Holiday Home Work (2019-20)

(Class -11)

English

1. Read the following passage carefully and answer the questions that follow:

My Vision of My India

In 3000 years of our history people from all over the world have come and invaded us, captured our lands, conquered our minds. From Alexander onwards, the Greeks, the Turks, the Moguls, the Portuguese, the British, the French, the Dutch, all of them came and looted us, took over what was ours. Yet we have not done this to any other nation. We have not conquered anyone. We have not grabbed their land, their culture, their history and tried to enforce our way of life on them. Why? Because we respect the freedom of others!

That is why my first vision is that of FREEDOM. I believe that India got its first vision of this in 1857, when we started the War of Independence. It is this freedom that we must protect and nurture and build on. If we are not free, no one will respect us.

My second vision for India is DEVELOPMENT. For fifty years we have been a developing nation. It is time we see ourselves as a developed nation.

I have a third vision. India must stand up to the world. Because I believe that unless India stands up to the world, no one will respect us. Only strength respects strength. We must be strong not only as a military power but also as an economic power. Both must go hand in hand.

My good fortune was to have worked with three great minds, Dr. Vikram Sarabhai of the Dept. of Space, Professor Satish Dhawan, who succeeded him and Dr. Brahm Prakash, father of nuclear material. I was lucky to have worked with all three of them closely and consider this the great opportunity of my life. Here I am reminded of an instance – One day an orthopaedic surgeon from Nizam Institute of Medical Sciences visited my laboratory. He lifted the material and found it so light that he took me to his hospital and showed me his patients. There were these little girls and boys with heavy metallic calipers weighing over three kg each, dragging their feet around. He said to me:" Please remove the pain of my patients". In three weeks, we made these Floor reaction Orthosis 300 gram calipers and took them to the orthopaedic centre. The children didn't believe their eyes. From dragging around a three kg load on their legs, they could now move around! Their parents had tears in their eyes. That was bliss to me.

I have a question: Why is the media here so negative? Why are we in India so embarrassed to recognize our own strengths, our achievements? We are such a great nation. We have so many amazing success stories but we refuse to acknowledge them. Why? Another question: Why are we, as a nation so obsessed with foreign things? We want foreign TVs, we want foreign shirts. We want foreign technology. Why this obsession with everything imported? Don't we realise that self-respect comes with self-reliance?

I was in Hyderabad giving this lecture, when a 14 year old girl asked me for my autograph. I asked her what her goal in life is: She replied: 'I want to live in a developed India.' For her, you and I will have to build this developed India. You must proclaim. India is not an underdeveloped nation; it is a highly developed nation in an advanced state of decay! Got 10 minutes for your country? If yes, then read; otherwise, choice is yours. (Dr. A.P.J.Abdul Kalam)

A. Choose the best alternative from the answers given below:

a) India has been plundered by:
   i) the Greeks and the Portuguese   ii) the French and the Dutch   iii) the British   iv) all of the above

b) What does the author mean when he says -Yet we have not done this to other nations.
   i) India has not conquered and plundered other nations
   ii) India has not snatched away the history and culture of other nations
   iii) Both (i) and (ii)   iv) None of the above

c) India has not conquered other nations because –
   i) India is afraid of other nations   ii) India respects the freedom of other countries
   iii) India lacks military strength   iv) All of the above

d) When did Indians first have the vision of freedom?
   i) In 1857 during the first war of independence   ii) During the First World War
   iii) During the Quit India Movement   iv) None of the above

e) Dr. A.P.J. Abdul Kalam envisages India which is....
   i) Free and developed   ii) Militarily and economically strong   iii) Self- reliant   iv) All of the above

f) How long did it take to make Orthosis 300 gm calipers?
   i) One week   ii) two weeks   iii) three weeks   iv) four weeks

B. Answer the following questions in reference to the above passage:
   a. What does Dr. Kalam want us to protect and nurture?
   b. Why must India stand up to the world?
   c. Name the great scientists who inspired A.P.J. Abdul Kalam.
   d. Why do we need to give up our obsession with foreign things?
   e. Explain briefly the statement: 'That was bliss to me'
   f. Find the synonym of 'Nurse' from the above passage.

