Assignment 10th DOI 08 Apr 2016; Date of Submission –Maths 11 Apr ; Sc 12 Apr

10 Mth Real Numbers (Q 1-3 : 1 mark each; 4-7 : 2 marks each; 8-12 : 3 marks each; 13-15 : 5 marks each;)

1. Can the number 6^n, n being a natural number, end with the digit 5? Give reasons.

2. A positive integer is of the form $3q + 1$, q being a natural number. Can you write its square in any form other than $3m + 1$, i.e., $3m$ or $3m + 2$ for some integer m? Justify your answer.

3. Can two numbers have 18 as their HCF and 380 as their LCM? Give reasons.

4. Using Euclid's division algorithm, find which of the following pairs of numbers are co-prime:
(i) 231, 396 (ii) 847, 2160

5. Prove that $\sqrt{2}+\sqrt{3}$ is irrational.

6. Prove that $\sqrt{p}+\sqrt{q}$ is irrational, where p, q are primes.

7. On a morning walk, three persons step off together, their steps measure 40 cm, 42 cm and 45 cm, respectively. What is the minimum distance each should walk so that each can cover the same distance in complete steps?

8. Show that the square of an odd positive integer can be of the form $6q + 1$ or $6q + 3$ for some integer q.

9. Prove that one of any three consecutive positive integers must be divisible by 3.

10. Show that one and only one out of n, $n + 4$, $n + 8$, $n + 12$ and $n + 16$ is divisible by 5, where n is any positive integer.

11. Prove that the square of any positive integer is of the form $5q$, $5q + 1$, $5q + 4$ for some integer, q.

12. Prove that the product of three consecutive positive integers is divisible by 6.

13. Show that one and only one of n, $n + 2$, $n + 4$ is divisible by 3.

14. Two milk containers contains 398 l and 436 l of milk the milk is to be transferred to another container with the help of a drum. While transferring to another container 7l and 11l of milk is left in both the containers respectively. What will be the maximum capacity of the drum.

15. Find HCF of 56, 96 and 324 by Euclid's algorithm.

10 Sc Chemical reactions and equations (Q 1-4:1 mark each (part); 5-10:4 marks each; 11:5 mark)

1. Write the balanced chemical equations for the following reactions and identify the type of reaction in each case.
(a) Nitrogen gas is treated with hydrogen gas in the presence of a catalyst at 773K to form ammonia gas.
(b) Sodium hydroxide solution is treated with acetic acid to form sodium acetate and water.
(c) Ethanol is warmed with ethanoic acid to form ethyl acetate in the presence of concentrated H_2SO_4.
(d) Ethene is burnt in the presence of oxygen to form carbon dioxide, water and releases heat and light.

2. Write the balanced chemical equations for the following reactions and identify the type of reaction in each case.
(a) Thermit reaction, iron (III) oxide reacts with aluminium and gives molten iron and aluminium oxide.
(b) Magnesium ribbon is burnt in an atmosphere of nitrogen gas to form solid magnesium nitride.
(c) Chlorine gas is passed in an aqueous potassium iodide solution to form potassium chloride solution and solid iodine.
(d) Ethanol is burnt in air to form carbon dioxide, water and releases heat.

3. Identify the reducing agent in the following reactions
(a) $4NH_3 + 5O_2 \rightarrow 4NO + 6H_2O$
(b) $H_2O + F_2 \rightarrow HF + HOF$
(c) $Fe_2O_3 + 3CO \rightarrow 2Fe + 3CO_2$
(d) $2H_2 + O_2 \rightarrow H_2O$

4. Identify the oxidising agent (oxidant) in the following reactions
(a) $Pb_3O_4 + 8HCl \rightarrow 3PbCl_2 + Cl_2 + 4H_2O$
(b) $2Mg + O_2 \rightarrow 2\ MgO$
(c) $CuSO_4 + Zn \rightarrow Cu + ZnSO_4$
(d) $V_2O_5 + 5Ca \rightarrow 2V + 5CaO$
(e) $3Fe + 4H_2O \rightarrow Fe_3O_4 + 4H_2$
(f) $CuO + H_2 \rightarrow Cu + H_2O$

5. A solution of potassium chloride when mixed with silver nitrate solution, an insoluble white substance is formed. Write the chemical reaction involved and also mention the type of the chemical reaction?

6. During the reaction of some metals with dilute hydrochloric acid, following observations were made.
(a) Silver metal does not show any change
(b) The temperature of the reaction mixture rises when aluminium (Al) is added.
(c) The reaction of sodium metal is found to be highly explosive
(d) Some bubbles of a gas are seen when lead (Pb) is reacted with the acid.
Explain these observations giving suitable reasons.

7. Write a balanced chemical equation for each of the following reactions and also classify them.
(a) Lead acetate solution is treated with dilute hydrochloric acid to form lead chloride and acetic acid solution.
(b) A piece of sodium metal is added to absolute ethanol to form sodium ethoxide and hydrogen gas.
(c) Iron (III) oxide on heating with carbon monoxide gas reacts to form solid iron and liberates carbon dioxide gas.
(d) Hydrogen sulphide gas reacts with oxygen gas to form solid sulphur and liquid water.

8. Balance the following chemical equations and identify the type of chemical reaction.

(a) $Mg(s) + Cl_2(g) \rightarrow MgCl_2(s)$ (b) $HgO(s) \xrightarrow{Heat} Hg(l) + O_2(g)$

(c) $Na(s) + S(s) \xrightarrow{Fuse} Na_2S(s)$ (d) $TiCl_4(l) + Mg(s) \rightarrow Ti(s) + MgCl_2(s)$

(e) $CaO(s) + SiO_2(s) \rightarrow CaSiO_3(s)$ (f) $H_2O_2(l) \xrightarrow{UV} H_2O(l) + O_2(g)$

9. Why do we store silver chloride in dark coloured bottles? Support your answer with chemical equations of the reaction.

10. Give the characteristic tests for the following gases (a) CO_2 (b) SO_2 (c) O_2 (d) H_2

11. On adding a drop of barium chloride solution to an aqueous solution of sodium sulphite, white precipitate is obtained.
(a) Write a balanced chemical equation of the reaction involved (b) What other name can be given to this precipitation reaction?
(c) On adding dilute hydrochloric acid to the reaction mixture, white precipitate disappears. Why?

1. Symposium Spoken English and Personality Development Programme (Activity level 1)

Speaker1 Roll No. 1, 6, 11, 16, 21, 26, 31, 36 ….. Speaker2 Roll No. 2, 7, 12, 17, 22, 27, 32, 37 …..
Speaker3 Roll No. 3, 8, 13, 18, 23, 28, 33, 38 ….. Speaker4 Roll No. 4, 9, 14, 19, 24, 29, 34, 39.....
Speaker5 Roll No.5, 10, 15, 20, 25, 30, 35, 40 ..... and so on

Symposium 10 SS Power Sharing

Speaker 1- Good morning friends. We welcome you all for our presentation on the topic Power Sharing. The topic will be covered by ……..,……..,……..,……and …….. Power sharing is the very spirit of democracy. All communities, social groups get their say in the governance. People have a right to be consulted on how they are to be governed. A legitimate government is one where citizens acquire a stake in the system; through participation. One basic principle of democracy is that people are the source of all political power. In a democracy, people rule themselves through institutions of self-governance. In a good democratic government, due respect is given to diverse groups and views that exist in a society. In a democracy political forms of power sharing should be distributed among as many citizens as possible. Now .....will discuss about Need of Power Sharing

Speaker 2. Power sharing helps in reducing the conflict between various social groups. Hence, power sharing is necessary for maintaining social harmony and peace. Power sharing helps in avoiding the tyranny of majority. The tyranny of majority not only destroys the minority social groups but also the majority social group. Hence, power sharing is essential to respect the spirit of democracy. Avoiding conflict in society and preventing majority tyranny are considered as prudential reasons for power sharing. Maintaining the spirit of democracy is considered as the moral reason for power sharing. Power is distributed among the organs of the government like – legislature, executive and judiciary. Power sharing also includes sharing at the different levels like union, state and local. Now .....will discuss about prudential and moral reasons for power sharing.

Speaker 3. Prudential reason for power sharing - Power sharing is desirable because it helps to reduce the possibility of conflict between the various social groups. Since social conflict often leads to violence and political instability, power sharing is a good way to ensure political stability. Imposing the will of the majority community over the minority may look like an attractive option in the short run, but in the long run it undermines the unity of the nation. Tyranny of the majority is not just oppressive for the minority, it often brings ruin to the majority as well.

Moral reasons for power sharing. Power sharing is the basic spirit of democracy. It includes the following principles.
1. Government of different political parties, i.e., a coalition government. 2. Protection of minority rights. 3. Decentralization of power. Now .....will discuss Why power sharing desirable?

Speaker 4. Why power sharing desirable?
1. To avoid conflict: it reduces the possibility of conflict between various social groups. Since social conflict often leads to violence and political instability, power sharing is a good way to ensure political stability. Imposing the will of majority community over the minority may look like an attractive option in the short run, but in long run, it undermines the unity of the nation. Tyranny of the majority is not just oppressive for the minority, it often brings ruin to the majority as well.
2. Spirit of democracy: Power sharing is the basic spirit of democracy. A democratic rule involves the sharing of power with those affected by its exercise, and those who have to live with its effects. A democratic government is chosen by the people. So they are to be governed. A legitimate government is one where groups, through participation acquire a stake in the system.
Now .....will discuss about horizontal and vertical power sharing.

Speaker 5 Horizontal Power sharing 1. Under the horizontal power sharing power is shared among different organs of government such as the legislature, executive and judiciary. 2. Under horizontal distribution of power, organs of the government are placed at the same level to exercise different powers. 3. Under horizontal power sharing each organ checks the other.
Vertical Power sharing 1. Under the vertical power sharing, power is shared among different levels of the governments.
2. The vertical division of power involves the highest and the lower levels of government. 3. Under vertical power sharing the lower organs work under the higher organ. With this we come to an end of our symposium. Thank You.

2. Quiz- http://www.learnmyway.in 10(04) DOI 08 Apr 2016.Q.Sc. Chemical reactions and equations;
3. Electronic test - http://www.learnmyway.in 10(04) DOI 08 Apr 2016.ET.Sc. Chemical reactions and equations;
Help line : email Rajinder_k_sharma@yahoo.com
Skype : rajinder.sharma1958 Mob : 9357388588