-bound).
13. Practice mock tests or Olympiad papers for self-evaluation.
14. Sleep 7–8 hours and stay hydrated—health fuels success.
15. Reflect weekly—what did I learn, how did I grow, what will I improve?

**"This summer, don't just pass the time—
Use it to pass your limits and surprise yourself."
Wishing you a joyful, productive and self-transforming break!**

With Best Wishes,

Principal

Summer Break - Assignment Session : 2025-2026
CLASS: XI SCIENCE

ENGLISH

- **Complete ASL project Files with creative and colourful pages Link is shared below** **https://leverageedu.com/blog/asl-topics/** **(topics)** **(https://youtu.be/1ciAB38k830) ASL pattern**
- **Open link and do any ten topics with at least 100-150 words**
- **20 marks will be given for ASL)**
- **During your summer break try to focus on communication skills and help your parents Domestic task.**
- **Do revision of completed chapters.**
- **Do revision of Reading, writing and grammar also.**
- **Complete the Assignment mentioned below :**
    Attempt all the questions in loose sheets
    Work must be done neatly

ONE MARK QUESTIONS
1. How long had the author known his grandmother?
2. What was the turning point in the author's relationship with his grandmother?
3. What was the name of the narrator's boat?
4. Why did the narrator hire two crewmen?
5. Who is in the photograph?
6. What does the phrase "the silence silences" mean?
7. What is the state of the laburnum tree before the bird arrives?
8. Who is described as the engine of the machine?
9. What does "The Address" refer to?
10. Why did the narrator visit Mrs. Dorling?
11. Why was it difficult for Aram to believe Mourad had stolen the horse?
12. What tribe did the boys belong to?

THREE MARK QUESTIONS
1. Describe the author's grandmother as a person.
2. How did the grandmother spend her time when the author was away at university?
3. Describe the events that happened on January 2nd.
4. How did the narrator and his family finally reach safety?
5. How does the poem reflect the contrast between youth and age?
6. Explain the mood of the poem "A Photograph".
7. How does the poet use sound imagery in the poem?
8. What is the relationship between the bird and the tree?

9. Describe the narrator's feelings during her visit to Mrs. Dorling's house.
10. How is the theme of memory presented in the story 'The Address'?
11. Describe the incident when John Byro saw the horse with the boys.
12. Why did Mourad eventually decide to return the horse?

FIVE MARK QUESTIONS

1. How does the narrator's relationship with his grandmother evolve throughout the story, and what are the key changes that impact their bond?
2. Discuss the significance of the address and the items found in the apartment as symbols of war, loss, and the lingering effects of conflict.
3. How does the poem "The Laburnum Top" portray the relationship between nature and life, using the specific imagery of the laburnum tree and the goldfinch?
4. Discuss the importance of teamwork and resilience in the face of adversity, as demonstrated by the crew of the "Wavewalker" during their ordeal.

CHEMISTRY

Revise Pre mid term syllabus of following chapters

Ch- 1 Some basic Concepts of chemistry
Ch-3 Classification of elements and their periodicity
Do Assignment of above chapters in a fair notebook .

ASSIGNMENT: Ch - 1 Some basic concepts of chemistry

MCQ (1 Mark)

(Q1 to Q10.) Given below are four options against each question. Choose the option which you consider the most appropriate as your answer.

Q1 Number of significant figures in the number 2.005 is:
    (a) 3.   (b)4 (c) 2.   (d) 1

Q2 What will be the molality of the solution containing 18.25 g of HCl gas in 500 g of water?
    (a) 0.1 m   (b) 1 M   (c) 0.5 m   (d) 1 m

Q3 The number of oxygen atoms in 100 g of $CaCO_3$ is :
    (a) 6.033×10^{23} (b) 9.033×10^{23}.   (c) 8.033×10^{23} (d) None of these

Q4 The number of molecules in 4.4 g of Carbon dioxide is :
    (a) 3.0×10^{23} (b) 6.022×10^{22} (c) $16/6.022 \times 10^{23}$ (d) $16/3.0 \times 10^{23}$

    Q5 One molar solution contains 1 mole of solute in:
        (a) 1000 g of the solvent,   (b) One litre of the solvent,
        (c) One litre of the solution,   (d) 22.4 litres of the solution.

