

1.Heat

❖ MAXIMUM PROBABILITY QUESTIONS ANALYSIS TABLE:

AS-1 (Differences): 1. Differences between evaporation and boiling 2. Differences between specific heat and latent heat	AS-1 (Understanding/Explanations): 1. Examples of evaporation 2. Why dogs panting during hot days ? 3. Reason for water droplets formed on tomato when bring out from fridge
AS-3 (Activities/Experiments): 1. Thermal equilibrium 2. Different substances have different specific heat Values 3. Finding Specific heat of solid lead shots 4. Factors effect the Rate of Evaporation	AS-5 (Diagrams/Figures): 1. Thermal equilibrium 2. Different substances have different specific heat values
AS-2 (Questioning/Prediction): 1. Hot coffee cools down after some time. Guess 2. Water on the floor disappears after some time. Guess the reason. 3. Your friend is unable to find difference between Evaporation and boiling. Ask some questions.	AS-6 (Daily life uses): 1. Uses of evaporation in daily life 2. Appreciate the role of specific heat 3. Role of specific heat in keeping a watermelon cool for a long time after removing it from a fridge on a hot day? 4. If you are chilly outside the shower stall, why do you feel warm after the bath if you stay in the bathroom?
AS-4 (Information Skills): 1. Table of specific heat values Questions related to which gain heat quickly, Which takes more time to raise temperature, Which are used for cooking utensils	

4 MARK QUESTIONS

(*) Single Star

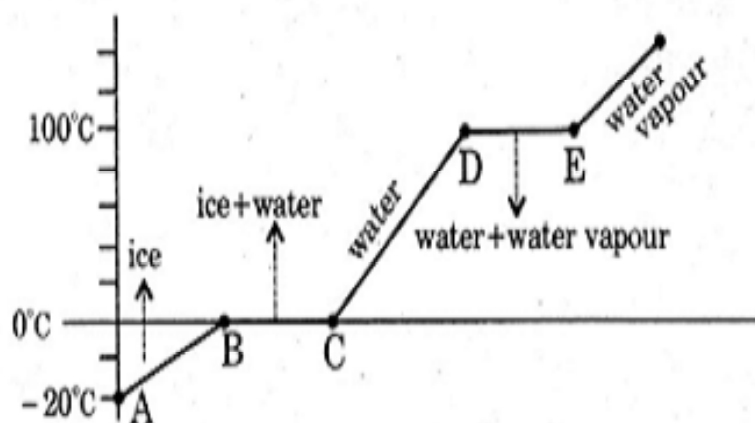
01. Answer these :(a) How much energy is transferred when 1 gm of boiling water at 100°C condenses to water at 100°C ?
 (b) How much energy is transferred when 1 gm of boiling water at 100°C cools to water at 0°C ?
 (c) How much energy is released or absorbed when 1 gm of water at 0°C freezes to ice at 0°C ?

02. Explain the procedure of finding specific heat of solid experimentally. (or) Hema want to prepare lids for cooking Utensils with the metals having high specific heat. What are the apparatus required and Explain the experimental procedure to find out the specific heat of the metals
03. Which liquid has highest specific heat? How do you appreciate the role of higher specific heat that liquid is stabilizing atmosphere temperature, during winter and summer seasons?(Or)Oceans are called heat Store houses why? (or) high specific heat capacity of water is friendly to the nature? Explain
04. Define evaporation. Explain what are the factors affecting of evaporation and how they affect on the rate of evaporation.

(**) **Two Star**

05. The graph shows the values of temperature, when ice is heated till it becomes water vapour. Observe the graph and answer the following questions.

(Note that the figure is not completely quantitative and also not to the scale. It is purely qualitative)



- a) At what temperature, ice converts into water?
- b) What does DE represent?
- c) What is the range of temperature of liquid water?
- d) Which part of the graph represents change of state from ice to water?
06. Suggest an experiment to show that when ice is converted into water, its temperature does not change. How much heat is required to convert 5 grams of ice at 0°C to water, at the same temperature? (Latent heat of fusion of ice is 80 cal/gram)
07. Explain the process of melting and latent heat of fusion.
08. Your teacher made an experiment that shows the formation of dew and fog. Explain how you show the formation of dew and fog?

09. Specific heat of some substances are given in the table:

Substance	Specific Heat	
	In Cal/g ^o -C	In J/Kg-k
Lead	0.031	130
Mercury	0.033	139
Brass	0.092	380
Zinc	0.093	391
Iron	0.115	483
Aluminum	0.21	882
Ice	0.50	2100
Water	1.00	4180

- How much heat energy is required to raise the temperature of 1 gm mass of iron by one 1^oC?
 - Why the specific heat of ice and water are different?
 - What do you mean by specific heat of water is 1 cal/g^o-c.?
10. Suggest an experiment to prove that the rate of evaporation of liquid Depends on its surface area and vapour already present in surrounding and explain it.

(*) Three Star**

- Explain the activity that proves specific heat of a substance depends on the nature of the substances?
- Raju observes bubbles from the water while boiling and he asked his sister, how did they form, what could be his sister answer.
- Write the Principle of method of mixtures. Derive an expression for it.
- Collect the information about working of natural geyser and prepare a report.

2 MARK QUESTIONS

(*) Single Star

- Write the differences between evaporation and boiling.
- A solid of mass 150 gm is heated to 100^o C and dropped in $\frac{1}{2}$ liter water at 20^o C. What is the equilibrium temperature of the mixture?
- What happens to the water when wet clothes dry?

04. Why water drops (dew) form on flowers and grass during morning hours in winter season?
05. What role does specific heat play in keeping a watermelon cool for a long time after removing it from a fridge on hot day? Explain.
06. Why does a piece of watermelon stay cool for a longer time than sandwiches do when both are removed from a picnic cooler on a hot day?

() Two Star**

07. How do you appreciate the role of oils in frying vegetables?
08. Explain, why dogs pant during hot summer days using the concept of evaporation? (Or) What is Evaporation? How does it is useful to the animals which have no sweat glands?
09. The surrounding air becomes warm or cool when vapour phase H_2O condenses explain? (Or) What is condensation? What changes made in the system?
10. Suppose you apply flame to 1L of water from a certain time and its temperature rise by $2^{\circ}C$. If you apply the same flame for the same time to 2L of water by how much will its temperature rise?
11. Your friend is asked to differentiate between specific heat and latent heat? What questions could you ask to make him difference between specific heat and latent heat?
12. Why is sweating an efficient mechanism for cooling up on a hot day?
13. Why do you feel uncomfortably warm on a hot and humid day?
14. Can we freeze water by adding ice at $0^{\circ}C$?

(*) Three Star**

15. The specific heat of water is $4180 J/Kg-K$ and the specific heat of sea water is $3900 J/Kg-K$.why the specific heat of the two substance are different?.
16. If the water level in a dish of water remains unchanged from one day to the next day can you conclude that no evaporation or condensation has occurred?
17. Air conditioning units contains no water what ever yet, it is common to see water dripping from them when they are running on a hot day. Explain?
18. An iron thump tank and a big iron Bolt are removed from a hot oven. Both are Red hot and have the same temperature.
When dropped into identical containers of water of equal temperature, which one raises the water temperature more?
19. Rama and Raju are couple they went to a mountain top for a picnic. they want to cook food there. but not happened for what reasons cooking is not possible there?
20. Irfan told his teacher that he is not able to recognise the difference between evaporation and boiling. Then the teacher ask some questions and made him to understand the difference between them. What are the questions asked by teacher to Irfan?

1 MARK QUESTIONS**(*) Single Star**

01. During winters, we will observe droplets of water in the cricket field, leaves and grass. How are these droplets formed?
02. Give an example to explain that evaporation is a cooling process
03. Why does ice float on water
04. Why do we get sweat while doing work?
05. The temperature of a furnace is 2000°C . What is the temperature on the Kelvin scale?

() Two Star**

06. The specific heat of Lead, Mercury and water are different. Why it is (the specific heat) the different for different materials?
07. What happened to kinetic energy of particles if we increase the temperature?
08. write a formulae for specific heat and explain terms in it.
09. while drinking water, Ramesh spilled some water on the floor. After sometime, the water disappeared from the floor. What happened to the water?
10. Which has highest specific heat capacity water (or) sand?

(*) Three Star**

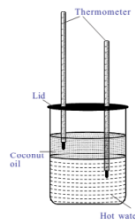
11. Define Latent heat of Fusion.
12. What is Humidity? How does humidity forms in the atmosphere?
13. The specific heat capacity of copper is $0.1\text{cal}^{-1}\text{-c}^{-1}$ Find its value in $\text{JKg}^{-1}\text{k}^{-1}$
14. 4 kg of water is 100°C temperature how much heat energy is required for whole water to evaporate?

❖ OBJECTIVE QUESTIONS

- 01) The latent heat of fusion(L) []
 a) Q/m b) m/Q c) mQ d) $mQ/2$
- 02) Freezing of water takes place at []
 a) 1 atm, 0°C b) 1 atm, 100°C
 c) 70 atm, 0°C d) 76 atm, 100°C
- 03) Reverse process of condensation is []
 a) freezing b) melting
 c) evaporation d) none of the above
- 04) The S.I unit of specific heat is []
 a) Cal/gm C b) J /gm K c) Cal/kg d) J/kg K
- 05) The latent heat of fusion of ice is []
 a) 540 Cal/gm b) 80 Cal/gm c) 540 Cal/kg d) 80 J/kg

- 06) According to the principle of method of mixtures, the net heat lost by the hot bodies is equal to.....by the cold bodies. []
a) Heat lost b) heat gained c) a or b d) a and b
- 07) Ice floats on water, because density of ice is.....density water []
a) grater then b) lesser than
c) equal d) lesser than or equal
- 08) 1 Joule =calories. []
a) 4.186 b) $\frac{1}{4.186}$ c) 273 d) $\frac{1}{273}$
- 9) A: Dew forms on the surfaces of the objects. B: Fog forms on the surface of water. []
a)Both a and b are correct b)a only correct
c) b only correct d)Both a and b are incorrect.
- 10) Specific heat of kerosene (A) and ice (B)are []
a) $A > B$ b) $B > A$ c) $B = A$ d) $A = 2B$
- 11) The degree of reluctance of a substance to change its temperature
a) Specific heat b) latent heat
c) Kinetic energy d) heat
- 12) Heat "store houses" on the earth.
a)Mountains b)Clouds c)Oceans d)Trees
- 13) If net heat lost (Q_1) and net heat gain (Q_2), then the principle of method of mixtures is []
a) $Q_1 = Q_2$ b) $Q_1 > Q_2$ c) $Q_2 > Q_1$ d) $\frac{Q_1}{Q_2} = 2$
- 14) The specific heat of water in SI system is []
a) 4.186 J/g $^{\circ}$ c b)4.186 J/kg $^{\circ}$ c
c)420 J/kg d)4186 J/kg \cdot K
- 15) The process involved in the phenomena of "wet clothes dries in the air" is.
a) Condensation b) evaporation c) Melting d) boiling[]
- 16) The process of escaping of molecules from the surface of a liquid at any temperature is ... []
a) Evaporation b) condensation c) Boiling d) melting
- 17) You feel warm after you finish your bath under the shower on a hot day, because []
A) The vapour molecules surrounding you condenses on your skin.
B) The water evaporates from the body.
a) 'A' is correct b) 'B' is correct
c) Both 'A' and 'B' are correct d) Both 'A' and 'B' are not correct

- 18) A liquid of mass 'm' that requires heat energy 'Q' calories to change its state from liquid to vapour. Latent heat is. []
- a) $\frac{m}{Q}$ b) $\frac{Q}{m}$ c) mQ d) $\frac{2m}{Q}$
- 19) The linear kinetic energy of the molecules is increased with the heat energy that received then its temperature..... []
- a) Decreases b) increases
c) Doesn't change d) depends on material
- 20) What will happen if we give energy to the ice at -15°C ? []
- a) Temperature of the ice first increases and then remains for sometimes.
b) Temperature of the ice first increases and then decreases.
c) Temperature of the ice remains constant.
d) Temperature of the ice increases continuously.
- 21) From the experiment, which is correct? []



- a) A loses kinetic energy B gains kinetic energy
b) A gains kinetic energy B loses kinetic energy
c) A,B gains kinetic energy
d) A,B loses kinetic energy
- 22) What do you notice when lead shots are dropped in steam []
- a) Lead shots get the temperature of 100°C
b) Get the temperature of 0°C
c) Get the temperature of 50°C
d) No change in the temperature of lead shots.
- 23) What do you observe the level of mercury in a thermometer which is kept in a beaker of ice cubes at -4°C and the beaker is being heated continuously? []
- a) Constant-increase-constant-increase
b) Increase-constant-increase-constant
c) Increase-constant-decrease-constant
d) Decrease-constant-increase-constant
- 24) Which apparatus is suitable to determine a specific heat of a solid?
- a) Calorimeter b) Galvanometer
c) Centrifuge d) Ammeter

- 25) The land breeze blow from land to sea in coastal regions, because the land
 a)cools slowly as compared to sea water []
 b)is heated rapidly as compared to sea water
 c)cools at the same rate as sea water
 d)none of the above
- 26) How do you feel in a room which is in the state of thermal equilibrium with you ? []
 a)Hotness b)Coolness
 c) Neither A nor B d) Either A or B
- 27) The temperature of a mixture is 70°C .One liquid of 100 ml at 90°C and second liquid at 60°C .The quantity of mixture is []
 a)100ml b)300 ml c)200 ml d)None
- 28) The required heat energy to convert 500ml of water at 100°C completely to vapour is []
 a)27 K cal b)270 K cal c)54 K cal d)540 K cal
- 29) Yolk in just boiled egg is hotter than white layer because []
 a)Specific heat of yolk is high
 b)Specific heat of white layer is high
 c)Due to boiling time
 d)None of the above
- 30) If 100 ml of water at 60°C is added to 200 ml of water at 30°C then the temperature in mixture is []
 a) 45°C b) 40°C c) 50°C d) 20°C
- 31) The reason of sweating at Vizag even though it is cooler than Vijayawada is... []
 a)humidity at Vijayawada is high b)humidity at Vizag is high
 c)local conditions d)all the above
- 32) Required heat energy to change the temperature of 1 gram of water from 273 K to 274 K..... []
 a)1 Calorie b)4.18 J c) A or b d) 273

OBJECTIVE QUESTIONS KEY

1	A	9	B	17	A	25	B
2	A	10	C	18	B	26	C
3	C	11	A	19	B	27	B
4	D	12	C	20	A	28	B
5	B	13	A	21	B	29	B
6	B	14	D	22	A	30	B
7	B	15	B	23	B	31	B
8	B	16	A	24	A	32	C

2. ACIDS BASES AND SALTS:**I. Very short answer type questions (1 mark)****(* Single Star**

1. Which element is common to all acids?
2. Fresh milk has a P^H of 6. why the P^H of milk changes as it turns into curd?
3. Which scale is useful to measure H^+ ion concentration in a solution?
4. The soil is slightly acidic, which substances do you suggest in case of crop yield?
5. Give the P^H of neutral, acidic basic solutions
6. The reaction in which acid reacts with base forming salt and water is called as?
7. Why should curd and other sour foodstuffs not be kept in metal container.

