SUBJECT CODE: 19CH/PC/RM34

M.Sc. DEGREE EXAMINATION, NOVEMBER 2020
BRANCH IV - CHEMISTRY
THIRD SEMESTER
COURSE : MAJOR CORE
PAPER : RESEARCH METHODOLOGY (PRACTICALS)
TIME :45 Mins   MAX.MARKS :25

SECTION-A

Answer any FIVE of the following   **(5x2=10 Marks)**

1. Draw the distribution curve for the molecular weight of polymer vs the number of moles of chains presents in the polymer.

Molecular Weight of polymer	No. of moles of chains
10000	20
20000	58
35000	90
15000	35
45000	100
40000	112
50000	94
25000	78
30000	82
55000	85
70000	40
60000	80
65000	55

2. Calculate the mean, median and mode for the following data

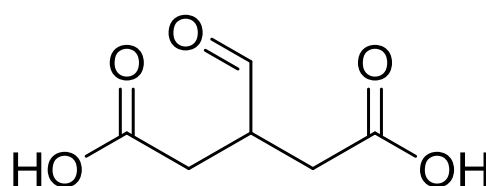| Sample label	1	2	3	4	5	6	7	8	9	10
Amount of Ca in ppm	12.3	17.8	22.2	12.3	17.4	15.6	13.8	12.3	18.9	22.1

3. Give the IUPAC Nomenclature of the following compounds:
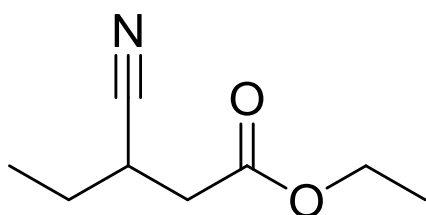
(a)   (b)

4.Convert the following IUPAC names to structure using chem draw.

    (i) (2*R*,3*S*)-2-methylpiperidin-3-ol

    (ii) 5-bromoformyl-4-ethoxycarbonylpentanoic acid

5. Draw the Fischer Projection of D-glucose using ChemDraw Templates.

6. Draw the pie chart for the following data of an alloy.

Composition	% by weight
Carbon	13.00
Manganese	7.00
Silicon	11.61
Chromium	47.25
Nickel	21.14

7. In the titration of dilute solution of HCl with NaOH, the following conductance data was obtained (c = 1/R). Draw a plot of reciprocal of resistance Vs volume of NaOH added.

Vol of NaOH (ml)	6	8	9	13	15	19	22	24
Resistance (Ohms)	66	58	52	47	43	40	39.5	39

SECTION-B
Answer any THREE of the following   **(3x5=15 Marks)**

8. The wave function for the particle in 1D- box is given as

$$Formula\ \psi_n = \sqrt{\frac{2}{a}} \sin \frac{n_x \pi x}{a}$$

    where a=1; n_x = 1,2,3,4 ; π_x = 0,5,10,15,20,25,30 &35. Calculate ψ_1, ψ_2, ψ_3 & ψ_4 and draw sine wave graph by plotting πx vs ψ_1, ψ_2, ψ_3 & ψ_4

9. In the alkaline hydrolysis of ethyl nitro-benzoate the following data are obtained.

Time (s)	60	120	240	530	600
Extent of reaction (x)	0.260	0.3295	0.488	0.690	0.7035

Calculate the second order rate constant by using the formula k=1/t [x/a(a-x)], where a=0.05. Plot a graph x/(a-x) Vs t and determine the slope 1/a from the graph.