    Q6 The formula which represents the simple ratio of atoms in a compound is called
        (a) empirical formula   (b) molecular formula
        (c) structural formula   (d) rational formula

Q7 Number of atoms in 1.4 g nitrogen is:

(a) 1.20×1023

(b) 3.01 X 1023

(c)6.02×103

(d) none of these

Q8 The litres of CO2 represented by 4.4 g of CO2 at S.T.P. are:

(a) 2.4 litres

(b) 2.24 litres

(c) 44 litres

(d) 22.4 litres

Q9 Equal volumes of different gases under definite temperature and pressure have:

(a) equal densities

(b) equal masses

(c) equal atoms

(d) equal molecules

Q10 The empirical formula and molecular mass of a compound are CH20 and 180 g respectively. What will be the molecular formula of the compound?

(a) C9H19O9

(b) CH20

(c) C6H1206

(d) C2H402

Short Answer type Questions. (2 Marks)

1. Calculate the mass percent of different elements present in sodium sulphate (Na2SO4).

2. Determine the molecular formula of an oxide of iron, in which the mass percent of iron and oxygen are 69.9 and 30.1 respectively.

3. What is the concentration of sugar (C12H22O11) in mol /L if it's 20 g dissolved in enough water to make a volume up to 2 L ?

4. Express the following in the scientific notation:

(i) 0.0048   (ii) 234,000   (iii) 8008   (iv) 500.0   (v) 6.0012

5. In a reaction

$$A + B2 \rightarrow AB2$$
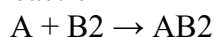
Identify the limiting reagent, if any, in the following reaction mixtures.

(i) 300 atoms of A + 200 molecules of B

(ii) 2 mol A + 3 mol B

(iii) 100 atoms of A + 100 molecules of B

(iv) 5 mol A + 2.5 mol B

(v) 2.5 mol A + 5 mol B

6. How are 0.50 m Na2CO3 and 0.50 M Na2CO3 different?

7. Calculate the number of atoms in each of the following

i) 52 moles of Ar

(ii) 52 u of He

(iii) 52 g of He

Three Marks Questions

1. (a) State and explain Avogadro's law. Illustrate it with an example.
   (b) 10.0 L of a welding gas weighs 11.6 g at STP. Calculate the molar mass of this gas.
2. (a) Calculate the mass of $CaCO_3$ required to react completely with 25mL of 0.75 M HCl.
   (b) Calculate volume of CO_2 released at STP in this reaction.
3. . Dinitrogen and dihydrogen react with each other to produce ammonia according to following chemical equation :
   $N_2 (g) + 3H_2 (g) \rightarrow 2NH_3 (g)$
   (a) Calculate the mass of ammonia gas formed if 2.0 kg of nitrogen gas reacts with 1.0 kg of hydrogen gas.
   (b) Which of the two reactants is the limiting reagent and why ?
   (c) Which of the two reactants will remain unreacted and what will be the amount left unreacted ?
4. Calculate the molarity of solution prepared by dissolving 175.5 g NaCl in enough water to form 1.0 L of brine solution.
   (b) Calculate molality of solution if its density is 1.25 g ml.
   (c) Calculate the mole fraction of NaCl .
5. Calculate the number of atoms in :
   a) 5.0 L oxygen gas at STP
   (b) 4.4 g of CO_2
   (c) 18 g of glucose
6. Calculate the number of moles :
   (a) 5 L of 0.75 M Na_2CO_3
   (b) 7.85 g iron
   (0) 34.2 g sucrose ($C_{12}H_{22}O_{11}$)
7. A compound contains 4.07% hydrogen, 24.27% carbon and 71.65% chlorine. Its molar mass is 98.96 g. Determine its empirical and molecular formulas.
8. Chlorine is prepared in the laboratory by treating manganese dioxide (MnO_2) with aqueous hydrochloric acid (HCl) according to the reaction :
   $MnO_2(s) + 4HCL(aq) \rightarrow MnCl_2 (aq) + 2H_2O(l) + Cl_2(g)$
   How many grams of HCl react with 5.0 g of manganese dioxide ?
9. If 20.0 g of $CaCO_3$, is treated with 20.0 g of HCl, how many grams of CO_2 can be produced according to the reaction:
   $CaCO_3(s) + 2HCl (aq) \rightarrow CaCl_2 (aq) + H_2O (l) + CO_2 (g)$

Ch-3 CLASSIFICATION OF ELEMENTS AND PERIODICITY IN PROPERTIES

(Q1 – Q10) Given below are four options against each question. Choose the option which you consider the most appropriate as your answer.

