END SEMESTER EXAMINATION 2020
(NEW SYLLABUS)
1st Semester
Subject Code- Sc-103
Subject-Chemistry
Full Marks – 70
TIME – 3 Hours

The figures in the margin indicate full marks for the questions

PART-A
Marks-25

1. Fill in the blanks:-   1 X 10 = 10

    a) E.C.E. of Age is _____

    b) Isobars are atoms having different _____

    c) Conjugate acid of ammonia is _____

    d) 32 grams of methane contains _____ number of molecules.

    e) Atomic radius _____ from top to bottom of a group.

    f) The oxidation number of Fe in Fe_3O_4 is _____

    g) The manufacturing of H_2SO_4 by contact process _____ is used as catalyst.

    h) The melting and boiling points of covalent compounds are _____ than those of Ionic compounds.

    i) Electrode used in Daniell cell is _____

    j) PH of acidic buffer is less than _____

2. Give the correct answer of the following :-   1 X 5 = 5

    a) Faraday is a unit of
        i) Charge   ii) Voltage   iii) Resistance

    b) Dual nature of electron was proposed by
        i) Einstein   ii) De-Broglie   iii) Rutherford

    c) 18 grams of water contain
        i) 1 gram atom of hydrogen   ii) 2 grams atom of hydrogen   iii) None of the above

    d) $FeCl_3$ solution is
        i) acidic   ii) basic   iii) neutral

    e) The basis of modern periodic table is
        i) Atomic volume   ii) Atomic olze   iii) Atomic number

3. Answer the following in one word/sentence :-   1 X 5 = 5

    a) Who did discover Neutron ?

    b) Give two examples of Secondary Cell.

    c) What is catalyst promoter ?
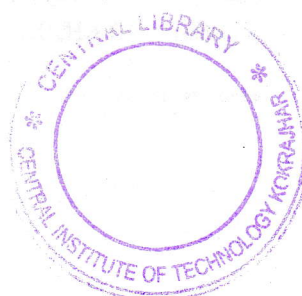
d) What is reversible reaction ?

e) What is the Principal Quantum Number of last electron of sodium ?

4. Write True or False of the following :-   1 X 5 = 5

a) Quantum Theory is used in Bohr's model of atom.

b) EDTA method is a process to remove hardness of water.

c) Methane molecule is tetrahedral.

d) $KMnO_4$ is a reducing agent.

e) At STP, value of temperature is 273°C

PART-B
Marks-45

5. a) State and Explain Boyle's Law ?   (3)

b) Show that at NTP volume of all gases occupies 22.4 litre.   (3)

c) At 27°C temperature and 152 cm pressure calculate the volume occupied by 132 grams of carbon di-oxide.   (4)

6. a) State Faraday's 2nd Law of Electrolysis ?   (3)

b) A current of 10 amperes is passed through a dilute solution of H_2SO_4 in water for 6 minutes, 26 seconds.Calculate the volume of hydrogen liberated in the electrode at NTP (3)

c) Mention the significance of Quantum number.   (4)

7. a) Discuss with example how Ionic compounds are formed ?   (4)

b) What is Aufbau principle ?   (2)

c) 25 ml of sodium carbonate solution is neutralized by 30 ml of sulphuric acid containing 4.9 grams per litre. Calculate the strength of sodium carbonate solution in terms of normality and in grams per litre.   (4)

8. a) Discuss the Permutit process of softening of water ?   (5)

b) Write the electron dot structure of nitric acid and hydrogen peroxide ?   (3)

c) Write notes on the solubility product.   (2)

9. a) State Law of Mass Action. Derive an expression for equilibrium constant for the reversible reaction ?   (5)

OR

b) (i) Calculate the amount of CO_2 produced by 24 grams carbon reacts with 32 grams oxygen.   (3)

(ii) Balance the following reaction by partial method-   (2) .
$Cu + HNO_3 = Cu (NO_3) + NO + H_2O$.

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