2. On the occasion of Anti - Corruption Day, you have been asked to write an article in 150- 200 words on the topic *'Minimization of Human Wants is the Only Way to Cleanse the Society of All Kinds of Corruption'* You are Avni / Anuj of Class XI.

3. Cut out one clipping of each of the given Classified Advertisements (from an English Newspaper). Paste them in your notebook with headings – 1. For Sale   2. To Let   3. Situation Vacant   4. Matrimonial 5. Missing Pet/Person 6. Travels & Tours

4. The following passage has not been edited. There is one error in each line. Write the incorrect word and the correction in your answer sheet. Remember to underline the word that you have supplied:

	Incorrect	Correct
Overeating was one of the most wonderful	a............	....
practices between those who think they	b............	....
can afford it. In fact, authorities says that	c............	....
nearly all which can get as much as	d............	....
they desire overeat to his	e............	....
disadvantage. This classes of people	f.............	....
could save a great most food	g............	....
from missing one meal per week.	h............	....

5. Rearrange the words so that they are in the correct order. (Use appropriate punctuation)
a) in service/ his village/far/from/a simpleton/was
b) heard/his home/nothing from/he/many days/and passed
c) long for/his wife/he/waited
d) he/sent/his wife/a message/that/a widow/had become/she
e) same words/repeated/the/of/the messenger/the man
f) the messenger/believed/the fool/tell a lie/won't/that
g) began to wail/on/the message/the wife/hearing

6. Rewrite the given passage putting the verbs given within the brackets in their correct tense.

My family and I (suffer) a good deal with the noise (make) by the guests of our neighbours when they (leave) their house on Saturday nights. They (stand) on the street, (laugh) loudly and (bid) goodbye to them and to each other. Then they (get) into their cars (bang) the doors loudly, and finally they (reverse) their cars and (leave).

7. Rewrite the following passage using the verbs (in brackets) in their correct form:

For a while I 1) ___ (can) not decide whether I should speak to her or not. I did not have the guts to tell her that her mother 2) ___ (die) before the doctor 3) ___ (arrive). She 4) ___ (turn) her eyes towards me. She 5) ___ (anxious) to know about her mother. I 6) ___ (collect) courage and 7) ___ (move) my lips and silently told her that her mother 8)___ (pass away).

8. Correct the following sentences using proper tense forms:

(a) I am liking it very much.
(b) Madhu is always writing beautiful poems.
(c) If you will go to Ludhiana, buy a good shawl for me.
(d) Where you got this pen from?
(e) Rohit is working in this film for ten years.
(f) These students prepare for their exams these days.

9. Answer the following questions in 30-40 words:

1. When people are pious and good even Nature mourns their death. Justify with reference to *The Portrait of a Lady.*
2. Why was Aram delighted and frightened at the same time when he saw his cousin Mourad on a beautiful white horse?
3. Identify the literary devices used in the poem *A Photograph* and discuss their meanings.
4. Human life is fugacious in contrast to nature. Comment on the statement in the light of the poem *A Photograph.*

10. Answer the following question in 120-150 words:

1. Sketch the character of Khushwant Singh's grandmother.
2. How would you describe the Garoghlanian tribe? Which character of the story impresses you the most and why?

