| BS (Hons) Chemistry/BS Botany/BS Zoology, Session:2018 Course Code: CHEM1113 Subject: Fundamentals of Organic Chemistry |  |  | Roll No. (in fig.)                        |  |  |
|---|--|--|---|--|--|
|   |  |  | Roll No. (in words)                       |  |  |
| Time Allowed: 15 Mi   | SECTION: I (MCQ's)                                 |  | Candidate's Signature.                    |  |  |
| NOTE: Encircle the corre  | ect/ best answer in each of the fol                | IX. Marks: 12  Howings. Each  C. Cutting and   | Signature of Addl. Supdt.                 |  |  |
| Q1.   |  |  |   |  |  |
| Alkanes v   | vater.   |  | (d) none of the above                     |  |  |
| (a) float on  | (b) sink in  | (c) readily mix with                           | (d) none of the ac-                       |  |  |
|   | ound C <sub>4</sub> H <sub>6</sub> has degree(s) o | of unsaturation. (c) three                     | (d) four                                  |  |  |
| (a) one   |  |  | ives                                      |  |  |
| • The reaction (a) an alkyne  | on of chlorine with an alke<br>(b) a dichloride    | (c) a chloroh                                  | ydrins (d) a trans alkene                 |  |  |
| <ul> <li>An example</li> </ul>  | e of a polar aprotic solvent                       | t is .   | (I) OH C(O)CH                             |  |  |
| (a) H <sub>2</sub> O  | (b) NH <sub>3</sub>                                | (c) $H_2S$                                     | (d) CH <sub>3</sub> C(O)CH <sub>3</sub> . |  |  |
| • Each ring at  | om in an aromatic compot<br>atoms (b) a p orbital  | ınd contains<br>(c) an sp <sup>3</sup> orbital | (d) at least three p orbitals             |  |  |
| <ul> <li>An electrophi</li> </ul>   | lic nitration substitution r                       |  |   |  |  |
| (a) $NO^+$  | (b) NO <sup>+2</sup>                               | (c) NO <sup>+3</sup>                           | (d) $NO_2$                                |  |  |
| Benzene can be  | e reduced by reaction wit                          | h ——— in the prese                             | ence of a catalyst.                       |  |  |
| (a) hydrogen  | (b) oxygen   | (c) nitrogen                                   | (d) helium                                |  |  |
| • The oxidation of  | f 1-propanol with chromi                           | c acid yields                                  |   |  |  |
| (a) an alcohol  | (b) an aldehyde                                    | (c) a ketone                                   | (d) an acid                               |  |  |
| • The strongest acid  | l is   |  | • •                                       |  |  |
| (a) 2-chloroacetic acid (b) 2,2-dichloro  |  |  | acetic acid                               |  |  |
| (c) 3-chloroacetic acid (d) 2,3-dichloro  |  |  | cetic acid                                |  |  |
| <ul> <li>Acetic acid reacts w</li> </ul>  | vith propionic acid to gi                          |  |   |  |  |
| 1   |  | cetic propionic                                | (d) all of the above                      |  |  |
| <ul> <li>Ethyl acetate is hydro</li> </ul>  | olyzed by water to give                            |  | (-) - or the above                        |  |  |
| / \ .   | er (c) an anhydride                                |  |   |  |  |
|   | ethyl acetate with diet                            |  | c acid and an alcohol                     |  |  |
|   | (1-): 1  |  |   |  |  |
|   | (b) imide  | (c) anhydride                                  | (d) amino acid                            |  |  |
|   |  |  |   |  |  |