(Two Star**

8. Name one animal and one plant whose stings contain methanoic acid?
9. Is the substance present in antacid tablet acidic or basic?
10. Write the common name of sodium hydrogen carbonate.
11. Which gas evolve when acids react with active metals.
12. Who introduced P^H
13. Which indicator is useful to know the strength of the acid or base?
14. What is the range of P^H scale.
15. What is the chemical name and formula of table salt?
16. What is Baking powder?
17. What is bleaching powder? write its formula?
18. What is water of crystallization?
19. How is plaster of paris obtained from gypsum?
20. What are the product formed when zinc granules react with sodium hydroxide?
21. Fill the following table.

S.No	Solution	P ^H range(<7, >7,=7)
1	NaCl solution	
2	Curd	
3	Caustic soda	

22. How will test for the gas which is liberated when limestone is heated?

(*) Three Star**

23. Why pure water is neutral?

24. Name an indicator which is red in acid solution but turns blue in basic solution?

25. Name an indicator which is pink in basic solution but turns colourless in Acidic solution.

26. When a solution is added to a cloth strip treated with onion extract, the smell of onion cannot be detected. State whether the given solution contains an acid or a base.

27. Write balanced chemical equation of dilute sulphuric acid with zinc granules?

28. A white shirt has a yellow stain of curry. When soap is rubbed on this shirt during washing. The yellow stain turns reddish brown Name the natural indicator present in curry stain.

29. What is common in all the water soluble bases?

30. Some indicators change their odour in acidic or basic solution give the name of the indicator.

31. Give the name and chemical formula of substances which is used to set broken bones

32. What type of reaction takes place in stomach when an antacid tablet is consumed?

33. What is the other name of aqueous sodium chloride?

34. Which salt is used in the manufacture of borax?

35. Give an example for salt possesses water of crystallization

36. Bases which are soluble in water are called as ?

37. When acid is added to water, what do you observe which type of reaction is it.

38. What are the products obtained from common salt solution during electrolysis?
39. Beds of the salt were formed when seas of bygone ages dried up. What is that salt?
40. What does $10\text{H}_2\text{O}$ signify in the formula $\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$?
41. How does a strong acid differ from a concentrated acid?
42. The pH of rain water collected from two cities, A and B, were found to be 6 and 5 respectively. Which city was affected with acid rain? Explain.
43. Which colour of the copper sulphate crystals taken into a dry test tube after heating?
44. Which ions are produced when a base is dissolved in water?
45. Ravi is suffering from irritation in his stomach. What is the name of the substance you suggest as a remedy? Give an example.
46. How will you test for the gas which is liberated when HCl reacts with an active metal?
47. How is the concentration of hydronium ions (H_3O^+) affected when the solution of an acid is diluted?

Short answer type questions (2Marks)

(*) Single Star

1. Write a short note on pH scale?
2. What happens when carbon dioxide gas is passed through lime water? Write the chemical equation?
3. Why is the soil of agricultural lands tested for pH ?
4. Plaster of Paris should be stored in a moisture-proof container. Explain why?
5. What is baking powder? How does it make the cake soft and spongy?
6. Give two important uses of washing soda and baking soda.
7. What are olfactory indicators? Give two examples.
8. What is water of crystallization? Give an example.

() Two Star**

9. When an acid reacts with a base, it forms salt and water. Give two examples with chemical equations.
10. Why does pure acetic acid not conduct electricity?

11. A milk man adds a very small amount of baking soda to fresh milk.
 - a) Why does he shift the P^H of the milk from 6 to slightly alkaline?
 - b) Why does this milk take a long time to set as curd?
12. While diluting an acid. Why is it recommended that the acid should be added to water and not water to the acid?
13. Why does distilled water not conduct electricity where as rain water does?
14. Dry HCl gas does not show acidic behaviour. why?
15. Why does tooth decay start when the P^H of mouth is lower than 5.5?
16. How does the flow of acid rain water into a river make the survival of aquatic life in a river difficult?

(*) Three Star**

17. How do you know the nature of salt formed due to the reaction between acids and bases.
18. How washing soda is obtained?
19. What is the role of P^H in our digestive system?
20. Explain the self defence by animals and plants through chemical warfare?
21. Why are some salts called hydrated salts? Give two examples of white coloured hydrated salts with their chemical formulae.
22. Do acids produce ions only in aqueous solution? Explain an activity to observe this.
23. Explain a test to know whether the acid is strong or weak?
24. Write any two chemical properties of acids.

Essay type questions (4 marks)

(*) Single Star

1. Compounds such as alcohol and glucose contain hydrogen but are not categorized as acids. Describe an activity to prove it.
2. Write an activity to show the reaction of acids with metals
3. The P^H values of six solutions A to F are given below.
A=11, B=6,C=2 D=13, E=7, F=8
Which of the above are
i) acidic ii) alkalis iii) Neutral iv) Strongly acidic v) Strongly basic

() Two Star**

4. Draw a neat diagram showing acid solution in water conducts electricity?
5. What is water of crystallization of a substance? Describe an activity to show the water of crystallization?
6. What is meant by strong acids and weak acids? classify the following into strong acids and weak acids ? HCl, CH₃COOH, H₂SO₄, HNO₃, H₂CO₃, H₂SO₃
7. What do you mean by dilution of an acid or base? Write an activity to prepare dil acid or dil.base?
8. Equal lengths of magnesium ribbons are taken in test tubes A and B. Hydrochloric acid is added to test tube A. Why acetic acid is added to test tube B. Amount and concentration of both the acids is same in which test tube will the fizzing occur more vigorously and why?
9. Describe how sodium hydroxide is obtained from common salt?
10. Describe process of preparation of bleaching powder? Write its uses ?
11. Write the chemical equation of preparation of baking soda? what are the uses of baking soda?
12. Discuss briefly the examples showing the importance of P^H in daily life?
13. What do you mean by
 - a) Strong acid
 - b) Strong base
 - c) Weak acid
 - d) Weak base
 and give two example for each one.
14. A compound X reacts with a compound Y and releases a gas 'Z' which turns lime water into milky. What are X,Y and Z describe an activity
15. Fill the following table

S.no	Sample solution	Red Litmus paper	Blue Litmus paper	Phenolphthalein solution	Methyl orange solution
1	HCl				
2	CH ₃ COOH				
3	KOH				
4	NH ₄ OH				

(*) Three Star**

16. Generally salts are neutral but some salts are basic in nature, some salts are acidic in nature. Give reasons with example.
17. What happens when an acid reacts with a base? Explain by taking the example of Hydrochloric acid and sodium hydroxide. Give equation of the chemical reaction which takes place. What is the special name of such a reaction?
18. How do you prepare your own indicator, using beetroot? explain.
19. How do you prepare washing soda? What are its uses?
20. A substance is sour whereas other is bitter to taste. Write the difference between these two substances.
21. Write any four chemical properties of substances which release H_2 gas with active metals.

3. Refraction of Light at Plane Surfaces

❖ MAXIMUM PROBABILITY QUESTIONS ANALYSIS TABLE:

<p>AS-1 (Differences)</p> <p>1. Differences between mirrors and lenses</p>	<p>AS-1 (Understanding/Explanations)</p> <p>1) Formation of mirages 2) Critical angle 3) Total internal reflection 4) Which are not change in refraction</p>
<p>AS-3 (Activities/Experiments)</p> <p>1. Relation between angle of incidence and refraction (From Rarer to Denser medium) 2. Relation between angle of incidence and refraction (From Denser to Rarer medium) 3. Observing Total internal reflection 4. Finding refractive index of a glass slab</p>	<p>AS-5 (Diagrams/Figures)</p> <p>1. Optical fiber – Total internal reflection 2. Refraction through Glass slab</p>
<p>AS-2 (Questioning/Prediction):</p> <p>1. Take a bright metal ball and make it black with soot in a candle flame. Immerse it in water. How does it appear and why? (Make hypothesis). 2. Predict some reasons that we can't shoot a swimming fish without practice</p>	<p>AS-6 (Daily life uses):</p> <p>1. How do you appreciate the role of Fermat principle in drawing ray diagrams. 2. Why stars twinkling? 3. Why the objects behind fire appears swaying? 4. Why Diamonds glitters? 5. Guess the situations that refractive ray doesn't deviate.</p>
<p>AS-4 (Information Skills):</p> <p>1. Table of Refractive index values Questions related to which has more value, in which light travel slowly, which has less critical angle,....</p>	

4 Mark Questions

(*) Single Star

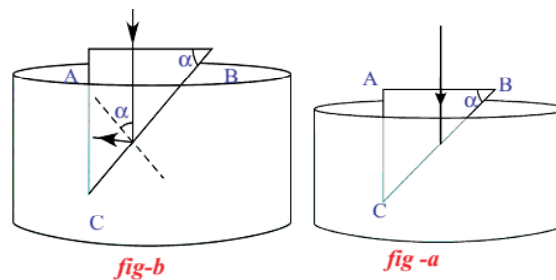
1. Sometimes during the hot summer at noon time on tar roads, it appears that there is water on the road, but there would really be no water. What do you call this phenomenon? Explain why it happens?(or) Explain the formation of mirage?
2. How the optical fibers are working? What are the various uses of optical fibers in our daily life?
3. How do you verify experimentally that $\sin i / \sin r$ is a constant?

() Two Star**

- An object of height 5 cm is placed at 30 cm distance on the principal axis in front of a concave mirror of focal length 20 cm. Find the image distance and size of the image.
- Explain the refraction of light through a glass-slab with neat ray diagram.
- How do you verify experimentally that the angle of refraction is more than angle of incidence when light rays travel from denser to rarer medium.
- Take a bright metal ball and make it black with soot in a candle flame. Immerse it in water. How does it appear and why? (Make hypothesis and do the above experiment?)

(*) Three Star**

- A light ray is incident on air-liquid interface at 45° and is refracted at 30° . What is the refractive index of the liquid? For what angle of incidence will the angle between reflected ray and refracted ray be 90° ?
- How do you find critical angle of water with an activity?
- A rectangular glass wedge is immersed in water as shown in figure (A). For what value of angle α , will the beam of light which normally incident on AB, reach AC entirely as shown in the following figure (b) take the refractive index of glass is $3/2$

**2 MARK QUESTIONS****(*) Single Star**

- Why is it difficult to shoot a fish swimming in water?
- When we sit a campfire, objects beyond the fire are seen swaying. Give the reasons for it.?
- In what cases does a light ray not deviate at the interface of two media?

() Two Star**

4. What could be the reasons for a lemon kept in water contained in a glass tumbler which appears bigger ? Why do the printed letters viewed through a glass slab appear raise
5. The speed of the light in a diamond is 1,24,000 km/s. Find the refractive index of diamond if the speed of light in air is 3,00,000 km/s.
6. Explain why a test tube immersed at a certain angle in a tumbler of water appears to have a mirror surface for a certain viewing position?
7. Take a bright metal ball and make it black with soot in a candle flame. Immerse it in water. How does it appear and why

(*) Three Star**

8. How do you appreciate the role of Fermat principle in drawing ray diagrams.?
9. A ray of light enters from air to a medium X. The speed of light in the medium is 1.5×10^8 m/s and the speed of light in air is 3×10^8 m/s. Find the Refractive index of the medium X?
10. The absolute refractive indices of two media A and B are 2.0 and 1.5 respectively if the speed of light 2×10^8 m/s. calculate the speed of light in vacuum and medium A

1 Mark Questions**(*) Single Star**

1. Why do stars appear twinkling?
2. Among objects made of glass and diamond, which one shines more Why?
3. What are applications of total internal reflection?
4. On what factor does the refractive index of a medium depend?
5. What is Snell's Law?
6. How Light ray moves when it enters from rarer medium to denser medium
7. what is fermat's principle?

() Two Star**

8. Write the laws of refraction?
9. What is mirage?
10. Can you take a photo of mirage?
11. Define Critical angle

13. Find the speed of light in a transparent medium, whose refractive index is $\frac{3}{2}$.

(*) Three Star**

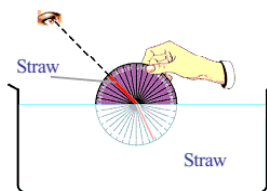
14. Draw the Diagram Showing the path of the ray when it travels from denser medium to rarer medium when the incident angle is more than the critical angle.
15. Refractive index of glass relative to water is $\frac{9}{8}$. What is the refractive index of water relative to glass?
16. Determine the refractive index of benzene if the critical angle is 42° .