Mathematics

Chapters 1. Sequences & Series   2. Trigonometric Functions

1. Determine k so that $k + 2, 4k - 6 \text{ and } 3k - 2$ are the three consecutive terms of an A.P.
2. If 7 times the 7th term of an A.P. is equal of an A.P. is equal to 11 times its eleventh term, show that the 18th term of the A.P. is zero.
3. If m times the mth term of an A.P. is equal to n times its nth term, then prove that the $(m + n)th$ term of the A.P. is zero.
4. The digits of a positive integer having three digits are in A.P. and their sum is 15. The number obtained by reversing the digits is 594 less than the original number. Find the number.
5. Find the common difference of an A.P. whose first term is 100 and the sum of whose first six terms is five times the sum of the next six terms.
6. If $S_1, S_2, S_3 \dots S_p$ are the sums, each to n terms of p A.P.'s whose first terms are 1, 2, 3, ... and common differences are 1, 3, 5, 7, ... respectively. Show that $S_1 + S_2 + S_3 + \dots + S_p = \frac{np}{2} (np + 1)$.
7. If a, b, c are in A.P., prove that $a^3 + c^3 + 6abc = 8b^3$.
8. The product of first three terms of a G.P. is 1000. If we add 6 to its second term and 7 to its third term, the resulting three terms form an A.P. Find the terms of the G.P.
9. The sum of an infinite number of terms of a G.P. is 15 and the sum of their squares is 45. Determine the first term and the common ratio.
10. An insect starts from a point and travels in a straight path one mm in the first second and half of the distance covered in the previous second in the succeeding second. In how much time would it reach a point 3 mm away from its starting point?
11. If a, b, c are in G.P. and x is the A.M. between a and b, y is the A.M. between b and c, prove that $\frac{a}{x} + \frac{c}{y} = 2$ and $\frac{1}{x} + \frac{1}{y} = \frac{2}{b}$.
12. Sum of the following series to a terms :
    $3 + 5 + 9 + 17 + 33 + \dots$
13. If $a_1, a_2, a_3, \dots a_n$ are in A.P., where $a_i > 0$ for all i, show that
    $$\frac{1}{\sqrt{a_1}+\sqrt{a_2}} + \frac{1}{\sqrt{a_2}+\sqrt{a_3}} + \dots + \frac{1}{\sqrt{a_{n-1}}+\sqrt{a_n}} = \frac{n-1}{\sqrt{a_1}+\sqrt{a_n}}$$

14. What is the ratio of the radii of two circles, at the centres of which two arcs of the same length subtend angles of 60o and 75o?
15. Find the angle between the minute hand of a clock and the hour hand when the time is 7 : 20.
16. Find the distance from the eye at which a coin of diameter 2 cm should be held so as just to conceal the full moon whose angular diameter is 31.
17. Prove that $(1 + cotA - cosecA)(1 + tanA + secA) = 2$.
18. If $sin\theta + cos\theta = m$ and $sec\theta + cosec\theta = n$, prove that $n(m + 1)(m - 1) = 2m$.
19. Prove that $\left(\frac{1}{sec^2\theta - cos^2\theta} + \frac{1}{cosec^2\theta - sin^2\theta}\right) sin^2\theta cos^2\theta = \frac{1-cos^2\theta sin^2\theta}{2+sin^2\theta cos^2\theta}$
20. Prove that $cos24^o + cos55^o + cos125^o + cos204^o + cos300^o = \frac{1}{2}$.
21. Prove that $sin^2\frac{\pi}{18} + sin^2\frac{\pi}{9} + sin^2\frac{7\pi}{18} + sin^2\frac{4\pi}{9} = 2$.
22. If $A + B = 225^o$, prove that $\frac{cotA}{(1+cotA)} \cdot \frac{cotB}{(1+cotB)} = \frac{1}{2}$.
23. Prove that $2cos\frac{\pi}{13}cos\frac{9\pi}{13} + cos\frac{3\pi}{13} + cos\frac{5\pi}{13} = 0$.
24. Solve $2cos^2\theta + 3\sqrt{3}sin\theta - 5 = 0$
25. Solve $tan\theta + tan2\theta + \sqrt{3}tan\theta tan2\theta = \sqrt{3}$
26. In a class of 60 students, 25 students play cricket and 20 students play tennis, and 10 students play both the games. Find the number of students who play neither?
27. In a survey of 200 students of a school, it was found that 120 study Mathematics, 90 study Physics and 70 study Chemistry, 40 study Mathematics and Physics, 30 study Physics and Chemistry, 50 study Chemistry and Mathematics and 20 none of these subjects. Find the number of students who study all the three subjects.
28. From 50 students taking examinations in Mathematics, Physics and Chemistry, each of the student has passed in at least one of the subject, 37 passed Mathematics, 24 Physics and 43 Chemistry. At most 19 passed Mathematics and Physics, at most 29 Mathematics and Chemistry and at most 20 Physics and Chemistry. What is the largest possible number that could have passed all three examination?
29. For all sets A, B and C Is $(A - B) \cap (C - B) = (A \cap C) - B$? Justify your answer.
30. Find the domain and Range of the function $f(x) = \frac{1}{\sqrt{x-5}}$
31. If $f(x) = x^3 - \frac{1}{x^3}$, then $f(x) + f(1/x)$ is equal to ?
32. Find x and y if: (i) $(4x + 3, y) = (3x + 5, -2)$ (ii) $(x - y, x + y) = (6, 10)$
33. Find the range of the following functions given by $f(x) = 1 + 3 cos2x$