Q1. Which of the following are isoelectronic with one another?
   (a) K+and Ne   (c) Ne and O
   (b) Na+ and Ne.   (d) Na+and K+

Q2. Which has the maximum negative electron gain enthalpy?
   (a) Cl   (b) Br
   (c) I   (d) F

Q3. In a group of the periodic table, the ionization enthalpies of the elements decrease from top to bottom because of

      (a) increase in densities   (b) decrease in chemical reactivities

      (c) increase in atomic sizes   (d) decrease in electronegativities

Q4. An element belongs to the 3rd period and group-13 of the periodic table. Which of the following properties will be shown by the element?

      (a) Good conductor of the electricity   (b) Gas, non- metallic

      (c) Liquid, metallic   (d) Solid, non- metallic

Q5. Which of the following elements can show covalency greater than 4?

      (a) Be   (b) P

      (c) B   (d) C

Q6. Among the elements of the second period the most reactive non-metal is:

      (a) O   (b) F   (c) P   (d) Si

Q7. Among alkali metals the least electronegative element is:

      (a) Na   (b) K   (c) Rb   (d) Cs

Q8. s- and p- Block elements are known as :

      (a) representative elements

      (b) inner transition elements

      (c) transition elements

      (d) halogens

Q9. The elements in which electrons are progressively filled in 4f- orbital are called:

      (a) actinoids   (b) transition elements   (c) lanthanoids   (d) halogens

Q10. Group 17 elements are known as:

      (a) Halogens   (b) Chalcogens   (c) Lanthanoids   (d) Transition elements

Q11.   Write the atomic number of the element in the third period and seventeenth group of the periodic table.

Q12.   Explain why cations are smaller and anions are larger in radii than their parent atom .

Q13.   The first ionisation enthalpy of carbon atom is greater than that of boron whereas the reverse is true for the second ionisation enthalpy. Explain.

      (b) In terms of period and group, where would you locate the element with Z=114 ?

Q14. Among the second period elements the actual ionization enthalpies are in the order:

      Li < B < Be < C < O < N < F < Ne

      Explain why :

      (i) Be has higher ionisation enthalpy than B

      (ii) O has lower ionisation enthalpy than N and F

15.   (a) Would you expect the second electrongain enthalpy of O as positive, more negative or less negative than the first? Justify your answer.

      (b) Write the general electronic configuration of s, p, d and f block elements.

16.   (a) Arrange the following ions in the order of increasingsize :

          Be^{2+}, Cl^-, S^{2-}, Na^+, Mg^{2+}, Br^-

      (b)Which of the following will have the most negative electron gain enthalpy and which the least negative?

          P, S, Cl, F

          Explain your answer.

17. The first ionization enthalpy values (in kJ mol-l) of group 13 elements are :

B	Al	Ga	In	Tl
801	577.	579	558	589

How would you explain this deviation from the general trend ?

18. The increasing order of reactivity among group 1 elements is Li < Na < K < Rb < Cs whereas among group 17 elements is F > Cl > Br › I Explain.

19. a) Considering the atomic number and position in the periodic table, arrange the following elements in the increasing order of metallic character: Si, Be, Mg, Na, P and explain.
(b) Write the general electronic configuration of Lanthanoids and Actinoids elements.

20. (a) Arrange the following ions in the order of increasing size :
Ca^{2+} , Cl^- , S^{2-} , K^+
(b) Arrange the following elements in the decreasing order of negative electron gain enthalpy : B, C, N, O
Explain your answer.

20. Explain Electronegativity ? Write its trends along the period and group, also mention the various factors affecting electronegativity .