MULTIPLE CHOICE QUESTIONS

01. The refractive index of glass with respect to air is 2. Then the critical angle of glass air interface is
 A) 0° B) 45° C) 30° D) 60°
02. The angle of deviation produced by the glass slab is
 A) 0° B) 20° C) 90° D) None
 D) Depends on the angle formed by the light ray and normal to the slab
03. Which one of the following is not an application of total internal reflection?
 A) Sparking of diamond B) Optical fibre
 C) Mirage D) Blue colour of sky
04. If speed of light were same in all the media, which of these processes are not possible.
 A) Reflection B) Refraction
 C) Dispersion D) Angle of incidence
05. If light travels from water to air, rays of light
 A) Bend away from the normal
 B) Travels in straight line in the same direction
 C) Travels in straight line in the opposite direction
 D) None of the above
06. Which of the following is the value of sine if c be the critical angle then r becomes 90° ?
 A) $\frac{n_1}{n_2}$ B) $\frac{n_2}{n_1}$ C) $\frac{n}{n_1}$ D) $\frac{n_2}{n}$
07. How many number of telephone signals transmitted through optical fiber?
 A) 1000 B) 2000 C) 3000 D) 4000
08. Light follows which law during refraction
 A) Fermat law B) Total internal reflection
 C) Refractive index D) Snell's law

09. 1.54 is the refractive index of which material ?
A) Ruby B) Sapphire C) Rock salt D) Kerosene
10. Which of the following is a result of change in speed of light at the interface?
A) Reflection B) Refraction
C) Critical angle D) Refractive index
11. If a light ray incident on a glass slab making certain angle with normal it get refracted comes out as emergent ray then the incident ray is to the emergent ray
A) Parallel B) Perpendicular
C) Intersected D) Coincidence
12. When the light ray travels from denser medium to rarer medium, then the refracted ray it from normal.
A) Moves towards B) Bends away
C) Passes along the normal D) None of these
13. Speed of light in vacuum is nearly equal to
A) 2×10^8 m/s B) 5×10^8 m/s C) 3×10^8 m/s D) 10^8 m/s
14. X : The light ray must travel from denser medium to rarer medium to form Total Internal Reflection.
Y : The angle of incidence in denser medium should be greater than the critical angle for the pair of media in contact
A) X and Y are True B) X is True and Y is False
C) X is False and Y is True D) Both X and Y are False
15. Shamta Curie is doing an experiment with the glass slab. She focused the light towards the glass slab at an angle 30° . What would be the angle of emergence?
A) 0° B) 30° C) 90° D) 180°
16. A man photographed a white donkey after fitting black strips vertically on to the lens of his camera. What photo will he get?
A) A dull image of white donkey
B) A bright image of white donkey
C) An image of zebra with horizontal strips
D) An image of zebra with vertical strips
17. A : When a mirror is immersed in water, its focal length doesn't change.
R : Focal length of a mirror is independent of surrounding medium
A) A and R are correct and R is correct explanation of A.
B) A and R are correct but R is not correct explanation of A.
C) A is correct and R is incorrect.
D) A is incorrect but R is correct

18. Suppose you are inside the water in a swimming pool, your friend is standing on the edge swimming pool, your friend appears to be
 A) Shorter B) Taller C) Same size D) Stout
19. The basic cause of refraction is
 A) when light is incident on a boundary
 B) when the refractive indices of two media are equal
 C) the change in the speed of light in going from one medium to another
 D) when the refractive indices of two media are not equal
20. A ray of light is incident on a plane surface of refractive index at certain angle. It is found that the reflected and refracted rays are perpendicular to each other. The angle of incidence is
 A) 30° B) 45° C) 60° D) 15°
21. In a glass vessel water is poured first and later a liquid of less density than water is poured in it so that the two liquids are inscribe. Then a glass tube is dipped in it. When viewed from the sides of glass vessel the glass tube is not seen in the liquid which is above. Can you guess the reason for it ?
 A) The velocity of light in liquid is more than the velocity of light in water.
 B) We can analyse that the person who
 C) The glass rod and the liquid above are having same refractive index.
 D) All the above.
22. In this activity ,When two straws came in a line?



- A) Straw kept 90° of water surface in water
 B) Straw kept along the surface of water
 C) Straw kept at 45° in water
 D) Two straws can't be in a line.
23. In which the velocity of light is high

Substance	Refractive index
Ice	1.31
Water	1.33
Benzene	1.50
Carbondisulphide	1.63

- A) Ice B) Carbondisulphide C) Benzene D) Water

24. Akash grandfather undergone heart surgery. Doctor sent a tube to see the inner parts on computer. What tube it can be ?
 A) Plastic B) Fiber C) Synthetic D) Optical fiber
25. Speed of light of a medium depends uponof the medium.
 A) Medium B) Optical density C) Material D) Length
26. The critical angle of diamonds
 A) 24° B) 24.4° C) 23.4° D) 26.4°
27. Mirage is an
 A) optical disturbance B) real image
 C) optical illusion D) none of these
28. If critical angle is 45° , then refractive index is
 A) 1.732 B) 1.33 C) 1.5 D) 1.414
29. If the refracted ray moves towards the normal. So the light ray is propagating from
 A) denser, rarer B) rarer, denser
 C) rarer, rarer D) denser, denser
30. Refractive index of a denser medium $n_1 = 2/5$ and rarer medium $n_2 = \sqrt{3}/5$ So critical angle C of denser medium is
 A) 0° B) 30° C) 60° D) uncertain

OBJECTIVE QUESTIONS KEY

1	C	9	C	17	A	25	D
2	A	10	B	18	B	26	B
3	D	11	A	19	C	27	C
4	B,C	12	B	20	C	28	D
5	A	13	C	21	C	29	B
6	B	14	C	22	A	30	C
7	B	15	D	23	A		
8	D	16	A	24	D		

4. Refraction light at curved surfaces

❖ MAXIMUM PROBABILITY QUESTIONS ANALYSIS TABLE:

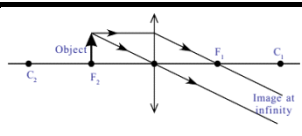
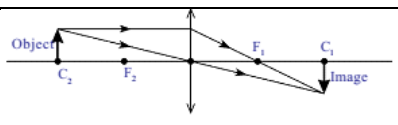
<p>AS-1 (Differences):</p> <p>1. Differences between Convex lens and concave lens</p>	<p>AS1-(Understanding/Explanations):</p> <p>1. Taking photo of a zebra by placing stripes glass before lens of camera – Properties of image</p>
<p>AS-3 (Activities/Experiments):</p> <p>1. Finding focal length of a convex lens 2. Image distances for object at different places (Convex lens) 3. Focal length of lens changes with respect to medium</p>	<p>AS-5 (Diagrams/Figures):</p> <p>1 . Useful rays to draw ray diagrams (Lenses) 2. Ray diagrams for convex lens / concave lens</p>
<p>AS-2 (Questioning/Prediction):</p> <p>1. Dinesh said, The convex lens made with glass behaves like concave lens when kept in water. What do you say?</p> <p>2. A convex lens is made up of three different materials. How many of images does it form?</p> <p>3. Assertion (A): A person standing on land appears taller than his actual height to a fish inside a pond. Reason (R): Light bends away from the normal as it enters air from water. Explain.</p>	<p>AS-6 (Daily life uses):</p> <p>1 . Uses of convex lens and concave lens</p>
<p>AS-4 (Information Skills): 1. Tabular information having u, v and f values for concave mirror experiment Questions to find f, relation between u and v</p>	

4 MARKS QUESTIONS

(*) Single Star

- An object is placed at the following distances from a convex lens of focal length 10 cm. (a) 8 cm. (b) 15 cm. (c) 20 cm. (d) 25 cm.
Which position of the object will produce
(i) A diminished, real and inverted image?
(ii) A magnified, real and inverted image?
(iii) A magnified, virtual and erect image?
(iv) An image of same size as the object? Justify your answer in each case.
- you have a lens. Suggest an experiment to find out the focal length of the lense
- Draw ray diagrams for the following positions and explain the nature and position of image.
(i) Object is placed at C_2
(ii) Object is placed between F_2 and optic centre P

4. The ray diagram showing the image formed by a concave lens are given in the following table. from these diagrams complete the table.

SNo	Ray diagram showing the image formed by a convex lens	Object placed	Place of the image formed	Size of the image	Real /Virtual image
01					
02					

() Two Star**

- Collect the information about the lenses where they will be used in our daily life?
- How do you verify experimentally that the focal length of a convex lens is increased when it is kept in water?
- Write about the behavior of light rays, when they incident on lens?
- Write characteristics of image formed due to convex lens at various distances?
- A student performed an experiment with biconvex lens and formulated a table as shown.

Object distance(u)cm	70	60	50	40	30
Image distance(v) cm	14.05	15.02	16.02	17	20
Focal length(f) cm	12.01	12.12	12.13	11.92	12

By observing above table answer the following questions.

- What is your idea regarding different values of focal length?
 - How you will decide the focal length of lens? What is that value
10. Explain the behavior of light rays in any four situations of their incidence on a convexlens.

(*) Three Star**

- (a) Describe a setup showing how you heat a utensil by using solar energy and mirrors.
(b) An object of 6 cm height is placed at a distance of 30 cm in front of a convex lens of focal length 10 cm. At what distance from the lens, will the image be formed? What are the characteristic of the image?

12. Find the radii of curvature of a convexo-concave convergent lens made of glass with refractive index $n=1.5$ having focal length of 24 cm. One of the radii of curvature is double than the other.
13. A parallel beam of rays is incident on a convergent lens with a focal length of 40cm. Where should a divergent lens with a focal length of 15 cm be placed for the beam of rays to remain parallel after passing through the two lenses? Draw a ray diagram.
14. A student focused the image of a candle flame on a white screen by placing the flame at various distances from the convex lens. He noted his observation.

S. No	Distance from the lens(cm)	Distance of the screen from the lens(cm)
1	60	20
2	40	24
3	30	30
4	24	40
5	15	70

- a) From the above table find the focal length of lens without lens formula.
- b) Which set of observations is incorrect and why?
- c) In which case the size of object and image will be same? Give reason for your answer

2MARKS QUESTIONS

(*) Single Star

1. Draw the diagram of different types of lenses. (Any two may be asked in the exam.) Collect the information about the lenses available in an optical shop.
02. Find out how the focal length of a lens may be determined by the given 'power' of the lens.
03. What happens to the image, if a convex lens is made up of two different transparent materials, as shown in figure



04. list out the images that are formed when a convex lens is made up of three different materials (n_1, n_2, n_3)?



05. What are the differences between convex and concave length?
06. The focal length of a converging lens is 20cm an object is 60cm from the lens. Where will the image be formed and what kind of image is it?
07. Focal length of a convex lens is 10cm.

u	Nature of the image		
	Real /Virtual	Erected /Inverted	Magnified/Diminished
15 cm			
20 cm			
30 cm			

Fill in the table with suitable answers

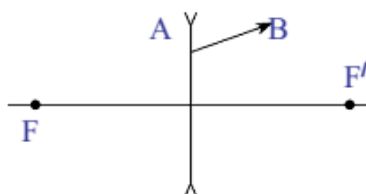
() Two Star**

08. What is the focal length of double-concave lens kept in air with two spherical surfaces of radii $R_1=30\text{cm}$ and $R_2= 60\text{cm}$.Take refractive index of lens as $n = 1.5$.
09. How do you appreciate the use of sign convention in knowing the properties of image formed by lenses ?
10. Harsha tells Siddhu that the double convex lens behaves like a convergent lens. But Siddhu knows that Harsha's assertion is wrong and corrected Harsha by asking some questions. What are the questions asked by Siddhu?
11. How do you appreciate the experimental results coinciding with ray diagram drawn for lenses?
12. Draw a ray diagram when an object is placed between focal point on the principal axis of a convex lens.
13. +50 cm focal length bi-convex lens is recommended to correct the defect of vision of a man. Find the power of lens.

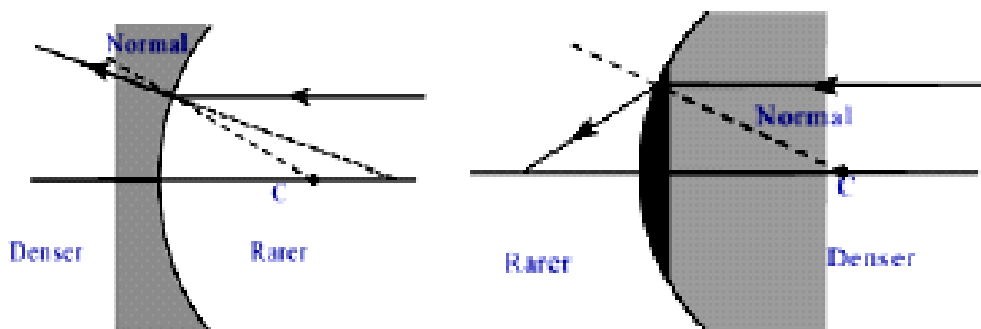
(*) Three Star**

14. Consider a Coaxial system of two thin convex lenses of focal length f each separated by a distance ' d '. Arrange them experimentally on a optical bench and draw ray diagrams for image formation corresponding to an object at infinity placed on the principal axis in the following cases
(a) $d = f$
(b) $d = 2f$

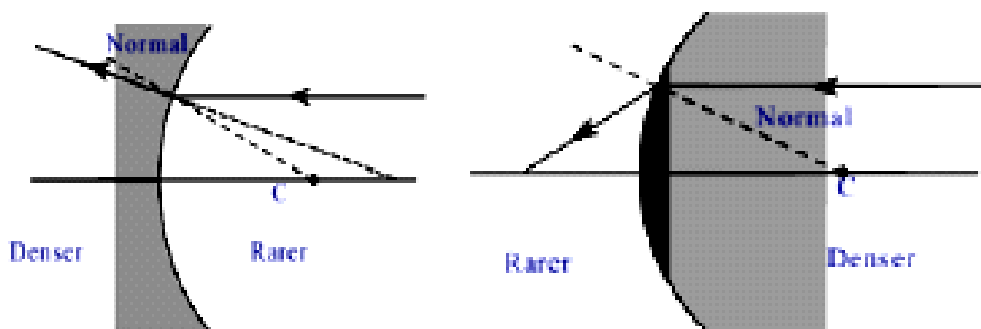
15. An electric lamp and a screen are placed on the table, in a line at a distance of 1m. In what positions of convex lens of focal length $f = 21\text{cm}$ will the image of lamp be sharp?
16. A transparent (glass) sphere has a small, opaque dot at its centre. Does the apparent position of the dot appear to be the same as its actual position when observed from outside?



17. Two converging lenses are to be placed in the path of parallel rays so that the rays remain parallel after passing through both lenses. How should the lenses be arranged? Explain with a neat ray diagram.
18. Figure shows ray AB that has passed through a divergent lens. Construct the path of the ray up to the lens if the position of its foci is known.



19. What difference do you notice in refracted rays between the following figures? What could be the reasons for that difference.



20. For the given data

Convex Lenses	Object distance(cm)	Focal length(cm)
A	30	20
B	10	15
C	20	10

- a) Which lens forms the image having same size as Object?
 b) Which lens forms virtual, erect and enlarged image?

1 MARK QUESTIONS

(*) Single Star

01. Write the lens Maker's formula and explain the terms in it
 02. Can a virtual image be photographed by a camera?
 03. A man wants to get a picture of a zebra. He photographed a white donkey after fitting a glass, with black stripes on to the lens of his camera. What photo will get? Explain.