34. Let A = {–1, 2, 3} and B = {1, 3}. Determine (i) A × B (ii) B × A
35. Find the values of x for which the functions f (x) = 3x 2 – 1 and g (x) = 3 + x are equal
36. Use the properties of sets to prove that for all the sets A and B   A – (A ∩ B) = A – B
37. Find the range of the following functions given by (i) $f(x) = \frac{|x-4|}{x-4}$
38. The set (A ∩ B')' ∪ (B ∩ C) is equal to
39. (A) A′ ∪ B ∪ C   (B) A′ ∪ B   (C) A′ ∪ C′   (D) A′ ∩ B
40. In a group of 50 students, the number of students studying French, English, Sanskrit were found to be as follows: French = 17, English = 13, Sanskrit = 15 French and English = 09, English and Sanskrit = 4 French and Sanskrit = 5, English, French and Sanskrit = 3.
41. Find the number of students who study
    (i) French only   (ii) French and Sanskrit but not English   (iii) English only
    (iv) French and English but not Sanskrit   (v) Sanskrit only
    (vi) at least one of the three languages   (vii) English and Sanskrit   (viii) none of the three languages but not French
42. In a town of 10,000 families it was found that 40% families buy newspaper A, 20% families buy newspaper B, 10% families buy newspaper C, 5% families buy A and B, 3% buy B and C and 4% buy A and C. If 2% families buy all the three newspapers.
43. Find (a) The number of families which buy newspaper A only.
    (b) The number of families which buy none of A, B and C

Physics

1. If a composite physical quantity in terms of moment of inertia I, force G, velocity v, work W and length L is defined as, Q = (I F v²/W L³) Find the dimensions of Q and identify it.
2. If 1 hp is 746 watts, comment on the statement" 1 hp is 550 ft lb/s"

3. A gas bubble from an explosion under water oscillates with a Period T proportional to $P^a d^b E^c$ where P is the static pressure, d is the density of water and E is the total energy of explosion. Find the values of a, b and c.
4. If velocity, force and time are taken to be fundamental quantities find dimensional formula for (a) Mass, and (b) Energy.
5. It is estimated that per minute each cm² of earth receives about 2 calorie of heat energy from the sun. This constant is called solar constant S. Express solar constant in SI units.

6. Find dimensions of resistance R and inductance L. Speculate what physical quantities (L/R) and (1/2) LT² represent?
7. In the formula X= 3YZ² , X and Z have dimensions of capacitance and magnetic induction   respectively. What are the dimensions of Y in MKSQ system?
8. A quantity X is given by $\varepsilon_0 L\Delta V/\Delta t$, where ε_0 is the permittivity of free space. L is a length, ΔV is a potential difference and Δ t is a time interval. The dimensional formula for X is the same as that of (a) resistance, (b) Charge, (c) Voltage, (d) Current.
9. Column I gives three physical quantities. Select the appropriate units for these from choices given in column II. Some of the physical quantities may have more than one choice

I	II
Capacitance	ohm ×second
Inductance	Coul² joule⁻¹
Magnetic Induction	Coulomb (ampere-m)⁻¹
	Volt second (ampere)⁻¹

