S.B. Roll. No……

APPLIED CHEMISTRY-I
1st Exam/Common/6052/Jun'2022
(For 2018 Batch Onwards)

Duration: 3Hrs. **M.Marks:75**

SECTION-A

Q1. a) Fill in the blanks. **15x1=15**

i. The combining capacity of an element is called_____
ii. Proton was discovered by_____
iii. Number of orbitals in d-subshell are_____
iv. Horizontal rows are called_____
v. Reduction involves _____of electrons.
vi. The pH of acidic solution is_____
vii. 1 ppm means_____
viii. Negatively charged ions are called_____
ix. _____is self linking property of an element.
x. General formula of amide is_____

b) State True or False.

xi. Ions are neutral particles.
xii. All orbitals have directional characteristics.
xiii. Alkali metals form ionic compounds.
xiv. Alkenes are unsaturated hydrocarbons.
xv. A sigma bond is always weaker than a pi bond.

SECTION-B

Q2. Attempt any ten questions. **10x3=30**

a. Define element, compound and mixture.
b. State Heisenberg's uncertainty principle.
c. Give three postulates of Bohr's model of atom.
d. What are isotopes and isobars?
e. What are the causes of chemical combination?
f. Calculate the pH value of 0.01 M HCl.
g. Explain the concept of homologous series.
h. What is the difference between temporary and permanent hardness?
i. Discuss reverse osmosis method for the desalination of sea water.
j. Differentiate between an orbit and an orbital.
k. What are electrolytes and non-electrolytes?
l. The nucleus of an atom contains 12 neutrons and 11 protons. Find its atomic number and mass number.
m. What is direct and indirect redox reaction?
n. Balance the following chemical equation by hit and trial method:

$H_2S + SO_2 \longrightarrow S + H_2O$

SECTION-C

Attempt any three questions. **3x10=30**

Q3. a. Name and explain the quantum numbers. **8**
b. State Pauli's exclusion principle. **2**
Q4. a. What are the advantages of long form of the periodic table? **5**
b. Differentiate between *sigma* and *pi* bond. **5**
Q5. a. Define hybridization. Explain sp, sp^2 and sp^3 hybridization. **7**
b. Give the functional group of the following compounds: **3**
i) Alcohol ii) Ketone iii) Amine
Q6. a. Define the following terms: i) Molarity ii) Molality iii) Normality iv) Standard solution. **6**
b. What is buffer solution? What are its types? **4**
Q7. a. State and explain Faraday's second law of electrolysis. **5**
b. What is electroplating? What are its objectives? **5**