AAH-003-001647 Seat No. _____

Third Year B. Sc. (Sem. VI) (CBCS) Examination

April/May - 2016

IC.P-602 : Heavy & Fine Chemicals - 2 & Analytical Chemistry

Faculty Code : 003
Subject Code : 001647

Time : $2\frac{1}{2}$ Hours] [Total Marks : **70**

Instructions : (1) All the questions are compulsory
(2) Figures to the right indicate maximum marks.
(3) Draw labelled diagrams wherever necessary.
(4) Assume suitable data.
(5) Question-1 carries 20 marks MCQ & should be written in the same answer sheet.
(6) Question-2 & 3 carries 25 marks each.

1 MCQ : **20**

(1) Applications of Citronellol is in

(A) Food Industries

(B) Mosquito repelling cream

(C) Bakery Industries

(D) All above

(2) Atomic emission detector works in the range between _____

(A) 170-780nm

(B) 250-500nm

(C) 300-700nm

(D) None of the above

(3) Which compound is used as food additives?

(A) Tartaric acid

(B) Citric acid

(C) Monosodiumglutamate

(D) All above

(4) Helium plasma is used in _____ detector.

(A) Thermal conductivity

(B) Flame ionization

(C) Atomic emission

(D) None of the above

(5) For standardization of Karl-Fischer reagent, which compound is used?

(A) Pyridine

(B) Disodium tartrate dihydrate

(C) Methanol

(D) Tartaric acid

(6) The NMR spectroscopy detects the resonance frequencies of _____ in a sample.

(A) Atom (B) M/Z

(C) Nuclei (D) Orbitals

(7) Uses of diethanolamine is

(A) In detergent industries

(B) In textile industries

(C) Both

(D) None

(8) Best manufacturing process for oxalic acid is

(A) Synthetic process from formates

(B) Fermentation process

(C) From wood waste

(D) Oxidation of cellulose

(9) 1, 4-dioxane is obtained as a by-product in which compound manufacturing process?

(A) Ethers

(B) Ethylene glycol

(C) Diethylene glycol

(D) All above

(10) Which compound is used as antifoaming agent ?

(A) Dimethyl polysiloxane

(B) Carbohydrates

(C) Ca-Al Silicates

(D) All above

(11) HPLC Chromatography is an example of _____ chromatography.

(A) Solid-liquid

(B) Gas-liquid

(C) Liquid-Liquid

(D) Gas-Solid

(12) In flame ionization detector temperature limit is _____

(A) 250 °C

(B) 400 °C

(C) 350 °C

(D) 500 °C

(13) Industrial applications of Essential oils is

(A) In adhesives

(B) In soap industries

(C) In tobacco industries

(D) All above

(14) Incident light from the source is directly proportional to the _____ of the sample.

(A) Viscosity

(B) Surface tension

(C) Concentration

(D) Temperature

(15) Which below analysis is based on Beer-Lambert law?

(A) Conductometric analysis

(B) Potentiometric analysis

(C) Colorimetric analysis

(D) None of the above

(16) For taking samples from conveyors, _____ is used to take a cross sectional sample of material.

(A) Split tube

(B) Hand scoop

(C) Open ended tube

(D) Stopcocks

(17) To take sample from various locations and then to be analysed is known as _____

(A) Standard sample

(B) Thief sample

(C) Dynamic sample

(D) Static sample

(18) Use of methylamine is as

(A) Refrigerant

(B) Dye Preparation

(C) Manufacturing of Herbicides

(D) All above

(19) What is the length of packed column in chromatography?

(a) 2-3 meters (B) >5 meters

(C) 30 meters (D) >50 meters

(20) Which catalyst is used in manufacturing of Ethanol from Ethylene?

(A) $PdCl_2$ (B) $CuCl_2$

(C) HCl (D) All above

2 (a) Answer any **three** : **6**

(1) Give manufacturing reaction, uses and properties of Ethyl acetoacetate.

(2) Give manufacturing reaction, uses and properties of Ketenes.

(3) Give manufacturing reaction, uses and properties of Sulfolane.

(4) Write down the principle of Uv-Vis Spectrometer.

(5) Explain Partition co-efficient.

(6) Write down the specific applications of NMR spectroscopy.

(b) Answer any **Three** : **9**

(1) Give manufacturing reaction, uses and properties of DMSO.

(2) Give manufacturing reaction, uses and properties of N- methyl-2-pyrolidone.

(3) Explain about Karl-Fischer reagents.

(4) Write a short note on chromatographic column.

(5) Explain carrier gas supply and sample injection system of GLC.

(6) Write a short note on flame ionization detector (FID).

(c) Answer any **two** : **10**

(1) Write a short note on Essential oils.

(2) Write a short note on Food additives.

(3) Explain manufacturing of Ethanol in detail.

(4) Write a brief note on NMR spectroscopy.

(5) Explain in detail - Polarimetric titration.

3 (a) Answer any **three** : **6**

(1) Explain about Fehling solution.

(2) Give properties and uses of Tartaric acid.

(3) Give properties and uses of Potassium dichromate.

(4) Write down the principle of IR spectroscopy.

(5) Write down the principle of colorimetric analysis.

(6) Define the terms (i) Chromatography (ii) Spectroscopy

(b) Answer any **three** : **9**

(1) Give manufacturing reaction, uses and properties of THF.

(2) Define with examples isolates, synthetics and semi-synthetics.

(3) Give manufacturing reaction, uses and properties of Triphenyl phosphine.

(4) Write a short note on Thermal Conductivity Detector (TCD).

(5) Write down applications of Gas-Liquid Chromatography (GLC).

(6) Give advantages of concluctometric titrations.

(c) Answer any **two** : **10**

(1) Write a short note on Surfactants.

(2) Explain Solvay process in detail.

(3) Write detail note on Oxalic acid.

(4) Explain in brief Mass spectroscopy

(5) Write detailed note on Potentiometric titration.