10. The time of oscillation of a drop of liquid under surface tension depends upon the density ρ, radius a and the surface tension S. from the knowledge of dimensions prove that the period of oscillation. $\sqrt{\frac{\rho a^3}{S}}$
11. The frequency n of vibration of a stretched string is a function of its tension G, the length L and the mass per unit length m. Prove $n \propto \frac{1}{L}\sqrt{\frac{F}{m}}$
12. Assuming that the mass m of the largest stone that can be moved by a flowing river depends only on the velocity v, the density of water ρ and g, show that m varies with the sixth power of the velocity of flow.
13. Assuming that the critical velocity v_0 of a viscous fluid flowing through a tube depends o only upon its density ρ, radius of the tube r and the coefficient of viscosity η, show by the method of dimensions that $V_0 = \frac{K\eta}{\rho r}$ Where K is a dimensionless constant.
14. If the escape velocity depends upon (i) acceleration due to gravity of the planet (ii) radius of the planet, establish dimensional relation between them.
15. Obtain by the method of dimensional analysis an expression for the surface tension of a liquid rising in a capillary tube. Assume that the surface tension depends upon mass, pressure and radius of the capillary tube. The constant $K = \frac{1}{2}$
16. Given that the unit of power is one million erg per minute the until of force is 100 dyne and the unit of time is (1/10) sec, what are the units of mass and length?
17. If the units of force were kilo Newton, that of time millisecond and that of power kilo watt. What would be the units of mass and length?
18. The value of acceleration due to gravity at a place is 980cm/sec². What would be its value in km/min² and ft/sec²?
19. If the unit of energy be one million erg, the unit of force be 1000 dyne and the of time be 100 sec, than what will be the unit of mass and length?
20. Calculate by the method of dimensions, the number of foot pound in one calorie (Given that 1 calorie = 4.2× 10⁷ erg, g = 32ft/sec², 1 lb = 453.6 g and 1 inch = 2.54 cm)

21. Test by the method of dimensions, the accuracy of the relation t = $2\pi\sqrt{\frac{K^2+F}{lg}}$ for the time period of compound pendulum.
22. A flywheel of moment of inertia I is set into rotation by the descent of a mass m. If ω is the angular velocity of the mass when it has descended through a distance h, we have, from the law of conservation of energy, the equation   mgh = ½ mv² + ½ I ω²
23. Experiment shows that for laminar flow of a through a circular pipe the significant variables are D the diameter of the pipe, V the mean velocity of the fluid, dp/dχ the rate of change of pressure along the pipe and η the coefficient of viscosity. Derive an expression for the velocity by means of dimensional analysis.
24. Assuming that the mass m of the largest stone that can be moved by a flowing river depends upon the velocity v, the density ρ, and acceleration due to gravity g, show that m varies with sixth power of the velocity of flow.
25. The planets move around the sun in nearly circular orbits. Assuming that the period of rotation (T) depends upon the radius r of the orbit, the mass (M) of the sun and the gravitational constant G , show that planets obey kepler's third law i.e. the square of time period of the planet is directly proportional to the cube of its orbital radius.
26. Prove by method of dimensions that acceleration due to gravity 'g' inside the surface of earth is given by g = $\frac{4}{3}\pi$ G R ρ, Where G = gravitational constant, R = radius of earth and ρ = mean density of the earth.

27. In an experiment for determining the density ρ of a rectangular block of a metal, the dimensions of the block are measured with vernier calipers having a least count of 0.01 cm and its mass is measured with beam balance of least count 0.1 g. The measured values are: Mass of block (m) = 39.3kg, Length of block (l) = 39.3 cm , Breath of block (b) = 2.56cm, Thickness of block (d) = 0.37 cm. Find the maximum proportional error in the determination of ρ.

28. Find out the maximum percentage error when the following observations were taken in the determine of the value of acceleration due to gravity.
Length of thread (L) = 100.2 cm
Radius of bob = 2.3 cm
Time of one oscillation (T) = 2.2 s
Calculate the value of maximum percentage error, up to the required significant figures. Which quantity should be measured more accurately?