#### ASITY OF EDUCATION

| JNIVERSITY OF ED<br>"UExam" Semester-II<br>BS (Hons) Chemistry/BS Bott                                       | . 2019  | ession:2018-2022                  | No.       | -442                                     |
|--|---|-----------------------------------|-----------|--|
| Course Code: CHEM1113<br>Subject: Fundamentals of Organ  |   |                                   | Roll No   | o. (in fig.)                             |
| SECTIO:  | N: 1 (MCQ's)  |                                   |           | andidate's Signature.                    |
| Time Allowed: 15 Minutes   | Max.  | Marks: 12                         | \         |  |
| NOTE: Encircle the correct/ best answ<br>Question carries 1 mark. Use of remo<br>Overwriting is not allowed. | er in each of the follow<br>er carries zero mark. C | rings. Each<br>futting and        |           | Signature of Addl. Supdt.                |
| Q1.  |   |                                   |           |  |
| Alkanes water.   |   |                                   |           | (d) none of the above                    |
|  | sink in   | (c) readily mix with              |           | (d) none of the                          |
| <ul> <li>The compound C<sub>4</sub>F</li> </ul>  | I <sub>6</sub> has degree(s) of                     | f unsaturation.                   |           | (4) 60                                   |
| (a) one  | (b) two   | (c) three                         |           | (d) four                                 |
| The reaction of chl  | orine with an alke                                  | ne in an inert solvent            | gives     | (I)                                      |
| (a) an alkyne (b   | ) a dichloride                                      | (c) a chloro                      | hydrins   | (d) a trans alkene                       |
| • An example of a po   | olar aprotic solven                                 | it is                             |           |  |
| (a) H <sub>2</sub> O   | (b) NH <sub>3</sub>                                 | $(c)H_2S$                         | (         | d) CH <sub>3</sub> C(O)CH <sub>3</sub> . |
| <ul> <li>Each ring atom in a</li> </ul>  | n aromatic compo                                    | ound contains                     |           |  |
| (a) two hydrogen atoms   | (b) a p orbita                                      | al (c) an sp <sup>3</sup> orbital | (d) a     | t least three p orbitals                 |
| An electrophilic nit   |   |                                   |           |  |
|  | (b) NO <sup>+2</sup>                                | (c) NO <sup>+3</sup>              |           | (d) $NO_2$                               |
| (a) NO <sup>+</sup>  | (b) 110   | with ——— in the p                 | resence   | of a catalyst.                           |
| Benzene can be red   | uced by reaction                                    | (c) nitroger                      | n         | (d) helium                               |
| (a) hydrogen   | (b) oxygen  |                                   |           | •  |
| • The oxidation of 1-  |   |                                   | 40.00     | (d) an acid                              |
| (a) an alcohol   | (b) an aldehyde                                     | (c) a ke                          | tone      | (u) III u                                |
| • The strongest acid   | is  |                                   |           |  |
| (a) 2-chlo   |   | (b) 2,2-dichloroacetic acid       |           |  |
|  | roacetic acid                                       | (d) 2,3-dich                      | iloroacet | ic acid                                  |
| • Acetic acid reacts   | with propionic aci                                  | id to give anhydride(s)           | ).        |  |
|  | ) propionic   | (c) acetic propionic              |           | (d) all of the above                     |
| • Ethyl acetate is hy  |   | to give                           |           |  |
|  |   | hydride (d) a carl                | boxylic a | cid and an alcohol                       |
| (a) a lactone (b) an   |   | with diethylamine give            | es an     |  |
|  | (b) imide   | (c) anhydride                     | ,         | (d) amino acid                           |
| (a) amide  | (U) Illiac  |                                   |           |  |

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# UNIVERSITY OF EDUCATION "UExam" Semester-I, 2019

BS (Hons) Chemistry/BS Botany/BS Zoology, Session:2018-2022

Course Code: CHEM1113

Subject: Fundamentals of Organic Chemistry

Time Allowed: 75 Minutes

Max. Marks:

# Section II (Short Answer)

# Q.2- Write short answers of the following.

3x5 = 15

- Explain why it is necessary to assume sp<sup>3</sup> hybridization in CH<sub>4</sub>? ì.
- Explain why a chloro group is deactivating but o,p-directing? ii.
- Discuss the mechanism of Friedel-Crafts reaction. What are its limitations? iii.
- Why a nitro group is both deactivating and meta directing?
- How can you distinguish between butanal and 2-butanone by a single test?

# Section III (Essay Type)

### Answer the following Questions

6x3 = 18

- Q.3:- How do inductive and resonance effects compete with each other when we discuss the orientation and reactivity of -OCH3 group present on benzene?
- Q.4:- Explain the phenomenon of hyperconjugation and give its applications.
- Q.5:- How do you compare S<sub>N</sub>1 and S<sub>N</sub>2 reactions? Give examples. The factors of steric hindrance and stability of carbocation decides these two types of mechanisms. Justify it.

# UNIVERSITY OF EDUCATION

# "UExam" Semester-I, 2019

BS (Hons) Chemistry/BS Botany/BS Zoology, Session:2018-2022

se Code: CHEM1113

ct: Fundamentals of Organic Chemistry

: Allowed: 75 Minutes

Max. Marks:

33

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3x5 = 15

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- iii. Discuss the mechanism of Friedel-Crafts reaction. What are its limitations?
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## UNIVERSITY OF EDUCATION

## "UExam" Semester-I, 2019

BS (Hons) Chemistry/BS Botany/BS Zoology, Session:2018-2022

urse Code: CHEM1113

bject: Fundamentals of Organic Chemistry

me Allowed: 75 Minutes

Max. Marks:

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