(**) Two Star

04. Suppose you are inside the water in a swimming pool near the edge. A friend is standing on the edge. Do you find your friend taller or shorter than his usual height? Why
 05. Write the rules to draw ray diagrams for image formation by lenses.
 06. Assertion (A) : A person standing on the land appears taller than his actual height to a fish inside a pond,
 Reason (R) : Light bends away from the normal as it enters air from water.
 Which of the following is correct? Explain.
 (a) Both A and B are true and R is the correct explanation of A.
 (b) Both A and R are true and R is not the correct explanation of A.
 (c) A is true but R is false.
 (d) Both A and R are false.
 (e) A is false but R is true.
 07. Fill the table with suitable answers.

Objective Distance	Image Distance	Focal Length
u	v	(a).....?
-10 cm	10 cm	(b).....?

(***) Three Star

08. Write the rules to draw ray diagrams for image formation by lenses.
 09. Can you find the minimum limiting object distance for obtaining a real image?
 10. Could you get an image on the screen for every object distance ?

11. Why don't you get an image for certain object distances?
12. Mahesh tells Vijay that the double convex lens behaves like a convergent lens. But Vijay knows that Mahesh's assertion is wrong and corrected Mahesh by asking some questions. What are the questions asked by Vijay?

OBJECTIVE QUESTIONS

01. Which of the following is true ?
 - A) the distance of virtual image is always greater than the object distance for convex lens
 - B) the distance of virtual image is not greater than the object distance for convex lens
 - C) convex lens always forms a real image
 - D) convex lens always forms a virtual image
02. Focal length of the plano-convex lens when its radius of curvature of the surface is R and n is the refractive index of the lens. Is
 - A) $f = R$
 - B) $f = R/2$
 - C) $f = R/(n-1)$
 - D) $f = (n-1)/R$
03. The value of the focal length of the lens is equal to the value of the image distance when the rays are
 - A) passing through the optic centre
 - B) parallel to the principal axis
 - C) passing through the focus
 - D) in all the cases
04. Which of the following is the Lens maker's formula?
 - A) $1/f = (n-1)(1/R_1 + 1/R_2)$
 - B) $1/f = (n+1)(1/R_1 - 1/R_2)$
 - C) $1/f = (n-1)(1/R_1 - 1/R_2)$
 - D) $1/f = (n+1)(1/R_1 + 1/R_2)$
05. The focal length of a lens depends on which of the following factors
 - A) Radius of curvature
 - B) Material of the lens
 - C) Medium in which the lens is placed
 - D) All the above.
06. Two plane convex lenses of focal lengths 10 cm and 20 cm are placed in contact with each other. The effective focal length of the combination is
 - A) 10 cm
 - B) 20 cm
 - C) 200 cm
 - D) 6.67 cm
07. The radius of curvature of a plano convex lens is doubled without changing the material of medium, its focal length will be
 - A) double
 - B) halved
 - C) remains same
 - D) insufficient data
08. When a refracted ray is distracted from its original path this displacement is called ?
 - A) reflection
 - B) refraction
 - C) lateral displacement
 - D) dispersion

09. S. I. unit of the power of a lens is
A) dioptre B) cm C) meter D) Watt
10. The power of a convex lens of focal length 50 cm is
A) +2D B) - 2D C) 50 D D) - 5D
11. The power of a concave lens is
A) Positive B) Negative C) A or B D) None
12. When the object is placed at the focal point (f_2) in front of a convex lens, then the image is formed at
A) beyond C B) at infinity C) between F_1 and C_1 D) at C
13. The air bubbles in water behaves like lens.
A) bi-concave B) concave C) convex D) bi-convex
14. If $f = 10$ cm and $u = 15$ cm and the object is placed perpendicular to the principal axis of a convex lens and (v) image distance ?
A) 30 cm B) 25 cm C) 40 cm D) 15 cm
15. A convex lens has a focal length of 25 cm and image distance is 75 cm then calculate, the object distance
A) -37.5 m B) 37.5 cm C) -37.5 cm D) 37.5 m
16. What is value of image distance (v), if focal length (f) is 20 cm and object distance (u), is 30 cm is placed on the principal axis of convex lens
A) 60 cm B) 80 cm C) 40 cm D) 20 cm
17. What is the focal length of double concave lens of radii $R_1 = 30$ cm and $R_2 = 60$ cm, refractive index $n = 1.5$
A) -120 cm B) 120 cm C) -120 m D) 120 m
18. A ray of light passes from glass into air. The angle of refraction will be
A) Equal to the angle of incidence
B) Greater than the angle of incidence
C) Smaller than the angle of incidence
D) 45°
19. At where the object is placed, the image formed at infinity
A) at C_2 B) at F_2 C) between C_2 and F_2 D) None
20. If the convex lens is placed in water its focal length is
A) Increases B) Decreases
C) remains constant D) either increase or decrease

21. Consider a convex lens and match the following.

Position of the object Position of image

- | | |
|----------------------|---------------|
| i) at Focus | P) same side |
| ii) between 2F and F | Q) infinitive |
| iii) between F and O | R) beyond 2F |

- | | |
|------------------------|---------------------------|
| A) i- Q, ii- R, iii- p | B) i- p, ii- Q, iii - R |
| C) i- R, ii- P, iii- Q | D) i - Q, ii - P, iii - R |

22. The lens which can form real and virtual images for real object

- | | |
|--------------------|-------------------|
| A) Converging lens | B) Diverging lens |
| C) Plane lens | D) Both A and B |

23. A bird flying in air will appear to a fish inside the water as

- A) Farther away than its actual distance
- B) Closer than its actual distance
- C) At the same place
- D) Bird doesn't appear to the fish

24. In the lens displacement method of finding the focal length of a convex lens, the sizes of the images are found to be 8 cm and 2 cm. The size of the object is

- | | | | |
|---------|---------|----------|---------|
| A) 8 cm | B) 2 cm | C) 16 cm | D) 4 cm |
|---------|---------|----------|---------|

25. In the lens displacement determining the focal length of a lens, the separation between the screen and the object should be

- | | |
|-----------------------------------|----------------------------------|
| A) greater than or equal to $2f$ | B) greater than or equal to $4f$ |
| C) greater than or equal to f^2 | D) greater than or equal f |

26. A monochromatic beam of light passes from a denser medium into a rarer medium. As a result

- | | |
|---------------------------|-----------------------------|
| A) its velocity decreases | B) its frequency decreases |
| C) its velocity increases | D) its wavelength decreases |

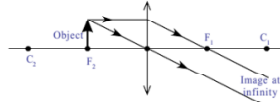
27. An object is placed at a distance of 10 cm from a convex lens of focal length 10 cm. The image is formed at

- | | | | |
|----------|----------|-----------|-------------|
| A) 10 cm | B) 20 cm | C) 100 cm | D) infinity |
|----------|----------|-----------|-------------|

28. A plano convex lens made of material of refractive index $\frac{3}{2}$ has a radius of curvature 10 cm. When it is placed in a transparent medium of refractive index 3, it will behaves as

- A) A convex lens of focal length 10 cm
- B) A concave lens of focal length 10 cm
- C) A convex lens of focal length 20 cm
- D) A concave lens of focal length 20 cm

29. A glass slab of thickness 18 cm and refractive index $\frac{3}{2}$ is placed on a printed matter. The normal shift of the printed matter is
 A) 12 cm B) 3 cm C) 6 cm D) 9 cm
30. The image properties are



- a. erect b. invert c. diminished, erect
 d. erect, magnified, virtual
- A) a, b B) c, d C) b D) c

OBJECTIVE QUESTIONS KEY

1	A	6	D	11	B	16	A	21	A	26	C
2	C	7	A	12	B	17	A	22	A	27	D
3	B	8	C	13	B	18	B	23	A	28	D
4	C	9	A	14	A	19	B	24	D	29	C
5	D	10	A	15	C	20	A	25	B	30	C

5. Human Eye and Colourful World

MAXIMUM PROBABILITY QUESTIONS ANALYSIS TABLE:

<p>AS-1 (Differences):</p> <ol style="list-style-type: none"> Differences between scattering and dispersion Differences between reflection and refraction 	<p>AS1-(Understanding/Explanations):</p> <ol style="list-style-type: none"> Explain Myopia – How to correct the defect ? Explain Hypermetropia – How to correct it ? Explain Presbyopia Lens power Formation of Rainbow in water drop
<p>AS-3 (Activities/Experiments):</p> <ol style="list-style-type: none"> Finding refractive index of Prism Formation of Rainbow in Class room (2 Activities) 	<p>AS-5 (Diagrams/Figures):</p> <ol style="list-style-type: none"> Human eye - structure Myopia – property – Correction Hypermetropia – property – Correction Refraction through Prism Formation of Rainbow
<p>AS-2 (Questioning/Prediction):</p> <ol style="list-style-type: none"> Why sky is blue ? Why sky is white on sunny day ? Why Sun is red in mornings and evenings ? 	<p>AS-6 (Daily life uses):</p> <ol style="list-style-type: none"> Role of Ciliary muscles What happened when white paper is stained with oil ?
<p>AS-4 (Information Skills) 1. Table contains defects of eye and correction methods</p>	

4 MARKS QUESTIONS

(*) Single Star

- How do you correct the eye defect myopia?
- Explain the correction of the eye defect hypermetropia?
- How do you find experimentally the refractive index of material of a prism?
- Explain the formation of rainbow?
- How do you appreciate the working of ciliary muscles in the
- Why does the sky sometimes appear white?
- Explain briefly the reason for the blue colour of the sky?
- A person cannot read newspaper placed nearer than 50 cm. From his eyes. Draw a ray diagram to illustrate this defect. Draw a ray diagram to show how this defect may be corrected using a lens

(or)

A student is unable to read the book near to him. What type of eye defect is this and draw the figures to rectify this eye defect.

() Two Star**

9. Which lens do you suggest to a person who is suffering from myopia? Draw the diagrams represents that how that lens correct the vision of that person?
10. Doctor advised a person to use biconcave lens who is suffered from eye defect. Identity the eye defect and draw diagrams showing
 - i) That eye defect
 - ii) Correction done to that defect
11. Manoj, who sits in the last row in his class room is unable to read the black board recently. He identified that there is some defect in his eye sight. What may be the defect? Suggest a corrective lens and draw a neat diagram showing the correction?

(OR) Sridhar has a difficulty in reading the black board. While sitting in the last row. What could be the defect the child is suffering from? Draw a neat diagram which shows the correction of the above defect.
12. The image of the object formed by an Eye lens at retina is real and inverted but the can identify the object as upright explain it?
13. Explain two activities for the formation of artificial rainbow?
14. Derive the formula for refractive index of the material in the case of prism?
15. Suggest an experiment to produce a rainbow in your class room and explain the procedure?
16. Why the reasons for appearance the red colour of sun during rise and at sunset?
17. A person cannot see the objects beyond two melts
 - i) Name the defect of vision he is suffering from?
 - ii) Which lens is required to correct his defect?
 - iii) Find the power of lens required?

(*) Three Star**

18. Prisms used in binoculars. Why prisms are used in binoculars?
19. How do you demonstrate the scatterings of light with an activity?
20. Explain the structure of human eye with diagram?
21. Spectacles correct the defects of vision explain it?
22. The focal length of a lens suggested to a person Hypermetropia is 100 cm. Find the distance of near and power of the lens?

23. Define accommodation of lens? How can we find the maximum focal length of the eye lens?

2 MARKS QUESTIONS

(*) Single Star

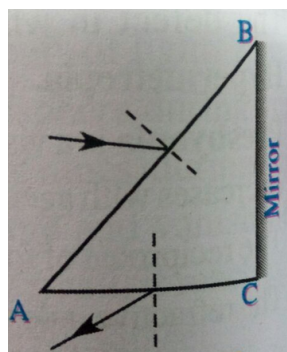
1. How do you appreciate the role of molecules in the atmosphere for the blue colour of the sky?

(**) Two Star

2. Glass is known to be a transparent materials. But ground glass is opaque and white in colour. Why?
3. What is the reason from sun appearance the white colour during noon hours?
4. A light ray falls on one of the faces of prism at an angle 40° so that it suffers angle of minimum deviation of 30° . Find the angle of prism and angle of refraction at the given surfaces?

(***) Three Star

5. Assertion (A) : Blue colour of sky appears due to scattering of light
Reason (R) : Blue colour has shortest wave length among all the colours of white light
6. Incident ray in one of the face AB of a prism and emergent ray from the face are given in figure. Complete the ray diagram?



1 MARKS QUESTIONS

(*) Single Star

7. What is least distance of distinct vision? What is its value for a human being?
8. What is angle of vision? What is its value for healthy human being?
9. What are the maximum focal length of the human eye lens
10. Define Power of lens? What are its units?

11. Write a formula to find the refractive index of the material of the prism and explain the terms?
12. What is dispersion of light? Give an example?
13. Doctor advised to use 2D lens. What is its focal length?

() Two Star**

14. What is accommodation of eye lens?
15. Which type of images forms by eye lens?
16. What is the role of rods and cones in human eye?
17. How many types of eye defects? What are they?
18. What is meant by angle of deviation
19. If you correct the eye defect Myopia then mention the focal length of bi-concave lens?
20. If you correct the eye defect hypermetropia then mention the focal length of bi-convex lens.
21. What is meant by presbyopia
22. How can you correct the eye defect presbyopia?

(*) Three Star**

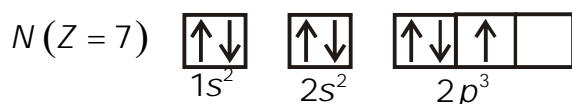
23. Name the receptors are there in the human eye?
24. How many number of receptors are there in the human eye?
25. How many number of optic-nerve fibers are there in the human eye?
26. What is the function of optical nerve in the eyes?
27. What is meant by a "far point"?
28. What is meant by a prism?
29. What is meant by a "angle of minimum deviation"

6. STRUCTURE OF ATOM

1 MARK QUESTIONS

(*) Single Star

- Which rule is violated in the electronic configuration $1s^0 2s^2 2p^4$?
- Following orbital diagram shows the electronic configuration of nitrogen atom. Which rule does not support this.



- Write the four quantum number for the differentiating electron of sodium (Na) atom?
- Which electronic shell is at a higher energy level K or L?
- Write the electronic configuration of Cr and Cu.
- What is Plank's equation?
- What is the name given to orbitals of equal energy?

(**) Two Star

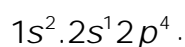
- What is absorption spectrum?
- What is emission spectrum?
- Which of the following orbitals are possible 1p, 2s, 2p and 3f?
- How many m_l values are possible for $l = 3$?
- Which of the given quantum number value is not possible for given set

n	l	m_l	m_s
3	2	-3	$+\frac{1}{2}$

- If $l = 4$ then what is the minimum and maximum values for m_l ?
- Which principle gives the information that maximum number of electrons filled in an orbital is 2?

