

Roll No.

C No. 62

Name:

SECTION-A

Marks:18

Time Allowed: 20 Minutes

- