



Sanjay Ghodawat University, Kolhapur

Established as State Private University under Govt. of Maharashtra. Act No XL, 2017

EXM/P/09/00

2019-20

Year and Program: 2019-20

School of Science

Department of Chemistry

F.Y. B.Sc. Chemistry

Course Code: CHS 102

Course Title: Chemistry-II

Semester – Even (II)

Day and Date: Thursday

End Semester Examination

Time: 3 hrs, Max Marks: 100

9/11/20

10:30 am to 11 am

PRN:

Seat No:

Section A Marks out of 20:

Section A

Instructions: 1) All Questions are compulsory.

2) For MCQs mark tic (✓) for correct answer. No marks for multiple tics (✓).

3) Section A should be submitted to Jr. Supervisor immediately after first 30 min.

Q.1 Choose the correct answer for following.

		Marks	Bloom's level	CO
		20		
1	A cycle consisting of one constant pressure, one constant volume and two isentropic processes is known as a) Carnot cycle b) Stirling cycle c) Otto cycle d) Diesel cycle	1	L1	1
2	In an open system, for maximum work, the process must be entirely a) irreversible b) reversible c) adiabatic d) none of the mentioned	1	L1	1
3	Which of the following is true for a closed system? a) mass entering = mass leaving b) mass does not enter or leave the system c) mass entering can be more or less than the mass leaving d) none of the mentioned	1	L2	1
4	Unit of equilibrium constant for reaction $H_2 + I_2 \rightleftharpoons 2HI$ is a) No units b) $mol\ dm^{-3}$ c) $dm^3\ mol^{-1}$	1	L2	2

- d) None of these
- 5 Which of the following represents symbol for reversible reaction? 1 L1 2
 a) Single arrow b) Double arrows
 c) Bar d) None of these
- 6 In reverse reaction, SO_3 decomposes in to 1 L2 2
 a) S and O
 b) S and O_2
 c) S_2 and O
 d) SO_2 and O_2
- 7 Identify the correct statement for aromatic hydrocarbons 1 L2 3
 a) It has only sigma bonds
 b) It has only pi bonds
 c) It has a sigma and two pi bonds
 d) It has a sigma and delocalized pi bond
- 8 Select the incorrect option: 1 L2 3
 a) The aromatic hydrocarbon has a pleasant aroma (smell)
 b) Some of the aromatic compounds are ring-shaped
 c) Aromatic hydrocarbon can be either mono or polycyclic
 d) Benzene is the simplest hydrocarbon
- 9 Arenes does not undergo: 1 L1 3
 a) Dehydrogenation
 b) Coupling reaction
 c) Halogenation
 d) Cyclo additions
- 10 Which among these is the simplest example for polycyclic arenes? 1 L1 3
 a) Benzacephenanthrylene
 b) Naphthalene
 c) Pyrene
 d) Dibenz-anthracene
- 11 The efficiency and work ratio of a simple gas turbine cycle are 1 L4 3
 a) low b) very low
 c) high d) very high

- 12 When ethyl chloride reacts with nascent hydrogen, what is the formed product? 1 L3 3
- a) Methane
b) Propane
c) Butane
d) Ethane
- 13 Which alkyl halide out of the following may follow both SN^1 and SN^2 mechanism? 1 L3 3
- a) $\text{CH}_3\text{-X}$
b) $(\text{CH}_3)_2\text{CH-X}$
c) $(\text{CH}_3)_3\text{C-X}$
d) $(\text{CH}_3)_3\text{C-CH}_2\text{-X}$
- 14 Ethanol $\text{C}_2\text{H}_5\text{OH}$ is known as 1 L1 4
- a) ethyl alcohol
b) spirit of wine
c) grain alcohol
d) all
- 15 Which of the following is an example for primary alcohols? 1 L2 4
- a) Propan-2-ol
b) Pentan-1-ol
c) Butan-2-ol
d) 4,5-Dimethylhexan-3-ol
- 16 Primary alcohol are obtained by the reaction of Grignard reagent with 1 L3 4
- a) CH_3COCH_3
b) HCOOH
c) HCHO
d) CH_3CHO

- | | | | | |
|----|--|---|----|---|
| 17 | The IUPAC name of $C_2H_5OC_3H_7$ is | 1 | L3 | 4 |
| | a) Ethoxy propane | | | |
| | b) Ethoxyethane | | | |
| | c) Propoxyethane | | | |
| | d) Methoxy propane | | | |
| 18 | Phenol is used | 1 | L3 | 4 |
| | a) in the preparation of phenolphthalein | | | |
| | b) in the manufacture of alloys | | | |
| | c) in the manufacture of perfumes | | | |
| | d) as a refrigerant | | | |
| 19 | Phenol when pure is | 1 | L2 | 4 |
| | a) Colourless crystalline solid | | | |
| | b) Pink hygroscopic liquid | | | |
| | c) Colourless amorphous solid | | | |
| | d) Pink crystalline solid | | | |
| 20 | Phenol is less acidic than | 1 | L2 | 4 |
| | a) Ethanoic acid | | | |
| | b) Ethanol | | | |
| | c) Cresol | | | |
| | d) Benzyl alcohol | | | |



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PRN:

Seat No:

Section B Marks Out of 80:

Section B

Instructions: 1) All Questions are compulsory.

		Marks	Bloom's level	CO
Q.2	Answer the following questions (Solve any Two)	12		
a)	State and explain Zeroth and First law of thermodynamics.	6	L1	1
b)	Discuss in detail third law of thermodynamics with its examples.	6	L2	1
c)	Explain concept of standard state and standard enthalpies of formations.	6	L2	1
Q.3	Answer the following questions (Solve any Two)	12		
a)	Explain in detail Relationships between K_p , K_c and K_x for reactions involving ideal gases.	6	L2	2
b)	Discuss in detail Strong, moderate, weak electrolytes and degree of ionization.	6	L2	2
c)	Write a note on solubility and solubility product of sparingly soluble salts.	6	L1	2
Q.4	a) Answer the following questions (Solve any Two)	12		
i)	How will you prepare benzene from following: a) phenol b) acetylene	6	L3	3
ii)	Describe electrophilic substitution reactions of benzene.	6	L3	3
iii)	Write a note on Friedel-Craft's reaction (alkylation and acylation).	6	L3	3

b)	Answer the following questions (Solve any Four)	16		
i)	Write a note on types of nucleophilic substitution reaction of alkyl halide.	4	L2	3
ii)	How will you prepare alkyl halide from: a) Alkene b) Alcohol	4	L2	3
iii)	How will you obtain isonitrile and cyanide from alkyl halide?	4	L1	3
iv)	Write a note on Sandmeyer and Gattermann reactions.	4	L3	3
v)	Discuss in detail aromatic nucleophilic substitution reaction of chlorobenzene.	4	L2	3

Q.5	a)	Answer the following questions (Solve any Two)	16		
	i)	How will you prepare primary, secondary and tertiary alcohols from aldehydes and ketenes using Grignard reagent? Give reactions.	8	L3	4
	ii)	Discuss the mechanism of Pinacol-Pinacolone rearrangement reaction.	8	L3	4
	iii)	Describe in detail following Electrophilic aromatic substitution reaction: a) Nitration b) Halogenation c) Sulphonation.	8	L3	4
	b)	Answer the following questions (Solve any Three)	12		
	i)	Write a note on Reimer-Tiemann Reaction.	4	L1	4
	ii)	How will you prepare phenol from Cumene hydroperoxide method?	4	L3	4
	iii)	Discuss the mechanism of Gattermann-Koch Reaction	4	L2	4
	iv)	How will you prepare phenol from diazonium salts?	4	L3	4