(*) Three Star**

15. The wave length of a radio wave is 1.0 m. Find its frequency.
16. Pavan observed an yellow light in the street lamp. They produce what type of vapours?
17. A thief had stolen gold in a jewellery shop. The police man collected the finger prints? What type of spectrum is used in the identification of finger prints?
18. Which principle is not follow in writing the following electronic configuration? Give reasons.



19. Which colours do you observe when an iron rod is gradually heated to higher temperature?
20. Write four quantum number values for valance electrons of potassium.

2 MARK QUESTIONS**(*) Single Star**

1. What information does the electronic configuration of an atom provide?
2. In an atom the number of electrons in M-shell is equal to the number of electrons in the K and L shell. Answer the following questions.
 - a) Which is the outer most shell?
 - b) How many electrons are there in its outermost shell?
 - c) What is the atomic number of the element?
 - d) Write the electronic configuration of the element.
3. What is an orbital? How is it different from Bohr's orbit?
4. What is nl^x method? How it is useful.

() Two Star**

5. Manvitha observed through a high resolution spectroscopy appears as group of finer lines instead of line spectrum
 - i) Manvitha observed what type of spectrum?
 - ii) Who explained this type of spectrum?

6. The vacation of Deepavali festival Sarath observed green flame and crimson red flame?
- Which compound exhibit green colour flame?
 - Which compound exhibit crimson red flame?
7. How many elliptical orbits are added by Sommerfeld in third Bohr's orbit? What was the purpose of adding these elliptical orbits?
8. Collect the information regarding wave length and corresponding frequencies of three primary colours red, blue and green.
9. How do you appreciate the formation of rainbow in studying the continuous spectrum?
10. Your father asked you to go to the market and purchase an electric lamp. The shop keeper displayed two lamps one is violet the another is red. Which coloured lamp do you purchase to put in your bed room? Support your choice of selection.
11. What is the name and atomic number of the element with following quantum numbers and write to electronic configuration limitations?

n	l	m_l	m_s
* 4	0	0	$-\frac{1}{2}$

12. After completion of 3p orbit why do the electron enters into 4s¹

(*) Three Star**

13. Draw neat diagram of electromagnetic spectrum
14. Observe the following set of quantum numbers for electrons of helium atom

	n	l	m_l	m_s
First Electron	1	0	0	$+\frac{1}{2}$
Second Electron	1	0	0	$+\frac{1}{2}$

Which rule is violated in the table. Explain that rule.

15. Fill the following tablet

Element	Atomic Number	Electronic Configuration
Q	0	
	11	
P		$1s^2 2s^2 2p^6 3s^2 3p^5$

4 MARK QUESTIONS

(*) Single Star

1. Explain the significance of three quantum numbers in predicting the positions of an electron in an atom.
2. Draw neat diagram of electro magnetic spectrum.
3. Draw shapes of s,p,d orbitals

4. $\begin{array}{|c|} \hline \uparrow\downarrow \\ \hline \end{array}$ $\begin{array}{|c|} \hline \uparrow\downarrow \\ \hline \end{array}$ $\begin{array}{|c|c|c|} \hline \uparrow\downarrow & \uparrow & \\ \hline \end{array}$ $\begin{array}{|c|} \hline \\ \hline \end{array}$ Which rule is violated in the electronic configuration explain that rule with examples.

5. Which rule is violated in the electronic configuration $1s^0 2s^2 2p^3$. Explain the rule with examples.
6. Draw a neat sketch of Moeller diagram

() Two Star**

7. a) How many maximum number of electrons that can be accommodated in a principal energy shell?
b) How many maximum number of electrons that can be accommodated in a subshell.
c) How many maximum number of electrons can be accommodate in an orbital?
d) How many subshells present in a principal energy shell?
e) How many spin orientations are possible for an electron in an orbittel?
8. Rainbow is an example for continuous spectrum - explain?
9. Explain the salient features of Bohr's atomic model. What are its

(*) Three Star**

10. Fill the following table: -

n	l	m_l	Orbital	No. of electrons
1	0			
2	1			
3	2			
4	3			

11. Fill the following table

	Sub shell	l value	No. of orbitals	Maximum number of electrons
1	s			
2		1		
3			5	
4				14

7. CLASSIFICATION OF ELEMENTS - THE PERIODIC TABLE**1 MARK QUESTIONS****(*) Single Star**

1. What was the Mendeleeff basis for the classification of elements?
2. How does the valency vary in a period from left to right?
3. What do you mean by screening effect?
4. What are lanthanides and actinides.
5. Using the periodic table predict the formula of the compound formed between element 'X' of group 13 and another element 'Y' of group 16.

() Two Star**

6. A, B and C are the elements of Dobereiner triads. If the atomic mass of A is 7 and C is 39 what should be the atomic mass of B?
7. Name the three elements predicted by Mendeleeff from the gaps in his periodic table. What name given to these elements when they discovered?
8. Why did Mendeleeff leave some gaps in his periodic tables?
9. What is a crystal radius?
10. Arrange the following elements in ascending order of metallic character.
Si, Al, S, P, Na, Cl, Mg

(*) Three Star**

11. Use Mendeleeff periodic table to predict the formulae for the oxides of the following elements?
a) Li, "Na" and "K"
b) Bi, Mg and Ca
12. If we had an element in our hand it will melt. What element it may be?
13. Which group of elements was missing from Mendeleeff original periodic table?
14. Which group elements have positive electron gain enthalpy value?

2 MARK QUESTIONS**(*) Single Star**

1. State any three limitations of Mendeleeff periodic table?
2. Which one between Cl, and Cl^- would have more size? Why?
3. Which one in each of the following pairs is larger in size?
a) Na, Al b) Na, Mg^{2+} c) S^{-2} , Cl^- d) Fe^{2+} , Fe^{3+}
4. Arrange the ionisation energy order in the following sets of elements.
a) Na, Al, Cl b) Li, Be, B c) C, N, O d) F, Ne, Na

5. An element 'X' belong to third period and group II of periodic table. State.
- The no. of valency electrons
 - The valency
 - Metal or non metal

() Two Star**

- Give two examples of each group 1, 17 and 18
- Elements in a group generally possess similar properties. But elements along a period have different properties. How do you explain?
- Why was the basic of classification of elements changed from atomic mass to atomic number.
- What are the properties which influence ionisation energy?
- What are the limitations of Dobereiner triad?
- What are the limitations of Newland's Octaves?
- What do you mean by electronegativity and what are the scales used to measure electro negativity
- Why do chlorine has more electron gain enthalphy than flourine.

(*) Three Star**

- Why do second ionisation is more than first ionsation energy?
- Why do you think the noble gases are placed in separate group.
- What are the factors influence electron gain enthalpy?
- Write any two groups of Dobereiner triad?
- Why lanthanides and actinides placed seperately at the bottom of the periodic table.
- What were the limitations of Dobereiner classification of elements?

4 MARK QUESTIONS**(*) Single Star**

- Write down atom the characteristics of the element having atomic number 17.
Electronic Configuration -
Period number -
Group number -
Element family -
No. of valency electrons -
Valency -
Metal/non metal -
- Define Modern periodic law. Discuss the construction of the long form of the periodic table.

3. What is a periodic property? How do the following properties change in a group and period.
- a) Atomic radius b) Ionisation potential c) electronegativity
- d) Metallic properties
4. Comment on the position of Hydrogen

() Two Star**

5. Explain how the elements are classified into s,p,d and f block elements in the periodic table.
6. Complete the following table using periodic table

Period Number	Filling up orbital	Max. No. of electrons filled in all sub shells	Total No. of electron period
1			
2			
3			
4	4s,3d,4p	18	18
5			
6			
7	7s,5f,6d,7p	52	In complete

7. Collect the information about reactivity of VIII th group elements.
8. How do you clarify Modern periodic table based on electronic configuration. Explain.
9. Fill the following table.

Group No.	Name of the element family	Valence Electron	Valency
13			
	Nitrogen family		
		6	
19			

(*) Three Star**

10. How the position of elements in the periodic table, help you to predict its chemical properties. Explain.
11. Newlands proposed the law of octaves. Mendeleeff suggested eight groups for elements in his table. How do you explain these observations in terms of modern periodic table.
12. State the number of valence electrons, the group number and the period number of each element given in the following table.

Element	Valence electron	Group no.	Period No.
Sulphur			
Oxygen			
Magnesium			
Hydrogen			

13. Complete the following table using periodic table.

Period No.	Total No. of elements	Elements		Total no. of elements in			
		From	To	s- Block	p- Block	d-block	f-block

14. What are salient features of Mendeleeff periodic table? What are its limitations?

8. CHEMICAL BONDING

(1 MARK QUESTIONS)

(*) Single Star

1. Draw lewis dot structure of Magnesium ?
2. What is a chemical bond?
3. What do you mean by metallic character or electro positive character?
4. What do you mean by non metallic character or electronegative character ?
5. When do two atoms of two elements form ionic bond?
6. Why do bond dissociation energy of different molecules is different ?

() Two Star**

7. What are valence electrons ? How many valence electrons present in phosphorous?
8. Which groups of elements generally form cations?
9. Which groups of elements generally form anions?
10. Why do some atoms of elements try to combine and form molecules?
11. Which of the following has same number of electrons?
a) Ne b) Na^+ c) F^- d) Mg^{2+}
12. If bond between atoms of two elements is covalent, what inference do you get about electronegativity ?
13. What is covalency ? write the covalency of carbon?
14. If a compound has formula X_2Y_3 then what is the valency of X and Y and which group X and Y belong?

(*) Three Star**

15. What is coordination number? What is the coordination number of Na^+ in NaCl ?
16. Why do some atoms combine , while other do not?
17. If two dissimilar elements form covalent bond then what is the name given to that bond?
18. What do you mean by kernel?
19. Write the formula of compound when an element X of group 2 reacts with an element Y of group 17.
20. What could be the reason for the change in reactivity of elements?

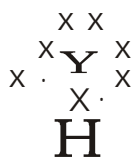
(2 MARK QUESTIONS)

(*) Single Star

- Why do only the valence electrons involve in bond formation ? why not electrons of inner shells? Explain(ASI)
- Represent the molecule H_2O using lewis notation
- Why ionic compounds have high melting and boiling points?
- Fill the following table

Compound	Hybridisation	Bond angle
a) BF_3		
b) $BeCl_2$		
c) NH_3		
d) H_2O		

- Explain the difference between the valence electrons and covalency of an element . (ASI)
- A chemical compound has the following lewis notation (ASI)



- How many valence electrons does element Y have ?
 - What is the valency of element Y ?
 - What is the valency of element X?
 - How many covalent bonds are there in the molecule ?
 - Suggest a name for the element X and Y ?
- Predict the reasons for low melting points for covalent compounds when compared with ionic compounds. (AS2)(2marks)
 - Collect the information about properties and uses of covalent compounds and prepare a report ? (AS4)(2marks)

(**) Two Star

- What are the factors which influence the formation of cation and anion.
- Why there is polar covalent bond exists in HCl?
- Draw the structure of Ammonia as per VSEPR theory ?
- Explain formation of F_2 molecule using valence bond theory ?
- Explain formation of H_2 molecule using valence bond theory.

(*) Three Star**

14. Represent the following using lewis electron dot structure
a) Beryllium b) Calcium c) Lithium
15. Why do some elements exist as molecules and some as atoms?
16. Why do some elements and compounds react vigorously while other are inert ?
17. Why there is absorption of energy in certain chemical reactions and release of energy in other reactions?
18. We know NaCl is soluble in water and Naphthalene is soluble in kerosene . But NaCl is not soluble in kerosene and Naphthalene is not soluble in water why?
19. Why is the chemical formula for water H_2O and $NaCl$? Why not HO_2 and $NaCl_2$?

(4 MARKS QUESTIONS)**(*) Single Star**

1. A, B and C are three elements with atomic number 6, 11 and 17 respectively. (ASI)
 - i) Which of these cannot form ionic bond ? Why ?
 - ii) Which of these cannot form covalent bond? Why?
 - iii) Which of these can form ionic as well as covalent bonds?
2. Explain the formation of the following molecules using valence bond theory .
 - 1) N_2 molecule 2) O_2 molecule
3. What is hybridization ? Explain the formation of the following molecules using hybridisation ?
 - a) $BeCl_2$ b) BF_3

() Two Star**

4. List the factors that determine the type of bond that will be formed between two atoms(ASI)
5. Explain the formation of sodium chloride and calcium oxide on the basis of the concept of electron transfer one atom to another atom?
6. Draw simple diagram to show how electrons are arranged in the following covalent molecules .
 - a) Calcium oxide (CaO) 2) Water(H_2O) c) Chlorine (Cl_2)

7. Represent each of the following molecules using Lewis notation: (AS5)
- a) Bromine gas (Br_2) b) Calcium chloride $CaCl_2$
- c) Carbon dioxide (CO_2)
- d) Which of the 3 molecules listed above contains a double bond?
8. Two Chemical reactions are described below.
- > Nitrogen and hydrogen react to form ammonia (NH_3)
- > Carbon and hydrogen react to form a molecule of methane
- for each reaction.
- Give
- a) the valency of each of the atoms involved in the reaction (AS1)
- b) The Lewis structure of the product that is formed (AS5)
9. How Lewis dot structure helps in understanding bond formation between atoms? (AS6)
10. Explain Formation of water and ammonia using hybridisation ?