29. In an experiment performed to measure the frequency of a.c. using the relation.$n = \frac{1}{2l}\sqrt{Mg/\frac{M'}{L}}$

The following set of observation was taken:
L = balance length of string = 60.8 cm, least count = dl = 0.1 cm (metre scale)
M = Mass suspended = 412.2 gm, least count = dM = (ordinary balance)
M' = Mass of thread 1.0874 gm, least count = dM' = 0.002 gm(analytical balance)
L = Length of experimental possible string 100 .0 cm least count = dL = (metre scale) Determine the maximum string error in the experiment.

30. Obtain the dimensional formula of the following physical quantities:
(a) Couple or torque, (b) Angular impulse (c) Coefficient of thermal conductivity (d) compressibility.

Chemistry:

1. Nickel atom can lose two electrons and form Ni^{2+} ion. The atomic number Ni is 28. From which orbital will nickel lose two electrons?
2. How are d_{xy} and $d_{x^2-y^2}$ orbitals related?
3. Chlorophyll, the green colouring matter of plants contains 2.68% magnesium by weight. Calculate the number of magnesium atoms in 2.00g of chlorophyll (Atomic mass of Mg=24)
4. If 500 mL of a 5M solution is diluted to 1500 mL, what will be the molarity of the solution obtained.
5. Calculate the energy associated with the first orbit of He^+. What is the radius of this orbit?
6. Discuss the similarities and difference between 1s and 2s-orbitals.
7. What is the basic difference between the terms electron gain enthalpy and electronegativity?
8. Predict the periods and blocks to which each of the following elements belong?
(i) $_{13}Al$ (ii) $_{24}Cr$ (iii) $_{29}Cu$ (iv) $_{11}Na$
9. Among the elements B, Al, C and Si,
(i) which element has the highest first ionisation enthalpy?
(ii) which element has the most metallic character? Justify your answer in each case.
10. Consider the following species N^{3-}, O^{2-}, F^-, Na^+, Mg^{2+} and Al^{3+}
(i) What is common in them?
(ii) Arrange them in the order of increasing ionic radii.
11. Would you expect the second electron gain enthalpy of O as positive, more negative or less negative than the first? Justify your answer.
12. What is the difference between molality and molarity?
13. The reactant which is entirely consumed in reaction is known as limiting reagent. In the reaction 2A + 4B → 3C + 4D, when 5 moles of A react with 6 moles of B, then
(i) which is the limiting reagent?
(ii) calculate the amount of C formed?
14. In a reaction, A + B → AB_2 identify the limiting reagent if any in the following reaction mixtures.
(i) 300 atoms of A + 200 molecules of B
(ii) 2 moles of A + 3 moles of B
(iii) 100 atoms of A + 100 molecules of B
(iv) 5 moles of A + 2.5 moles of B
(v) 2.5 moles of A + 5 moles of B
15. Electromagnetic radiation of wavelength 242 nm is just sufficient to ionise the sodium atom. Calculate the ionisation energy of sodium in kJ mol⁻¹.
16. What transition in the hydrogen spectrum would have the same wavelength as the Balmer transition n = 4 to n = 2 of He^+ spectrum?
17. Calculate the energy associated with the first orbit of He^+. What is the radius of this orbit?
18. Write the values of the quantum number n, l, m and s for electron filling 21st place in the atom of element with atomic number 24.
19. Two oxides of a metal contain 27.6% and 30.0% of oxygen respectively. If the formula of the first oxide is M_3O_4, find that of the second.
20. A compound made up of two elements A and B has A = 70%, B = 30%. Their relative number of moles in the compound are 1.25 and 1.88. Calculate
(i) atomic masses of the elements A and B
(ii) molecular formula of the compound, if its molecular mass is found to be 160.
21. 50.0 kg of $N_2(g)$ and 10.0 kg of $H_2(g)$ are mixed to produce $NH_3(g)$. Calculate the $NH_3(g)$ formed. Identify the limiting reagent in the production of NH_3 in this situation.
22. Commercially available concentrated hydrochloric acid contains 38% HCl by mass.
(i) What is the molarity of the solution (density of solution = 1.19g mol⁻¹)?
(ii) What volume of the above concentrated HCl is required to make 1.0 L of 0.10 M HCl?
23. Commercially available sulphuric acid contains 93% acid by mass and has density of 1.84g m⁻¹. Calculate-
(a) the molarity of the solution
(b) volume of concentrated acid required to prepare 2.5L of 0.50M H_2SO_4.
24. An element with mass number 81 contains 31.7% more neutrons as compared to protons. Assign the atomic symbol.
25. A golf ball has a mass of 40g and a speed of 45 m/s. If the speed can be measured within accuracy of 2%, calculate the uncertainty in the position.

