**JIYA LAL MITTAL DAV PUBLIC SCHOOL**

**GRADE – XI SA-I (SEPT, 2015)**

**SUBJECT – CHEMISTRY**

**TIME: 3hrs. M.M-70**

**General Instructions:**

1. **All questions are compulsory.**
2. **Questions 1 to 5 are very short answer questions and carry 1 mark each.**
3. **Questions 6 to 10 are short answer questions and carry 2 marks each.**
4. **Questions 11 to 22 are also short answer questions and carry 3 marks each.**
5. **Questions 23 is value based question and carry 4 marks.**
6. **Questions 24 to 26 are long answer questions and carry 5 marks each.**
7. Calculate number of significant figures in planck’s constant.
8. Define isotope. Give example
9. Why Bohr’s orbits are said to be stationary states?
10. Write IUPAC name of element with Atomic number 116.
11. What is the number of unpaired electrons in case of manganese?
12. Calculate wavenumber for longest wavelength transition in the Balmer series of atomic Hydrogen.
13. Which of the following has larger size.
14. O2- or F- (ii) P or N

Or

Define electronegativity, Ionization enthalpy.

1. What is the cause of chemical reaction in the atoms? Give example.
2. Draw structure of a molecule have 2 Lp and 2 bp by giving example.
3. Define oxidation and reduction according to electronic concept
4. (i) Why falling liquid droplets are spherical?
5. What is capillary action?
6. On the basis of VSEPR, discuss shape of PCl5.
7. Give difference between sigma and pi – bond.
8. Discuss three factors affecting Ionization enthalpy.
9. Out of NH3 & NF3 which has higher dipole moment and why?
10. Calculate period, block and gp. Of elements with Atomic number 27, 14.
11. A 100 watt bulb emits electromagnetic light of wavelength 400nm. Calculate number of photons emitted per second by bulb. OR

What is an orbital? Give difference between orbit and orbital.

1. What are the harmful effects of photochemical smog and how can they be controlled?
2. Discuss orbital structure of ethane using concept of hybridization.
3. Derive an expression for ideal gas equation.
4. What is surface tension? Discuss the factors affecting it.
5. State and explain Dalton’s Law of partial pressure. What is its utility?
6. One day Ramya’s , mother was cutting onions. The vapours of onion were producing a lot of tears in her mother’s eyes. She was wiping her eyes again and again and was feeling very uncomfortable. Ramya at once thought of an idea. She asked her mother to place these onions into refrigerator for some time and then cut these. Her mother placed the onions into the freezer for some time. When she cut these onions after some time, she had very less tears in her eyes and felt comfortable.

On the basis of above passage, answer the following questions:

1. Why did Ramya asked her mother to keep onions in the refrigerator for some time?
2. What are the values associated with the above suggestion of Ramya?
3. A spherical balloon of 21cm diameter is to be filled with Hydrogen at N.T.P from a cylinder containing the gas at 20 atm and 27°C. If the cylinder can hold 2.82 litres of a water then calculate number of balloons that can be filled up? OR

Dinitrogen and dihydrogen react with each other to produce ammonia according to following chemical reaction:

 N2(g)  + 3H2(g)  2NH3(g)

1. Calculate mass of ammonia produced if 2.00 X 103 g of N2 reacts with 1.00 X 103g of H2.
2. Will any of the two reactants remain unreacted?
3. If yes, which one and what would be its mass?
4. A compound has Na=36.5%, H=0.8% , O=38.1% , P=24.6% . Calculate its empirical and molecular formula if molecular mass is 126. OR

Zn + NO3 ---------> Zn + NH4 (in basic medium)

Balance above equation by ion electron method.

1. When light of wavelength 470nm falls on the surface of potassium metal, electrons are emitted with a velocity of 6.4X104 ms-1. What is the minimum energy required per mole to remove an electron from potassium metal? OR
2. What is vapour pressure? Discuss two factors affecting it.
3. Calculate all the quantum numbers for the last electron of Chromium.