(*) Three Star**

11. How bond energies and bond lengths of molecule helps us in predicting their chemical properties ? Explain with examples. (AS1)
12. What is octet Rule ? How do you appreciate the role of the octet rule in explaining the chemical properties of elements? (AS6)
13. Draw the formation of $MgCl_2$, $AlCl_3$ through Lewis electron dot symbols.
14. Write the postulates and drawbacks of Valence Shell Repulsion pair theory. (VSEPR)
15. Write the differences between ionic and covalent compounds

9. Electric Current

MAXIMUM PROBABILITY QUESTIONS ANALYSIS TABLE:

<p>AS-1 (Differences):</p> <ol style="list-style-type: none"> 1. Differences between ohmic and non ohmic conductors 2. Differences between series combination and parallel combination of resistors 3. Differences between emf and potential difference 	<p>AS1-(Understanding/Explanations):</p> <ol style="list-style-type: none"> 1. Working of battery 2. Laws of resistance ($R = \frac{\rho l}{A}$) 3. Electric shock 4. Kirchoff's junction law and loop law 5. Formula for resultant resistance when three resistors are connected in series 6. Formula for resultant resistance when three resistors are connected in parallel 7. KWH
<p>AS-3 (Activities/Experiments):</p> <ol style="list-style-type: none"> 1. Experimental verification of Ohm's law 2. Resistance dependence upon Length /Area of cross section / Nature / Temperature 	<p>AS-5 (Diagrams/Figures):</p> <ol style="list-style-type: none"> 1. Experimental set up of Ohm's law / Graphs 2. Series / Parallel combination of Resistances
<p>AS-2 (Questioning/Prediction):</p> <ol style="list-style-type: none"> 1. Why does a bird can't get shock even it sit on an electric wire ? 2. Why Filament is made with Tungsten ? 3. Which material is used to make fuses ? Why it should be used ? 	<p>AS-6 (Daily life uses):</p> <ol style="list-style-type: none"> 1. How to overcome the problem of over load of electricity in daily life? 2. How do you appreciate the role of fuse in houses ?
<p>AS-4 (Information Skills):</p> <ol style="list-style-type: none"> 1. Table of Specific resistance (Resistivity) values Questions related to which is best conductor, Which has more resistance, Which is used for filament, 2. Table contains measurements in Ohm's law experiment. Questions like which is Ohmic, What is R value, relation between V and I..... 	

4 MARKS QUESTIONS

(*) **Single Star**

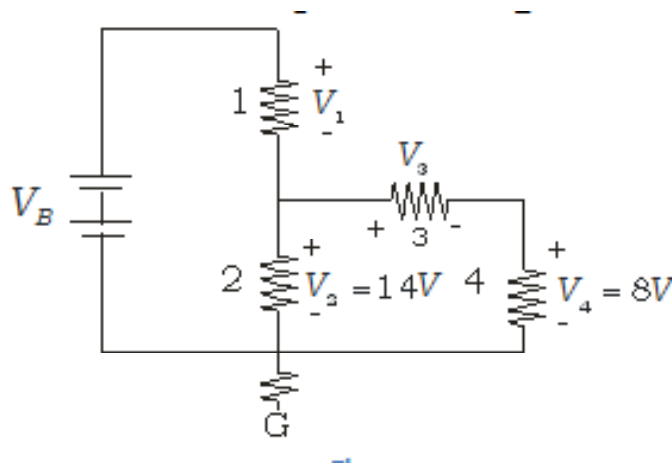
1. What do you mean by electric shock? Explain how it takes place?
2. Deduce the expression for the equivalent resistance of three resistors connected in series?
3. Deduce the expression for the equivalent resistance of three resistors connected in parallel?

() Two Star**

4. Derive $R = \rho l/A$
5. State ohm's law and suggest an experiment to verify it and explain the procedure?
6. A house has 3 tube lights, 2 fans and a television. Each tube light draws 40W. The fan draws 80W. and television draws 60W. On the average, all tube lights are kept on for 5 hours, 2 fans for 12 hours and television for 5 hours every day. Find the cost of electrical energy used in 30 days at the rate of Rs.3 per kWh?
7. How can you appreciate the role of a small fuse in house wiring circuit in preventing damage to various electrical appliances connected in the circuit?
8. Why should we connect electrical appliances in parallel in household circuit? What happens if they are connected in series?

(*) Three Star**

9. Explain Kirchhoff's laws with examples?
10. Observe the circuit and answer the questions given below.



- A) Are resistors 3 and 4 in series?
- B) Are resistors 1 and 2 series?
- C) Is the battery in series with any resistors?
- D) What is the potential drop across the resistor 3?
- E) What is the total emf in the circuit if the potential drop across the resistor 1 is 6V?

2 MARKS QUESTIONS**(*) Single Star**

1. Write the differences between potential difference and emf?
2. Why do we consider tungsten as a suitable material for making the filament of a bulb?
3. What are the factors affecting the resistance of a wire?

() Two Star**

4. Explain overloading of household circuits?
5. Why don't we use series arrangement of electrical appliances like bulb, television, fan and others in domestic circuits?
6. Silver is a better conductor of electricity than copper. Why do we use copper wire for conduction of electricity?
8. What happens to our body if we touch live wire of 240V?
9. Why doesn't a bird get a shock when it stands on a high voltage wire?

(*) Three Star**

10. Why does a bulb glow immediately when we switch on?
11. Two bulbs have ratings 100W, 220V and 60W, 220V. Which one has greater resistance?
12. A wire of length 1m and radius 0.1 mm has a resistance of 10Ω . Find the resistivity of the material?

1 MARKS QUESTIONS**(*) Single Star**

1. Define conductors and insulators, give examples?
2. What are ohmic and non-ohmic conductors?

() Two Star**

3. Define semiconductors and give examples?
4. What is electric current? Write its units?
5. Define volt?
6. What is the difference between resistance and resistor?
7. What is the value of 1kWh in joules?

(*) Three Star**

8. Define conductivity and write its units?
9. Are the headlights of a car connected in series or parallel? Why?
10. Define electric power? Write S.I. Units?

10. Electro Magnetism

MAXIMUM PROBABILITY QUESTIONS ANALYSIS TABLE:

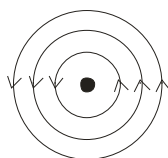
<p>AS-1 (Differences):</p> <ol style="list-style-type: none"> 1. Differences between motor and generator 2. Difference between A.C. Generator and D.C. Generator 	<p>AS1-(Understanding/Explanations):</p> <ol style="list-style-type: none"> 1. Are magnetic lines of forces closed ? 2. Working of Motor 3. Working of A.C. Generator 4. Working of D.C. Generator 5. What happened when bar magnet kept neat a TV? 6. Magnetic flux density – Units 7. Examples for transformation of energy
<p>AS-3 (Activities/Experiments):</p> <ol style="list-style-type: none"> 1. Oersted Experiment 2. Experiment to prove Faraday's law 	<p>AS-5 (Diagrams/Figures):</p> <ol style="list-style-type: none"> 1. Block diagram of Electric motor 2. Block diagram of A.C. Generator 3. Block diagram of D.C. Generator
<p>AS-2 (Questioning/Prediction):</p> <ol style="list-style-type: none"> 1. Observe the figure given. Magnetic lines are shown. What is the direction of the current flowing through the wire?. 	<p>AS-6 (Daily life uses):</p> <ol style="list-style-type: none"> 1. Applications of Faraday's law 2. How the world change due to relation between electric field and magnetic field.
<p>AS-4 (Information Skills):</p>	



1 MARKS QUESTIONS

(*) Single Star

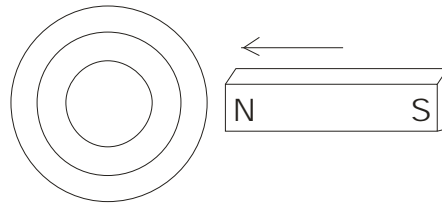
1. Define magnetic flux density or magnetic field induction
2. What is meant by a solenoid?
3. See figure, magnetic lines are shown. In what direction does the current through wire flow?



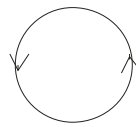
() Two Star**

4. What is meant by an electromagnetism?
5. What is meant by magnetic flux? Write their units.

6. A bar magnet with north pole facing towards coil as shown in fig. What happens to magnetic flux passing through the coil?



7. The direction of current flowing in a coil as shown in the figure. What type of magnetic is formed at the face that has flow of current as shown in figure.



(*) Three Star**

8. A coil is kept perpendicular to page. At P, current flows into the page and at Q it comes out of the page as shown in figure. What is the direction of magnetic field due to coils?



2 MARKS QUESTIONS

(*) Single Star

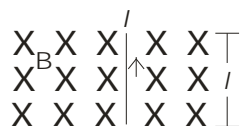
1. Are the magnetic lines closed? Explain.
2. Why does the picture distorted when a bar magnet is brought close to the screen of television? Explain.
3. Rajkumar said to you that the magnetic field lines are you and they start at north pole of bar magnetic and end at south pole. What questions do you ask Rajkumar to correct him by saying field lines are closed?

() Two Star**

4. Give a few applications of faraday's law of induction in daily life.
5. What are the difference between electric motor and a generator?

(*) Three Star**

6. Symbol 'X' indicates the direction of a magnetic field into the page. A straight long wire carrying current along its length is kept perpendicular to the magnetic field. What is the magnetic of force experienced by the wire by the magnetic field? In what direction does it act?



7. Collect information above generation of current by doing faraday's law.

4 MARKS QUESTIONS**(*) Single Star**

1. The value of magnetic induction of uniform field is 2T. What is the flux passing through the surface of area 1.5 m² perpendicular to field?
2. Write the principle and Draw a neat diagram of AC generator. label its parts.
3. Write the principle and Draw a neat diagram of DC generator. label its parts.
4. Write the principle and Draw a neat diagram of electric motor. label its parts.

() Two Star**

5. How can you verify that current carrying wire produces magnetic field with the help of experiment?

(OR)

Explain with the help of one activity that current carrying wire produces magnetic field.

6. Collect information of experiments done by faraday.

(*) Three Star**

7. What experiment do you suggest to understand faraday's law? What material is required? What suggestions do you give to get goat results of the experiments? Give precautions.

(OR)

Explain the FARADAY'S law of induction with the help of two activities.

8. Which of the various methods of current generation protects the nature well? Given examples to support your answer.
9. An 8N force acts on a rectilinear conductor 20 cm long placed perpendicular to magnetic field. Determine the magnetic field induction if the current in the conductor is 40 A.

11. PRINCIPLES OF METALLURGY

(1 mark Questions)

(*) Single Star

1. List three metals that are found in nature as oxide ores?
2. List three metals that are found in nature in uncombined form?
3. Write the names of any two ores of Iron?
4. What is gangue and slag?
5. Which method is useful in concentration of sulphide ore?

() Two Star**

6. Mention two methods which produce very pure metals?
7. What is metallurgy?
8. What is a mineral?
9. What is the chemical formula of slag?
10. What is the refining of metal?
11. What is the compound formed due to tarnishing of silver?
12. What is the compound formed due to green coating on copper?

(*) Three Star**

13. Give example for two sulphide ores?
14. Give formula of the following
a) Horn silver b) Epsom salt
15. What is flux? If impurity is FeO which type of flux do you prefer to remove the impurity?
16. What is the name given to $Fe_2O_3 \cdot xH_2O$?
17. If gangue is acidic which of the following do you choose as flux
1) SiO_2 2) CO_2 3) P_2O_5 4) CaO
18. What is the method used in refinery of tin?
19. Which method is useful in refinery of Zinc?
20. How do you purify blister copper?

(2 MARKS QUESTIONS)

(*) Single Star

1. Write a note on dressing of ore in metallurgy?
2. What is an ore? On what basis a mineral is chosen as an ore?
3. How do metals occur in nature? Give examples to any two types of minerals?

4. Write short notes on each of the following
 - 1) Roasting
 - 2) Calcination
 - 3) smelting
5. What is thermite process ? Mention its application in daily life?
6. Which method do you suggest for extraction of high reactivity metals ? Why ?

() Two Star**

7. Write a short notes which useful in concentration of sulphide ore (froth floatation) .
8. When do we use magnetic separation method for concentration of an ore? Explain with an example?
9. What is the difference between roasting and calcination ? Give one example for each?
10. Magnesium is an active metal if it occurs as a chloride in nature, Which method of reduction is suitable for its extraction ?
11. Write a short notes on Electrolytic refining ?
12. Roasting is carried out on which furnace?
13. Smelting is carried out on which furnace?

(*) Three Star**

14. What is activity series? How it helps in extraction of metals?
15. Do you agree the statement that "All ores are minerals but are minerals need not be ores"? Why ?
16. How do you extract the metals at the bottom of the activity series?
17. Which method is useful to convert Galena into oxide ore ? Explain.
18. Which method is useful to convert lime stone into oxide ore? Explain ?

(4 MARKS QUESTION)**(*) Single Star**

1. Suggest an experiment to prove that the presence of air and water are essential corrosion. Explain the procedure?
2. Collect information about extraction of metals of low reactivity silver , platinum and gold and prepare a report?
3. Draw a neat diagram of furnace used for roasting (Reverberatory furnace) and label its parts?
4. Where do we use hand picking and washing methods in daily life? Give examples. How do you correlate these examples with enrichment of ore?

() Two Star**

5. Draw a neat diagram showing
 - 1) froth floatation
 - 2) Magnetic separation

6. Draw a neat diagram of furnace used for smelting (Blast furnace) and label its parts?

7. Fill the following table

Ore	Formula	Metal
1. Bauxite		
2.	HgS	
3.		Manganese
4. Magnesite		

(*) Three Star**

8. How do you extract metals in the middle of the activity series ? Explain?
9. Explain the methods which produce very pure metals?
10. What is furnace ? Explain parts of furnace?

12. CARBON AND ITS COMPOUNDS

(1MARK QUESTIONS)

(*) Single Star

1. What is catination?
2. Give an example for esterification reaction. What is esterification?
3. Give the names of functional groups.

i) -CHO ii) >C=O

4. What is a functional group?
5. Define allotropy & what are allotropes?
6. What is micelle?

Type your text

() Two Star**

7. Write the general molecular formulas of alkanes, alkenes and alkynes.
8. Name the carboxylic acid used as a preservative.
9. Name the product obtained when ethanol is oxidized by either chromic anhydride or alkaline potassium permanganate.
10. Write the IUPAC name of next homologous of $\text{CH}_3\text{OHCH}_2\text{CH}_3$
11. How ethanoic acid is obtained from ethanol?
12. Name the acid present in Vinegar.
13. Wohler prepared urea, (first organic compound) from an inorganic salt. Name it with chemical formula.
14. Name any two crystalline forms of carbon.
15. Name any two amorphous forms of carbon.
16. What is isomerism?
17. Why do graphite behaves like good conductor electricity?

(*) Three Star**

18. Name the simplest hydrocarbon ?
19. Name of the product formed other than water formed on burning of ethanol in air.
20. Name of simplest ketone & write its molecular formula.
21. Name the compound formed by heating ethanoal at 443 k with excess of con. H_2SO_4 .
22. Write the chemical equation representing the reaction of preparation of ethanol from ethane.
23. How do you condemn the use of alcohol as a social practice?
24. Why alkanes are also called as paraffins?