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26. The first ($\Delta_i H_1$) and the second ($\Delta_i H_2$) ionisation enthalpies (in kJ mol^{-1}) and the ($\Delta_{eg} H$) electron gain enthalpy of a few elements are given below:

Elements	$\Delta_i H_1$	$\Delta_i H_2$	$\Delta_{eg} H$
1.	520	7300	-60
2.	419	3051	-48
3.	1681	3374	-328
4.	1008	1846	-295
5.	2372	5251	+48
6.	738	1451	-40

Which of the above elements is likely to be:
(a) the least reactive element
(b) the most reactive metal
(c) the most reactive non-metal.
(d) the least reactive non-metal
(e) the metal which can form a stable binary halide of the formula MX_2 (X = halogen).
(f) the metal which can form a predominantly stable covalent halide of the formula MX (X = halogen)?

27. (i) 0.5 mole each of H_2S and SO_2 mixed together in a reaction flask, react according to equation $2H_2S + SO_2 \rightarrow 2H_2O + 3S$
Calculate the number of moles of S formed.
(ii) Calculate the volume of 0.015M HCl solution required to prepare 250 mL of a 8.25×10^{-5} M HCl solution.

28. A photon of wavelength 4×10^{-7} m strikes on metal surface, the work function of the metal being 2.13 eV. Calculate

(i) the energy of the photon (eV)
(ii) the kinetic energy of the emission.
(iii) the velocity of the photoelectron (1 eV = 1.6020×10^{-19} J).

29. Assign the position of the element having outer electronic configuration.
(i) $ns^2 np^4$ for n = 3
(ii) $(n-1) d^2 ns^2$ for n = 4 and
(iii) $(n-2) f^7 (n-1) d^1 ns^2$ for n = 6, in the periodic table.

30. (i) A sample of drinking water was found to be severely contaminated with chloroform $CHCl_3$ which is carcinogenic in nature. The level of contamination was 15 ppm (by mass)
(a) Express this in per cent by mass.
(b) Determine the molarity of chloroform in the water sample.
  (ii) Calculate the molarity of a solution of ethanol in water in which the mole fraction of ethanol is 0.40.

Accountancy:

1. Book keeping is not a part of accounting. Do you agree with the statement? Give reason.
2. Which type of accounting information shows profit earned or loss incurred?
3. **State whether the following statements are true or false with reason:**
    (i) Accounting may be influenced by the personal judgment.
    (ii) Financial Statements are not comparable.
    (iii) Accounting information must be presented in such a way that only accounting people understand it.
    (iv) Accounting information must be reliable.
4. Who is a debtor?
5. What is meant by Revenue from operations?
6. Define Merchandise.
7. Which principle assumes that a business enterprise will not be liquidated in near future?
8. "Closing stock is valued lower than the market price" which concept of accounting is applied here?
9. Under which accounting principle, quality of manpower is not recorded in the books of accounts?
10. **Show the effect of the following business transactions on assets, liabilities and capital through accounting equations:**
    (i) Commenced business with cash   Rs.20,000
    (ii) Goods purchased on credit   Rs.7,000
    (iii) Furniture purchased   Rs.3,000
    (iv) Paid to creditors   Rs.2,000
    (v) Amount withdrawn by the proprietor for personal use   Rs.4,000
    (vi) Interest on capital   Rs.1,000
11. **Show the effect of the following business transactions on assets, liabilities and capital through accounting equations:**
    (i) Sohan started business with cash   Rs.80,000
        Machinery   Rs.10,000
        And stock   Rs.10,000
    (ii) Interest on the above capital was allowed @ 10%
    (iii) Money withdrew from the business for his personal use   Rs.10,000
    (iv) Interest on drawings   Rs.500
    (v) Depreciation charged on machinery   Rs.2,000
12. **Show the effect of the following business transactions on assets, liabilities and capital through accounting equations:**
    (i) Started business with cash   Rs. 3,30,000
    (ii) Commission received   Rs. 22,000
    (iii) Interest received in advance   Rs. 1,100.
    (iv) Salary paid   Rs. 22,000
    (v) Prepaid rent   Rs. 4,400.
    (vi) Accrued commission   Rs. 3,300
    (vii) Wages outstanding   Rs. 11,000.