22. Explain Ionization enthalpy? Write its trends along the period and group, also mention the various factors affecting it

PHYSICS

- Do assignment given on fair notebook
- Revise Pre mid term syllabus
  Unit 1 Ch 1 Units and dimensional analysis
  unit 2. Ch 2 Motion in straight line
  Unit 2 Ch 2 Motion in plane(till cross product of two vectors)
- Do 2 practical on vernier callipers and screw gauge on practical file.

ASSIGNMENT

Motion in a Straight Worksheet

Each question carries 3 marks

1) The position of an object moving along x-axis is given by $x = a + bt^2$ where a = 8.5 m, b = 2.5 m s^{-2} and t is measured in seconds. What is its velocity at t = 0 s and t = 2.0 s. What is the average velocity between t = 2.0 s and t = 4.0 s ?

2) A ball is thrown vertically upwards with a velocity of 20 m s^{-1} from the top of a multistorey building. The height of the point from where the ball is thrown is 25.0 m from the ground.

(a)   How high will the ball rise ? and (b) how long will it be before the ball hits the ground? Take g = 10 m s^{-2}.

3) A woman starts from her home at 9.00 am, walks with a speed of 5 km h^{-1} on a straight road up to her office 2.5 km away, stays at the office up to 5.00 pm, and returns home by an auto with a speed of 25 km h^{-1}. Choose suitable scales and plot the x-t graph of her motion.

4 Derive distance covered by body in nth second

5.Draw position time graphs

6. Draw velocity time graphs

Five marks questions

7 Derive three equations of motion by graphical method

8 Derive three equations of motion by calculus y

One marks questions

9. Consider a body moving with an acceleration of 2 m/s^2. After t seconds its velocity is 10 m/s. Find 't'.

   a) 4 s   b) 20 s   c) 5 s   d) 8 s

10 For the motion with uniform velocity, the slope of the velocity-time graph is equal to

   a) m/s ZERO   b) Initial velocity   c) Final velocity

11 The change in velocity corresponding to the time interval within which the change has accelerated is known as _____

   a) Speed   b) Instantaneous Velocity   c) Uniform Motion

   d) Average Acceleration

12 Two trains of 40 m length are travelling in opposite directions with a velocity of 10 m/s and 15 m/s. What is the time of crossing?

   a) 1s   b) 2.4 s   c) 2 s   d) .4 s

13. A particle is moving with a constant speed along a straight-line path. A force is not required to

   a) change its direction   b) decrease its speed   c) keep it moving with uniform velocity

   d)   Increase its momentum

14 Which is the formula for motion in a straight line

   a) v =u + at   b) v =u – at   c) U = 2at+v   d) v = 2at+u

15 Unit of acceleration is _____

   a)   m^{2}s   b) m/s   c) m/s^2 d) m/s^3

ASSIGNMENT : **Motion in plane**

Five marks questions

1 State and prove triangle law of vector addition

2 State and prove parallelogram law of vector addition

Three marks questions

3 Find the angle between the vectors vec A = i +2 j - k and vec B =- i + j -2k

4. For what value of a are the vectors vec A =2a i -2 j + k and perpendicular to each other ? vec B =a i +a j -4 k are perpendicular to each other

5. Determine the sine of the angle between the vectors (3 (i +2 j +4k) and (2i-2j-4k)

6.find unit vector perpendicular to each of the vectors 3i+j+2k and 2i-2j+4k

7 Determine a unit vector which is perpendicular to both A vector= Ai+j+k and B = i-j+ 2k

8 For what value of m the vector A vector= 2i+3j-6k is perpendicular to B vector =3i-mj+6k

9 Two forces whose magnitude are in the ratio 3: 5 give a resultant of 28 N. If the angle of their inclination is 60°, find the magnitude of each force

10 Two vectors, both equal in magnitude, have their resultant equal in magnitude of the either. Find the angle between the two vectors.

11 find unit vector of 4i-3j+k

One mark question

12 Which is the vector that gives the position of a point with reference to a point other than the origin of the coordinate system?

1. Coplanar Vectors   2.Equal vecto   3.Unit Vector   4. Displacement vector

13 Which theorem states that "If a particle under the simultaneous action of three forces is in equilibrium, then each force has a constant ratio with the sine of the angle between the other two forces"?

a) Lay's theorem   b) Lami's Theorem   c) Newton's law   d) Faraday's theorem

14 ot product is distributive, it is given as

a) A.(B-C) = A.B*A.C   b) A.(B+C) = A.B-A.C   c) A.(B+C) = A.B+A.C

d)   A.(B*C) = A.B/A.C

15 Give an example of motion in two dimensions _____

a) Motion along a straight line in any direction   b) Bird flying

c) A flying kite   d) Projectile motion

nits and dimensions

1. Which among the following is the Supplementary Unit———

   a) Mass   b) Time   c) Solid angle   d) Luminosity

2. Dimensions of kinetic energy is the same as that of _____

   a) Acceleration   b) Velocity   c) Work   d) Force

3. The smallest value which is measured using an instrument is known as _____

   a) Absolute count   **b)** Least count   c) Round off value   **d)** Minimum count

4. Which is the system of unit SMS system

   a) MKP system   b) FPS System   c) CJS System

5. What is the unit of solid angle?

   a) Second   b) Steradian   c) Kilogram   d) candela

6. Using the method of dimensions, find the acceleration of a particle moving with a constant speed v in a circle of radius r.

7. In the expression P is pressure and V is the volume. Calculate the dimensions of a and b.

8. A displacement of a particle is given by equation $y = A \sin \omega t$, where y is in metres and A is also in metres, t is in seconds. What are the dimensions of ω.

9. If density ρ, acceleration due to gravity g and frequency f are the basic quantities, find the dimensions of force.

10. What is meant by dimensional formula? Name physical quantities whose dimensional formulae are as follows. a) ML^2T^{-2} b) MT^{-2}

11. The value of G in CGS system is 6.67×10 dyne cm³/g³. Calculate the value in Sl units

Q12. The velocity v of a particle depends upon time as $V = At + Bt + C$, where v is in m/s and t is in sec. What are the units of A, B and C?

Q13) State the number of significant figures in the following a) 6.320 J b) 6.032Nm² © 0.2370

14. A small spherical ball of radius & falls with velocity through a liquid having coefficient of viscosity n. Find viscous drag F on the wall if it depends on z υ, η. Take K = 6pi

15. The velocity (v) of transverse waves on a string 7 may depend upon (i) length (1) of string. (ii) tension T in the string and (iii) mass per unit length (m) of the string. Derive the formula dimensionally.

ASSIGNEMNT: BIOLOGY

- **Complete practical file**
- **Practical File -JBD Publishers**

1.Parts of a compound microscope.
2. Specimens/slides/models and identification with reasons - Bacteria, Oscillatoria, Spirogyra, Rhizopus, mushroom, yeast, liverwort, moss, fern, pine, one monocotyledonous plant, one dicotyledonous plant and one lichen.
3. Virtual specimens/slides/models and identifying features of - Amoeba, Hydra,liverfluke, Ascaris, leech, earthworm, prawn, silkworm, honey bee, snail, starfish, shark, rohu, frog, lizard, pigeon and rabbit.