25. How hydrocarbons are different from carbonhydrates?
26. What is absolute alcohol?

(2 MARKS QUESTIONS)**(* Single Star**

1. Distinguish between esterification and saponification reactions of organic compounds.
2. Why do graphite is used in lubricants and lead in pencils?
3. What is a homologous series? What are the characterstics of features of homologous series?
4. Write IUPAC names of
 - a) C_5H_{12}
 - b) C_7H_{16}
 - c) CH_4
 - d) C_2H_2
5. Draw the lewis dot struture of methane .
6. What happens when a small piece of sodium is dropped ethanol?
7. Allotropy is a property shown by which class of substances,elements, compounds or mixtures ? Explain allotropy with examples.

(Two Star**

8. Explain with the help of a chemical equation . How an addition reaction is used in vegetable ghee industry ?
9. Suggest a test to find the hardness of water and explain the procedure.
10. Write a short note on fullerenes.
11. What is catination. Name two elements which exhibit catenation other than carbon.
12. What are the differnce between Alkanes , Alkenes and Alkynes?
13. What do you mean by denaturated alcohol?
14. What are the chemical reactions shown by acetic acid?
15. Why does carbon form compounds mainly by covalent bonding ?
16. Draw the electronic dot structure of ethane molecule.

(* Three Star**

17. Two carbon compounds A and B have molecular formula C_3H_8 and C_3H_6 respectively . Which one of the two is most likely to show addition ? Justify your answer.
18. Suggest a chemical test to distinguish between ethanol and ethanoic acid and explain the procedure .
19. Give an example each for
 - i) primary amines
 - ii) secondary amines
 - iii) Tertiary amines

20. A mixture of oxygen & ethyne is burnt for welding. Can you tell why a mixture of ethyne and air is not used?
21. What is the use of fullerenes in medicines
22. What are the uses of Nanotubes?
23. Fill the following table

Name of the compound	Hybridization	Bond angle
a) Ethene		
b) Acetylene		
c) Methane		

24. What are the chemical properties shown by Ethanol?

(4 MARKS QUESTIONS)

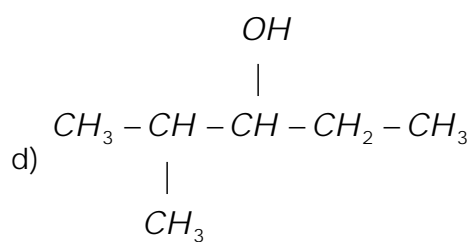
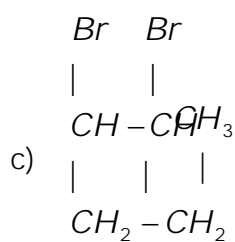
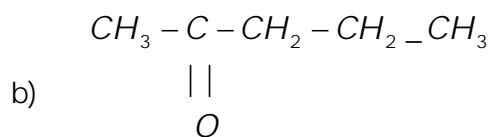
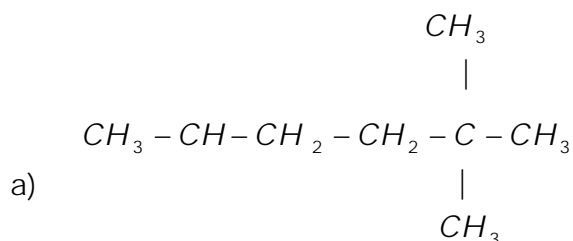
(*) **Single Star**

- Draw all possible structural isomers & IUPAC names of the carbon compound with molecular formula C_5H_{12} .
- Draw the structures of the following
 - Butanone
 - propanol
 - pentanoic acid
 - hexanal
- Explain the cleansing action of soap.
- Explain the structure of graphite in terms of bonding and give one property based on this structure.
- Give IUPAC names of the following compounds . If more than one compound is possible. name all of them.
 - An aldehyde derived from ethane.
 - A ketone derived from butane.
 - a chloride derived from propane
 - an alcohol derived from pentane

(**) **Two Star**

- What are the various possible structural formulae of a compound having molecular formula C_3H_6O ?
 - Give the IUPAC names of the above possible compounds and represent them in structures.
 - What is the similarity in these compounds?

7. An organic compound with molecular formula $C_2H_4O_2$ produces brisk effervescence on addition of sodium carbonate /bicarbonate. Answer the following:
- Identify the organic compound
 - Write the chemical equation for the above reaction .
 - Name the gas evolved.
 - How will you test the gas evolved?
 - List two important uses of the above compound.
8. Draw electron dot structure of Ethanoic acid?
9. Write *IUPAC* names of the following organic compounds :



(*) Three Star**

10. An organic compound 'X' with a molecular formula C_2H_6O undergoes oxidation with alkaline $KMnO_4$ and forms compound Y, that has molecular formula $C_2H_4O_2$
- Identify "X" and "Y".
 - Write your observation regarding the product when the compound "X" is made to react with compound "Y" Which is used as a preservative for pickles.

11. 1 ml glacial acid and 1ml of ethanol are mixed together in a test tube. Few drops of concentrated sulphuric acid are added to the mixture and it is warmed in a water bath for 5 min .

Answer the following:

- Name the resultant compound formed.
 - Represent the above change by a chemical equation .
 - What term is given to such a reaction ?
 - What are the special characteristics of the compound formed?
12. Draw the structures of the following organic compounds :
- 2-chlorobutanol
 - 2,3 - Dichloropropanal
 - Pent-4-en-2-ol
 - 2,3-dimethylcyclo- hexan - 1-ol.
13. Explain the various chemical reactions shown by carbon compounds?

BITS

2. Chemical Reactions and Equations

- $Fe_2O_3 + 2Al \rightarrow Al_2O_3 + 2Fe$ The above reaction is an example of ()
A) Combination reaction B) Decomposition reaction
C) Displacement reaction D) Double decomposition reaction
- What happens when dil. Hydrochloric acid is added to iron fillings? ()
A) hydrogen gas and iron chloride are produced
B) chlorine gas and iron hydroxide are produced
C) no reaction takes place
D) iron salt and water are produced
- $2PbO_{(s)} \rightarrow 2Pb_{(s)} + CO_2(g)$ Which of the following statements are correct for the above chemical reaction? ()
i) lead is reduced ii) carbon dioxide is oxidized
iii) carbon is oxidized iv) lead oxide is reduced
A) (i) and (ii) B) (i) and (iii) C) (i), (ii) & (iii) D) all
- The chemical equation : $BaCl_2 + Na_2SO_4 \rightarrow BaSO_4 + 2NaCl$ represents following type of chemical reaction. ()
A) displacement B) Combination
C) decomposition D) double - displacement
- The reaction of formation of hydrogen chloride from hydrogen and chlorine represents following type of chemical reaction. ()
A) decomposition B) displacement
C) combination D) double - displacement
- In the chemical reaction - $Fe_2O_3 + 2Al \xrightarrow{\Delta} 2Fe + Al_2O_3$, the symbol Δ represents ()
A) compressing B) heating
C) cooling D) smelting
- The reaction in which heat is absorbed is called ()
A) exothermic reaction B) endothermic reaction
C) catalytic reaction D) reversible reaction

8. Identify the exothermic reaction among the following. ()
A) $C + O_2 \rightarrow CO_2$ B) $N_2 + O_2 \rightarrow 2NO$
C) $Ca + H_2O \rightarrow Ca(OH)_2$ D) all the above
9. Atomic mass of oxygen ()
A) 8U B) 23U C) 27U D) 16U
10. Chemical reactions occur with the _____ of chemical bonds.()
A) formation B) breaking
C) both A & B D) None
11. A reaction in which a single product is formed from two or more reactions known as : ()
A) combination reaction B) decomposition reaction
C) displacement reaction D) double decomposition reaction
12. The metal formed when zinc reacts with $AgNO_3$ is ()
A) Au B) Ag C) Al D) Cu
13. The colour of the precipitate of lead iodide is ()
A) purple B) light green C) blue D) yellow
14. A chemical reaction which occurs in the presence of sun light is called ()
A) catalytic reaction B) thermal decomposition reaction
C) photo - electric reaction D) photo - chemical reaction
15. A chemical reaction in which one element displaces another element from compound and takes its place is called ()
A) decomposition reaction B) combination reaction
C) displacement reaction D) double - displacement

II. Fill in the blanks

16. The decomposition of vegetables into compost is an example of _____
17. The chemical reactions in which energy is absorbed to form a new compound is called _____
18. The reaction $2N_2O \rightarrow 2N_2 + O_2$ is an example for _____

19. The reaction $\text{Ca} + 2\text{H}_2\text{O} \rightarrow \text{Ca}(\text{OH})_2 + \text{H}_2 \uparrow$ is an example for _____ reaction.
20. The substances that are present on left side of a chemical equation are called _____
21. The arrow mark between the reactants and products of a chemical equation shows _____

KEY

1	2	3	4	5
C	A	B	D	C
6	7	8	9	10
B	B	A	D	C
11	12	13	14	15
A	B	D	D	C

16. Thermal decomposition reaction
17. Endothermic
18. Decomposition reaction
19. Displacement
20. Reactants
21. Direction of the reaction

4. Acids bases and salts

- The colour of methyl orange indicator in acidic medium is ()
A) yellow B) green C) orange D) red
- The colour of phenolphthalein indicator in basic solution is ()
A) yellow B) green C) pink D) orange
- Colour of methyl orange in alkali conditions _____ ()
A) orange B) yellow C) red D) blue
- A solution turns red litmus blue, the PH is likely to be _____()
A) 1 B) 4 C) 5 D) 10
- A solution reacts with crushed egg shells to give a gas that turns lime-water milky, the solution contains _____ ()
A) NaCl B) HCl C) LiCl D) KCl
- If a base dissolves in water, by what name is it better known?()
A) neutralization B) basic C) acid D) alkali
- Which of the following substances when mixed together will produce table salt ()
A) Sodium thiosulphate and sulphur dioxide
B) Hydrochloric acid and sodium hydroxide
C) Chlorine and oxygen
D) Nitric acid and sodium hydrogen carbonate
- What colour would hydrochloric acid ($P^H = 1$) turn universal indicator?()
A) orange B) purple C) yellow D) red
- Which one of the following types of medicines is used for treating indigestion. ()
A) antibiotic B) analgesic C) antacid D) antiseptic
- What gas is produced when magnesium is made to react with hydrochloric acid ()
A) hydrogen B) oxygen
C) carbon dioxide D) no gas is produced

11. Which of the following is the most accurate way of showing neutralization ? ()
- A) acid + base \rightarrow acid - basic solution
B) acid + base \rightarrow salt + water
C) acid + base \rightarrow sodium chloride + hydrogen
D) acid + base \rightarrow neutral solution
12. The gas liberated when zinc reacts with dilute HCl is ()
- A) oxygen
B) nitrogen
C) carbondioxide
D) hydrogen
13. A metal that does not react with hydrochloric acid ()
- A) Au
B) Zu
C) Mg
D) all
14. The acid formed when CO_2 is dissolved in water : ()
- A) carboxylic acid
B) citric acid
C) carbonic acid
D) all the above
15. The salt formed when MgO reacts with sulphuric acid is ()
- A) Mg_3S_2
B) MgO_3
C) $MgSO_4$
D) $MgSO_2$
16. The gas liberated when zinc reacts with sodium hydroxide. ()
- A) CO_2
B) H_2
C) N_2
D) SO_2
17. The acid which gives sour taste to pickles is ()
- A) nitric acid
B) sulphuric acid
C) Oxalic acid
D) acetic acid
18. The acid formed when N_2O_5 is dissolved in water: ()
- A) nitrous acid
B) carbonic acid
C) oxalic acid
D) nitric acid

19. When sodium oxide is dissolved in water we get : ()
A) NaOH B) NaH_2 C) NaCl D) $Na(OH)_2$
20. A non metallic oxide among the following is: ()
A) Na_2O B) CaO C) N_2O_3 D) K_2O

KEY

1	2	3	4	5	6	7	8	9	10
D	C	B	D	B	D	B	D	C	A
11	12	13	14	15	16	17	18	19	20
B	D	A	C	C	B	D	D	A	C

8. Structure of atom

- An emission spectrum consists of bright spectral lines on a dark background which one of the following does not correspond to the bright spectral lines? ()
A) frequency of emitted radiation
B) wave length of emitted radiation
C) energy of emitted radiations
D) velocity of light
- The maximum number of electrons that can be accommodated in the L shell of an atom is ()
A) 2 B) 4 C) 8 D) 16
- If $l=1$ for an atom then the number of orbitals in its sub-shell is ()
A) 1 B) 2 C) 3 D) 0
- The quantum number which explains about size and energy of the orbit or shell is ()
A) n B) l C) m_l D) m_s
- Total number of orbitals associated with third shell is ()
A) 2 B) 4 C) 9 D) 3
- Which of the following orbitals has least energy? ()
A) K B) L C) M D) N
- How many elliptical orbits are possible for a given $n=6$? ()
A) 3 B) 4 C) 5 D) 7
- Bohr's atomic model explains the spectrum of _____ ()
A) He^+ B) Li^{+2} C) H D) all
- Which of the following orbitals has highest energy? ()
A) 3p B) 4s C) 3d D) 4p

10. The maximum number of unpaired electrons which can exist in an orbital according to Pauli's exclusion principle. ()
A) 1 B) 2 C) 3 D) many
11. If $n=4$, the total number of p orbitals is : ()
A) 3 B) 6 C) 9 D) 12
12. The property possessed by the p orbitals : ()
A) no orientation B) spherical
C) five degenerate orbitals D) has three orientations
13. The number of 's' electrons in sodium atom is ()
A) 5 B) 10 C) 6 D) 11

II. Fill in the blanks:

14. If $n=1$ then angular momentum quantum number (l) = _____
15. If a sub-shell is denoted as $2p$ then its magnetic quantum number values _____
16. Maximum number of electrons that an M-shell contain is / are _____
17. For 'n' the minimum value is _____ and the maximum values in infinity
18. For 'l' the minimum value is _____ and the maximum values _____
19. For ' m_l ' the minimum value is _____ and the maximum values _____
20. The value of ' m_s ' for an electron spinning in clockwise direction, is _____ and for anti-clockwise direction is _____

1	2	3	4	5
D	C	C	A	D
6	7	8	9	10
A	C	D	D	A
11	12	13		
A	D	A		

14. 0
15. -1,0, +1
16. 18
17. 1, value is infinity
18. 0,n-1
19. -1,+1
20. $+1/2$, $-1/2$

9. Classification of elements-Periodic table

- Number of elements in period (2) of the long form of periodic table. ()
A) 2 B) 8 C) 18 D) 32
- Nitrogen ($Z = 7$) is the element of group V of the periodic table which of the following is the atomic number of the next element in the group. ()
A) 9 B) 14 C) 15 D) 17
- Electron configuration of an atom is 2,8,7 to which of the following elements would it be chemically similar. ()
A) nitrogen ($Z=7$) B) fluorine ($Z=9$)
C) phosphorus ($Z=15$) D) argon ($Z=18$)
- Which of the following is the most active metal? ()
A) lithium B) sodium C) potassium D) rubidium
- The element which has the highest ionization energy: ()
A) carbon B) nitrogen C) boron D) oxygen
- The property of attracting the bonded electron pair more towards it is called ()
A) electro positivity B) electro negativity
C) electron affinity D) ionization potential
- The region in long form periodic table where most of the non metals are present ()
A) s block B) d block C) f block D) p block
- The element which has the property of losing an electron to a greater extent is ()
A) Be B) Li C) F D) O
- The elements which have incompletely filled orbitals before the outermost orbit are called : ()
A) transition elements B) representative elements
C) inner transition elements D) dissimilar elements

10. Law of octaves was first proposed by : ()
- A) Dobereiner B) John Newlands
 C) Mendeleef D) Mosely

II. Fill in the blanks

11. Lithium, _____ and potassium constitute Dobereiner's Triad.
12. _____ was the basis of the classifications proposed by Dobereiner Newlands and Mendeleeff.
13. Noble gases belong to _____ group of periodic table.
14. The incomplete period of the periodic table is _____
15. The element at the bottom of a group would be expected to show _____ metallic character than the element at the top.