10. Write the given reaction scheme using ChemDraw and paste it in a word document.
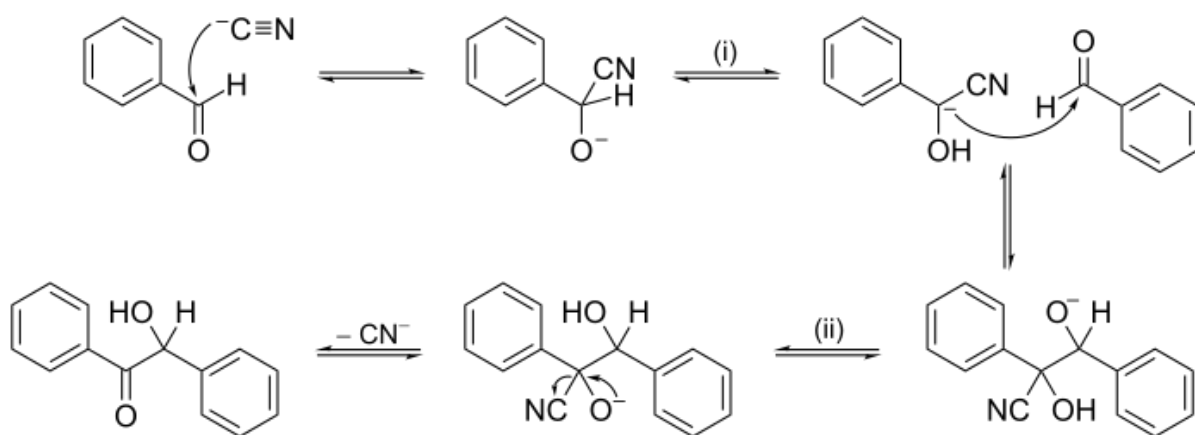
11. Draw the following catalytic process using ChemDraw and paste it in a word document.
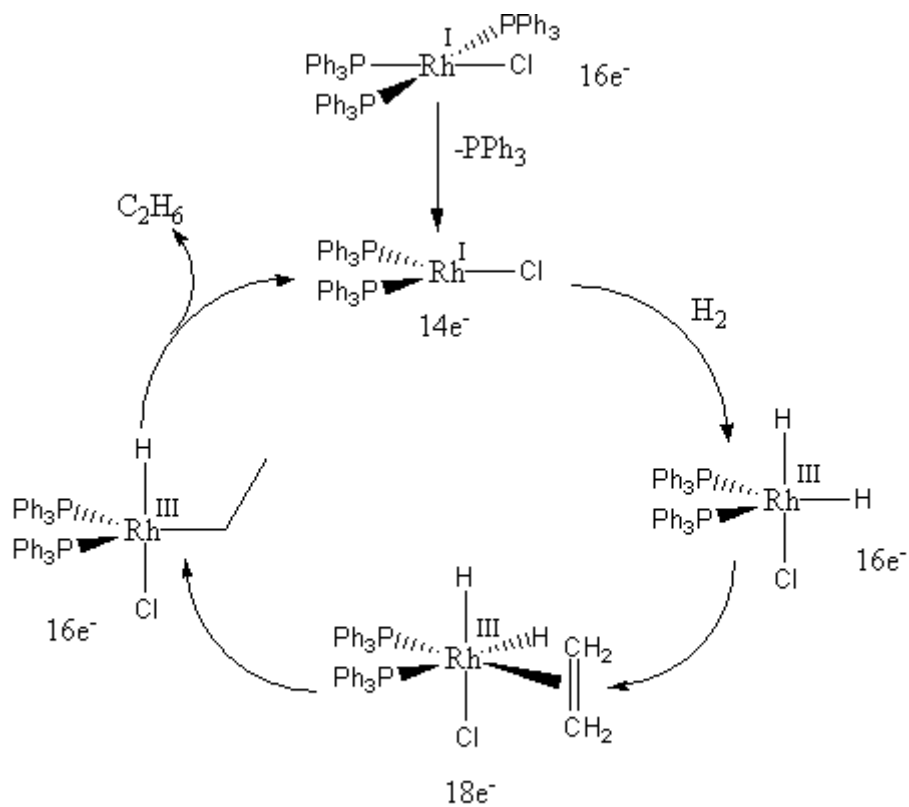
Catalytic hydrogenation of ethylene

STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI-86
(For candidates admitted during the academic year 2019-20& thereafter)

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BRANCH IV- CHEMISTRY
THIRD SEMESTER

COURSE : MAJOR CORE
PAPER : RESEARCH METHODOLOGY (THEORY)
TIME :45 Mins   **MAX.MARKS :25**
SECTION-A

Answer any FIVE of the following   **(5x2=10 Marks)**

1. How a scientific data table is represented in a research report.

2. Expand and give the meaning for the following:

   (i) ibid. (ii) ISBN

3. What is the significance of impact factor?

4. Give abbreviations for the following journals:

   (i) Adsorption Science and Technology (ii) Journal of Organometallic Chemistry

5. Define the term patent .Give any two uses of patent.

6. Mention any two primary sources used in chemical literature.

7. What is the purpose of bibliography in thesis writing?

SECTION-B

Answer any THREE of the following   **(3 x 5 =15 Marks)**

8. Explain the format used for tables and figures in thesis writing with suitable examples.

9. Explain in detail the various steps involved in publishing an article in a scientific journal.

10. Write a short note on Plagiarism

11. Expand APA and MLA formats. Discuss in brief the ACS format of representing a reference in research report.