- **Do given assignments and prepare for unit exams.**

- **Draw all diagrams of covered chapters.**

1. Exchange of gases occurs only in the alveolar region, why not in other parts of respiratory system?

2. Explain the term thecodont and diphyodont.

3. Why is AV bundle essential for the conduction of cardiac impulse?

4. How pulmonary circulation is different from coronary circulation?

5. Name the cell that secretes HCl. What is the function of HCl in digestive tract?

6. Where is pneumotaxic centre located in humans? What is its significance in breathing?

7. How portal circulation is different from coronary circulation?

8. Why SA node is called the pacemaker of the heart?

9. How atherosclerosis affects the body?

10. How is the permeability of DCT and CT controll for regulating the water content inside body?

11. Name the types of joint present between following

(i) between pubic bones in pelvic girdle

(ii) between phalanges

12. How does the eye regulate the amount of light that falls on the retina?

13. Terrestrial animals are generally either ureotelic or uricotelic, not ammonotelic. Why?

14. What is osteoporosis? Write the factors responsible for it.

15. Excretion of uric acid instead of urea is of great advantage to birds and reptiles. Why?

16. Give one example of each of the following

(i) Fibrous joint

(ii) Cartilagenous joint

17. How do you perceive the colour of an object?

18. How the loop of Henle helps in concentrating ur in terrestrial mammals?

19. What is uremia? How it can be cured?

20. How does exchange of respiratory gases tak place in the alveoli?

21. What is meant by Coronary Artery Disease (CAD)?

22. Why are human teeth referred to as heterodont and diphyodont?

23. What causes first heart sound?

24. How is the foetus with Rh-positive blood affected if the mother is Rh negative?

25. Give one reason why white muscles get fatigued soon?

26. Which part of the ear functions to maintain body balance?

27. How does the eye regulate the amount of light that falls on the retina?

28. Where is hormone vasopressin (ADH) synthesized?

29. Due to some physiological reasons, the blood glucose level of an otherwise normal person has shot up above normal. How will this condition be returned to normal through hormone action?

30. Why blood group O is called universal donor?

31. Describe the role of any two proteases in pancreatic juice.

32. Define the term (i) vital capacity (ii) Functio residual volume

33. Bile juice contains no digestive enzyme, yet it is important for digestion. Why?

34. How would the digestion of food be affected if the bile duct is completely blocked?

35. Define the term (i) vital capacity (ii) Functional

35. Define the term (i) vital capacity (ii) Functional residual volume

36. How sounds of lubb and dupp are produced in heart during cardiac cycle?

37. You had eaten boiled rice at lunch time. Make a list of enzymes it will be acted upon and the changes it will undergo before being absorbed in the intestine.

38. What is the role of Ca^{2+} and ATP in muscle contraction?

39. Name the two types of nephrons on the basis of their position in the kidney. How are they different from each other?

40. What is synapse? How does the nerve impulse cross the chemical synapse?

41. What is the role of Ca^{2+} and ATP in mus contraction?

42. Draw the structure of sarcomere and label parts.

43. How does bile help in digestion and absorption fats?

44. Write a short note on ECG along with diagram.

45. What is Emphysema? How can this disease be prevented?

M.R. Citi Public School

MATHEMATICS

- Write activity 1 to 5 on Practical file (Dev Jyoti)
- Do given Assignment of Ch- 1, 2,3,4 on loose sheets.
- Revise premidterm syllabus

ASSIGNMENT

Ch-1,2,3,4

1. If a $\in$ N, N is set of natural numbers such that aN = { ax : x ϵ N } then $3N \cap 7N$ =

   (a) $10N$ (b) $4N$ (c) $21N$ (d) none

2. A and B are two sets with n(A)= 16 ,n(B)=14 and n(AUB)= 25 then n(A$\cap$ B)=

   (a) 30 (b) 5 (c) 6 (d) 2

3. For any two sets A and B , A $\cup$ B = A iff,

   (a) B$\subseteq$ A (b) A$\subseteq$ B (c) B$\neq$ A (d) A=B

4. For any set A , A $\cup$ A = A is called

   (a) Idempotent Law (b) Associative Law (c) Identity Law (d) none

5. A= {x :x is a prime number <10} and B= {y :y is an odd number <10} then

   (a) A$\subseteq$ B (b) B$\subseteq$ A (c) A=B (d) none

6. In throw of a dice Which one of the following is a null set:

   (a) A= {x: x is prime outcome}

   (b) B= {y: y is an odd outcome}

   (c) C = {z: z I a divisor of 7 }

   (d) D = {u: u is a multiple of 7}

7. If X= {1, 2, p, 4, q} the cardinality of P(X) is=

   (a) 32 (b) 16 (c) 64 (d) 15

8. Two finite sets have m and n elements .The number of elements in power set of first is48 more than number of elements in power set of the other, values of m and n are:

   (a) 7 ,6 (b) 6 ,3 (c) 4 ,6 (d) 7, 4

9. If A = { 1 , 3 , 5 ,B} and B= { 4 , 6, 5 } then

   (a) 4 $\subset$ A (b) 4$\in$ A (c) {4} $\subset$ A (d) none

10. Write the following in set builder form

(a) { 7 , 14 , 21, 28 ……….} (b) { 1 , 4 , 9 , 16 , 25 , ….. …..100 }

11. Write in tabular/Roster Form

(a) B = {x : x is a letter from word MATHEMATICS }

(B) X = {a : a is a month of year not having 31 days }

12. Define Equal, Equivalent, Universal and Power sets.

13. Represent the following by Venn diagram for sets A, B and C

(a) A − B (b) A∩B' (c) A ∪ B (d) A∩ B (e) A ∩B∩C

Show that A- B = A ∩ B'

14. In a committee 50 people speak Spanish, 10 speaks both Spanish and French , howmany speak at least one of the two languages?

15. Let A, B & C are three sets such that A ∪ B = A ∪C and A∩B= A∩C , then show that B = C

16. If A ⊂ B, then C−B ⊂ C − A

17. Show that A = B, if A ∩X = B∩X = ϕ and A∪X = B∪X .

18. In a survey it was found that 21 people like product A, 26 like product Band 29 likeproduct C.If 14 like product A and B, 12 like product C and A, 14 like B and C and 8 like allthree product . How many like product B .

19. What is the domain of f(x) =1/x+2

(a) $\mathbb{R}$ (b) $\mathbb{R}$− (-2, 2) (c) $\mathbb{R}$− { 2} (d) none

20. Domain of the relation" x is relatively prime to y " from { 2,3,4,5] to { 3,6,7,10} is

(a) {2,3,5} (b) { 2,3,4,5] (c) {2,3} (d) { 3,6,7,}

21. What is the range of f(x) = x^2-2

(a) $\mathbb{R}$ (b) $\mathbb{R}$ - (1,2) (c) (-2, ∞) (d)none

22. What is the range of g(x) =

(a) $\mathbb{R}$ (b) $\mathbb{R}$− (-2, 2) (c) $\mathbb{R}$− { 0} (d) none

23.. Number of elements in P(AXB) if n(A)= 2 and n (B)=3

    (a) 32 (b) 16 (c) 64 (d) none

24. If (x, 8) = (-3, Y-2) the (x , y) is

    (a) (1 ,3) (b) (-3, 10) (c) (11,3) (d) none

25. The range of Signum function is

    (a) $\mathbb{R}$ (b) $\mathbb{R}-$ (-2, 2) (c) {1,0, -1} (d) none

26.Write 10 elements of relation R defined as R={(x,y): HCF (x,y) =1 }

27. Find the domain of the function $f(x) = \sqrt{x} - 2$

28. Find the range of the function f(x) =1/1-2cosx

29.Write the relation R defined as R= { (x,x3) : x is a prime number less than 20 } in roster form

30. If f(x) = x +1/x then find the value of f(x) + f (1/x)

31. Find the domain and range of the function $f(x) = \sqrt{x^2} - 9$

32. If $f(x) = 4x - x^2$. $x \in \mathbb{R}$ then write the value of f(a+1) – f(a−1)

33. If f(x) =x+1 /x-1 is a real function the find f(f(f(2)))

34-40 are given below:

Show that $\dfrac{cos6x+6cos4x+15cos2x+10}{cos5x+5cos3x+10cosx} = 2\cos x$

Show that $\sin4x = 4\sin x \cos^3 x - 4\cos x \sin^3 x$

Prove that $\tan6^0 \tan42^0 \tan66^0 \tan78^0 = 1$

If $\tan A = \dfrac{1-cosB}{sinB}$,find the value of $\tan 2A$

If $\tan\dfrac{x}{2} = \dfrac{3}{4}$, $\pi < x < \dfrac{3\pi}{2}$, find $\sin\dfrac{x}{2}$ and $\cos\dfrac{x}{2}$

Show that $\dfrac{\sin 5A - \sin 3A}{\cos 5A + \cos 3A} = \tan A$.

