



UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program /Eighth Semester – 2019

Paper: Organic Chemistry (Sp. Theory-I)

Course Code: CHEM-428 Part – I (Compulsory)

Time: 15 Min. Marks: 10

Roll No. in Fig.

Roll No. in Words.

Signature of Supdt.:

ATTEMPT THIS PAPER ON THIS QUESTION SHEET ONLY.

Division of marks is given in front of each question.

This Paper will be collected back after expiry of time limit mentioned above.

Q.1. Encircle the correct option.

(10x1=10)

- The absorption of signals in a PMR spectrum can be pulled apart by the use of
a) shift reagent b) increased magnetic field c) both of these
d) Cannot be pulled apart
- Which of following atomic nuclei are NMR active
a) ${}^2\text{He}^4$ b) ${}^6\text{C}^{12}$ c) both of these d) none of these
- Which kind of sample is studied in mass spectrometer?
a) Liquid b) Solid c) Gas d) All of these
- Which kind of information is obtained about positive ion from mass spectroscopy?
a) Relative abundance b) Molecular mass c) both of these d) none of these
- M+2 Peak don't observed in the mass spectrum of compound containing
a) Chlorine b) Bromine c) Iodine d) Sulphur
- NMR spectroscopy is useful for determination of
a) Geometrical isomers b) Molecular mass c) both of these d) none of these
- Standard reference used in NMR
a) TMS b) Ethanol c) Methanol d) None of these
- Which of following compound belongs to triterpene class of natural products.
a) Quinine b) Androgen c) α -amyrin d) Cholesterol
- How many peaks are observed for ethanol in NMR?
a) 1 b) 2 c) 3 d) 4
- How many differ type of proton are present in 2-bromobutane.
a) 5 b) 2 c) 3 d) 6



ATTEMPT THIS (SUBJECTIVE) ON THE SEPARATE ANSWER SHEET PROVIDED

Q. No. 2. Answer the following questions.

(4 x 5 = 20)

- Define Chemical Shift and how it is measured. Why TMS is used as reference in NMR spectroscopy?
- How will you distinguish between p-xylene and mesitylene by $^1\text{H-NMR}$ spectroscopy?
- In benzaldehyde, two of the ring protons have resonance at 7.87 ppm, and the other three have resonance in the range from 7.5 to 7.6 ppm. Explain.
- Sketch the mass spectrum of 1,3-dichloropropane
- How will you distinguish between CH_3Cl , CH_3Br , and CH_3I by mass spectrometry?

Q. No.3. Answer the following questions. (10 + 10 + 10)

- Briefly explain the difference between primary and secondary metabolites. What are different classes of natural products?
Write a short note on alkaloids and their classification.
- Define ionization. Briefly explain the different modes of ionization in mass spectrometry.
- How many signals would you expect to find in the PMR and CMR spectrum of each of the following compounds? What would be the chemical shift values, multiplicity and relative area of each signal?