Business Studies :

1. Classify the following into business, profession and employment.
   a) Hari sells mobile phones on behalf of his employer.
   b) It requires minimum academic and other qualifications.
   c) A hawker sells toys for children outside a function.
   d) Chitranshi is the advocate of High Court.
   e) Dhruv is the manager of a mobile company.

2. Identify the type of industry highlighted in each of the following individual cases:
   a) Raman is engaged in the industry of obtaining coal from a mine.
   b) Shivam imports different components from China and assemble them to make Computer.
   c) Krishna has a cement factory.
   d) Akhil is engaged in the construction of flyovers.
   e) Namit joined his father's business of poultry farming.

3. State with reason whether the following statements are 'True' or 'False':
   a) Transportation removes the hindrance of time.
   b) Economic objectives deals with fulfilling obligations towards the society.
   c) Business risk increases with the size of business.
   d) Business risk due to natural causes can be controlled.
   e) Employment involves greater risk than business.
   f) Advertising helps in removing the hindrance of information.

4. Mr. Kamal Mehra is a practicing Chartered Accountant. His wife is a Bank Manager in State Bank of India and his son, Arnav has a factory in Muradabad, where he manufactures shoes. Name the economic activities in which Mr.Mehra, Mrs.Mehra and Arnav are engaged.

5. Mukul produces goods, but all the goods are used by him for personal consumption and not even a single good is sold in the market. Will it be considered a business activity?

6. Name the activities which facilitate buying and selling of goods and services.

7. Identify the type of partner highlighted in the following statements:
   a) This partner does not take part in the day to day activities of the business.
   b) He gives an impression of his being partner to others by his words or conduct.
   c) He allows the use of his goodwill to benefit the firm and can be represented as partner.
   d) He is represented as a partner and inspite of knowing this, he does not deny such impression.
   e) His association with the firm is not disclosed to the general public.

8. "Although company is an artificial person, it can still own property and enter into contracts" . defend or refute.

Economics :

  1. What are Economic agents?
  2. What is the problem of resource allocation?
  3. State the Fundamental Law of Satisfaction?
  4. Define Microeconomics & Macroeconomics also state two examples of the following?
  5. Why is the PPC Concave to its origin?
  6. "An Economy always produces on but not inside a PPC." Defend (Support) or Refute (Prove False)?
  7. With the help of a hypothetical example explain the relationship between TU & MU?
  8. Define the Marginal opportunity cost along a PPC?
  9. What are the components of Microeconomics & Macroeconomics?
  10. What are the three central problems of an economy? Why do they arise?
  11. Which Factors lead to a shift of the PPC either rightwards or leftwards?
  12. What do you understand by consumer equilibrium? Give Logical reasoning as to how he reaches his state of equilibrium?

Sociology:

Do a research and make a project on any of the given topic :
   • Mass communication and how it affects the society?
     OR
   • Physical disabilities are less biological and more of a social taboo.

Power Points
1. Please do not use only internet but refer to books, newspaper, journals.
2. Take a case study.

History

   Do the research work on any ONE of the given topic for your project work.
   1. Critique of the Industrialization in Britain.
   2. Making and unmaking of Mesopotamia.
   3. Aspirations of women in Renaissance period.
   4. Scientific Revolution and the origins of modern sciences.

Political Science

Make a project on any one of the topics discussed
   1. Make it presentable and exploratory
   2. Use internet only for facts and data collection
   3. Don't make a plagiarized work