1	2	3	4	5
B	C	B	D	B
6	7	8	9	10
B	D	B	A	B

11. Sodium
12. Atomic weight
13. VIII A
14. Seventh
15. More

10. Chemical Bonding.

- Which of the following elements is electronegative? ()
A) sodium B) oxygen C) magnesium D) calcium
- An element ${}_{11}X^{23}$ forms an ionic compound with another element 'Y'. Then the charge on the ion formed by 'X' is ()
A) +1 B) +2 C) -1 D) -2
- An element 'A' forms a chloride ACl_4 . The number of electrons in the valence shell of 'A' is ()
A) 1 B) 2 C) 3 D) 4
- The number of valence shell electrons that a group IA element loses to get octet configuration : ()
A) 7 B) 2 C) 1 D) 2
- Noble gases belong to the following group : ()
A) Group VIIA B) Group V A C) Group III A D) Group VIII A
- Any species attains stability when it has _____ number of electrons in its valence shell : ()
A) 1 B) 2 C) 3 D) 8
- The force of attraction between any two atoms or a group of atoms that result in a stable entity is known as : ()
A) chemical bond B) crystalline bond
C) crystal lattice D) none of these
- Ionic bond is also called : ()
A) metallic bond B) electrovalent bond
C) coordinate covalent bond D) none of these
- An example of an ionic compound ()
A) $MgCl_2$ B) NH_3 C) H_2O D) all of these
- The negative ion formed from chlorine atom is called ()
A) cation B) anion C) neutral ion D) all of these

11. The scientist who proposed the ionic bond is : ()
 A) Lewis B) Rutherford C) Lavoiser D) Kossel
12. The bond formed when two atoms share their valency electrons between them _____ ()
 A) Ionic B) Covalent C) Electrovalent D) Metallic

II. Fill in the blanks

13. Electrons in _____ shell are called valence electrons.
14. Except _____ gas all other noble gases have octet configuration in their valence shell.
15. Covalency of elements explains about number of _____ formed by the atom.
16. Valence bond theory was proposed by _____
17. In _____ bonding the valence electrons are shared among all the atoms of the metallic elements.

1	2	3	4	5
B	A	D	C	D
6	7	8	9	10
D	A	B	A	B
11	12			
D	B			

13. Valence
14. Helium
15. Bonds
16. Linus Pauling
17. metallic

13. Principles of metallurgy

- The impurity present in the ore is called as _____ ()
A) gangue B) flux C) slag D) mineral
- Which of the following is a carbonate ore? ()
A) magnesite B) bauxite C) gypsum D) galena
- Which of the following is the correct formula of gypsum? ()
A) $\text{CuSO}_4 \cdot 2\text{H}_2\text{O}$ B) $\text{CaSO}_4 \cdot 1/2 \text{H}_2\text{O}$
C) $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ D) $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$
- The oil used in Froth floatation process is _____ ()
A) kerosene oil B) pine oil C) coconut oil D) olive oil
- Froth floatation is the method used for purification of _____ ore. ()
A) sulphide B) oxide C) carbonate D) nitrate
- Galena is an ore of _____ ()
A) Zn B) Pb C) Hg D) Al
- The metal that occurs in the native form is _____ ()
A) Pb B) Au C) Fe D) Hg
- The most abundant metal in the earth's crust is _____ ()
A) silver B) aluminium C) zinc D) iron
- The reducing agent in thermite process is _____ ()
A) Al B) Mg C) Fe D) Si
- The purpose of smelting an ore is to _____ it. ()
A) oxidise B) reduce
C) neutralise D) none of the these

1	2	3	4	5
A	A	D	B	A
6	7	8	9	10
B	B	B	A	B
11	12	13		
A	D	C		

14. Froth flotation
15. Activity series
16. Distillation
17. air , water
18. Calcination

14. carbon and its compounds

- Which of the four test tubes containing the following chemicals shows the brisk effervescence while dilute acetic acid was added to them.
i) KOH ii) NaHCO_3 iii) K_2CO_3 iv) NaCl ()
A) i & ii B) ii & iii C) i & iv D) ii & iii
- Which of the following solutions of acetic acid in water can be used as preservative? ()
A) 5-10 % B) 10-15 % C) 15-20% D) 100%
- The suffix for naming an aldehyde is _____ ()
A) -ol B) -al C) -one D) -ene
- Acetic acid when dissolved in water it dissociates into ions reversibly because it is a _____ ()
A) weak acid B) strong acid C) weak base D) strong base
- Which one of the following hydrocarbon can show isomerism? ()
A) C_2H_4 B) C_2H_6 C) C_3H_8 D) C_4H_{10}
- Combustion of hydrocarbon is generally accompanied by the evolution of _____ ()
A) heat
B) light
C) both heat and light
D) electric current
- 2 ml of ethanoic acid was taken in each of the three test tubes A, B and C and 2 ml, 4ml and 8ml water is added to them respectively. clear solution is obtained in _____ ()
A) test tube A only
B) test tubes A & B only
C) test tubes B & C only
D) all the test tubes

8. If 2 ml acetic acid was added slowly in drops to 5ml of water then we will notice ()
- A) The acid forms a separate layer on the top of water
B) Water forms a separate layer on the top of the acid
C) Formation of a clear and homogeneous solution .
D) Formation of a pink and clear solution
9. A few drops of ethanoic acid were added to solid sodium carbonate. The possible results of the reactions are ()
- A) a hissing sound was evolved
B) brown fumes evolved
C) brisk effervescence occurred
D) a pungent smelling gas evolved
10. When acetic acid reacts with ethyl alcohol, we add conc. H_2SO_4 , It acts as _____and the process is called ()
- A) oxidizing agent, saponification
B) dehydrating agent, esterification
C) reducing agent, esterification
D) acid & esterification
11. The number of covalent bonds that a carbon atom can form is ()
- A) 2 B) 4 C) 6 D) 1
12. In excited state a carbon atom gets its one of the '2s' electrons to()
- A) $2P_x$ B) $2P_y$ C) $2P_z$ D) 3s
13. The bond angle in methane molecule ()
- A) $109^{\circ}28'$ B) $104^{\circ}31'$ C) $107^{\circ}48'$ D) 120°
14. The carbon compound having sp^2 hybridization ()
- A) CH_4 B) C_2H_4 C) C_2H_2 D) C_4H_{10}

15. Amorphous allotrope of carbon is : ()
- A) graphite B) diamond
C) sugar charcoal D) fullerenes
16. The hardest allotrope of carbon : ()
- A) graphite B) lamp black C) diamond D) fullerenes

1	2	3	4	5	6	7	8	9	10
B	A	B	A	D	C	D	C	C	B
11	12	13	14	15	16				
B	C	A	B	C	C				

HUMAN EYE AND COLOURFUL WORLD

1. When objects at different distances are seen by the eye, which of the following remain constant?
A) Focal length of eye-lens B) Object distance from eye lens
C) The radii of curvature of eye-lens D) Image distance from eye lens
2. The human eye forms the image of an object
A) Cornea B) Iris C) Pupil D) Retina
3. The least distance of distinct vision for a young adult with normal vision is about
A) 25 m B) 2.5 cm C) 25 cm D) 2.5 m
4. We can see the sun before the actual sunrise by about
A) 5 minutes B) 2 minutes C) 2 hours D) 20 minutes
5. The light which bends most and least are
A) Red and Blue B) Blue and Red
C) Violet and D) Red and Violet
6. The minimum focal length of eye lens for the person of hypermetropia is greater than
A) 2.5 cm B) 2.27 cm C) 2.5 m D) 2.27 cm
7. Which of the following lenses are used to correct presbyopia of a person
A) Bi-concave B) Bi-Convex C) Bi-focal D) Plano Convex
8. Which of the following is the coloured part that we see in an eye?
A) Iris B) Retina C) Cornea D) Pupil
9. The relation between the speed of wave (v), speed wavelength (λ) and frequency (f) is
A) $v = \lambda f$ B) $f = v\lambda$ C) $\lambda = vf$ D) $v = f\lambda$
10. At the angle of minimum deviation (D), the angle of incidence is equal to the angle of
A) Critical angle B) Refraction C) Reflection D) Emergence
11. At which angle of scattering the intensity is maximum?
A) 45° B) 90° C) 30° D) 0°
12. Which of the following is unit of power of lens?
A) Dioptre B) Hertz C) mm D) cm
13. Which of the following lenses are needed to correct one's myopia?
A) Bi-convex B) Bi-Concave C) Bi-focal D) plano - Convex
14. A healthy person can see objects at all distances more than _____ clearly
A) 25 cm B) 30 cm C) 35 cm D) 20 cm

15. Which of the following molecules are the reason blue sky?
A) H_2O B) H_2 C) N_2, O_2 D) CO_2
16. The angle of vision for a healthy human being about
A) 60° B) 30° C) 45° D) 90°
17. Which of the following reports in the retina identify the colour?
A) Cones B) Optic - nerve C) Rods D) Iris
18. Which of the following is the value of power of
A) $P=1/f$ (in m) B) $P=100/f$ (in (m) C) $P=50/f$ (in (m) D) A and B
19. How many receptors called as rods and cones are there in the retina of eye
A) 2.25 million B) 325 million C) 125 million D) 425 million
20. The size of an object as perceived by an depends primarily on
A) Actual size of the object
B) Distance of the object from the eye
C) Aperture of the pupil
D) Size of the image formed on the retina

KEY

- | | | | | |
|-------|-------|-------|-------|-------|
| 1. A | 2. D | 3. C | 4. B | 5. C |
| 6. B | 7. C | 8. A | 9. D | 10. D |
| 11. B | 12. A | 13. B | 14. A | 15. C |
| 16. A | 17. C | 18. D | 19. C | 20. B |

ELECTRIC CURRENT

- A uniform wire of resistance 50Ω is cut into five equal parts. These parts are now connected in parallel then the equivalent resistance of the combination is
 A) 2Ω B) 12Ω C) 250Ω D) 6250Ω
- Ohm/Coulomb is the same as
 A) 1-watt B) 1-volt C) 1-ampere D) 1-ohm
- _____ is an electric discharge between two clouds or between cloud and earth.
 A) Lightning B) Thunder C) Rain D) Sunlight
- In SI unit of electric current
 A) Volt B) Ampere C) Ohm D) Ohm-meter
- Electron density of copper is
 A) $1.602 \times 10^{-19} C$ B) $8.5 \times 10^{28} m^{-3}$
 C) $5.8 \times 10^{28} m^{-3}$ D) $16.02 \times 10^{-19} C$
- The magnitude of electric charge is _____ C
 A) 1.602×10^{-19} B) 1.206×10^{-19}
 C) 1.062×10^{-19} D) None
- The melting point of tungsten is _____ $^{\circ}C$
 A) 4322 B) 2342 C) 2234 D) 3422
- Electric power = _____
 A) $V \cdot iR$ B) $p=Vi$ C) $\epsilon =pt$ D) None of these
- The SI unit of power is _____
 A) Volt B) Ampere C) Watt D) KWH
- Electric energy = _____
 A) $V = iR$ B) $p = Vi$ C) $\epsilon = pt$ D) None of these
- $\frac{1 \text{ volt}}{1 \text{ ampere}} =$
 A) 1 Ohm B) 1 joule C) 1 watt-hour D) 1 watt
- An example of ohmic conductor
 A) Copper B) Nichrome C) Germanium D) Silicon
- $1 \text{ volt} \times 1 \text{ Coulomb} =$
 A) 1 ohm B) 1 Ampere C) 1 joule D) 1 watt

14. Fuse wire is an alloy of
 A) Copper + Zinc
 B) Copper + Zinc
 C) Alluminium + Copper + Zinc
 D) Tin + Lead
15. Watt is the unit of
 A) specific resistance
 B) work
 C) power
 D) potential difference
16. The mathematical representation of Ohm's law :
 A) $I = \frac{R}{V}$
 B) $I = \frac{V}{R}$
 C) $I = V \times R$
 D) $I = V + R$
17. If the length and radius of a conductor are both halved, the resistance becomes
 A) Doubled
 B) 4 times
 C) halved
 D) doesn't change
18. The electric current is _____ quantity
 A) Vector
 B) Scalar
 C) scalar or vector
 D) None of these
19. In the formula $\rho = \frac{Ra}{l}$, the letter 'a' stands for _____
 A) length
 B) specific resistance
 C) cross-sectional area
 D) material radius
20. The electrical appliance that gives steady e.m.f is _____
 A) Ammeter
 B) Voltmeter
 C) Motor
 D) Battery

KEY

- | | | | | |
|-------|-------|-------|-------|-------|
| 1. A | 2. B | 3. A | 4. B | 5. B |
| 6. A | 7. D | 8. B | 9. C | 10. C |
| 11. A | 12. A | 13. D | 14. D | 15. B |
| 16. B | 17. A | 18. B | 19. C | 20. D |

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