Show that $\cot 4x \,(\,\sin5x + \sin 3x\,) = \cot x\,(\,\sin 5x - \sin3x\,)$

Q1. Prove that:

$(i)\ i^{104} + i^{109} + i^{114} + i^{119} = 0$

$(ii)\ (1+i)^4\ (1+\frac{1}{i})^4 = 16$

$(iii)\ 6i^{54} + 5i^{37} - 2i^{11} + 6i^{68} = 7i$

$(iv)\ \dfrac{1}{i} - \dfrac{1}{i^2} + \dfrac{1}{i^3} - \dfrac{1}{i^4} = 0$

Q2. Solve for x and y

$(i)\ (3+i)\,x + (1-2i)\,y + 7i = 0$

$(ii)\ \dfrac{(x-1)}{(3+i)} + \dfrac{(y-1)}{(3-i)} = i$

$(iii)\ (1+i)\,y^2 + (6+i) = (2+i)\,x$

Q3. Express the following in the form of $x+iy$:

$(i)\ \dfrac{(2+3i)^2}{1+i}$

$(ii)\ \dfrac{(1-i)^3}{1-i^3}$

$(iii)\ \dfrac{3-i}{2+i} + \dfrac{3+i}{2-i}$

$(iv)\ \dfrac{3+2i}{2-3i} + \dfrac{3-2i}{2+3i}$

$(v)\ \dfrac{3}{1+i} - \dfrac{2}{2-i} + \dfrac{2}{1-i}$

$(vi)\ \left(-1+\sqrt{3}i\right)^{-1}$

$(vii)\ \dfrac{5+\sqrt{2}i}{1-\sqrt{2}i}$

$(viii)\ \left(\dfrac{1}{1-2i} + \dfrac{3}{1+i}\right)\left(\dfrac{3+4i}{2-4i}\right)$

Q4. Find the multiplicative inverse of the following:

$(i)\ \dfrac{2+3i}{3-2i}$

$(ii)\ (2-5i)^2$

$(iii)\ (6+5i)^2$

$(iv)\ \dfrac{(i+1)(i+2)}{(i-1)(i-2)}$

Q8. Show that if $\left|\dfrac{z-5i}{z+5i}\right| = 1$, then z is a real number.

Q9. If $a+ib = \dfrac{c+i}{c-i}$, where a and b are real, prove that $a^2 + b^2 = 1$ and $\dfrac{b}{a} = \dfrac{2c}{c^2-1}$.

Q10. For complex values of z, solve $|z| + z = 2+i$

Q11. Show that $\dfrac{\sqrt{7}+i\sqrt{3}}{\sqrt{7}-i\sqrt{3}} + \dfrac{\sqrt{7}-i\sqrt{3}}{\sqrt{7}+i\sqrt{3}}$ is real.

Q12. Show that: $\dfrac{(1+i)(3+i)}{(3-i)} - \dfrac{(1-i)(3-i)}{(3+i)} = \dfrac{14}{5}i$

Q13. Find the values of x and y for which the complex numbers $-3 + ix^2 y$ and $x^2 + y + 4i$ are conjugate of each other.

Q14. If z is a complex number such that $|z| = 1$, prove that $\left(\dfrac{z-1}{z+1}\right)$ is purely imaginary.

Q15. Find all non-zero complex numbers z satisfying $\bar{z} = iz^2$.

Q16. Show that the locus of a complex variable z, satisfying $\left|\dfrac{z-3}{z+3}\right| = 2$, is a circle.

PHYSICAL EDUCATION

- Read these chapters carefully:-
    Chapter 01 Changing trends and career options in physical education
    Chapter 02 Olympism
    Chapter 03 yoga
- Learn & Revise long answer type questions and all MCQ.
- Students need to start working on the Physical Education Practical file.
- Choose a Game of your choice and Write it's history, rules and fundamental skills & Draw a diagram of ground.
- Write a history of athletics & four event's two track events and two fields events from SP publication practical file. Please be neat in your presentation and read all rules and regulations of Game & Athletic events.
- Life skills:- Prepare a beautiful Charts related to Importance of games and sports in our life and Balance Diet.
- Do physical activities, yoga asanas, pranayam
- Life skills:- Prepare a beautiful Charts related to Importance of games and sports in our life and Balance Diet.
- Do physical activities, yoga asanas, pranayam

(Ms. Neeru Sharma)
Coordinator
M: 87250-24407

(Ms. Ritu Batra)
Principal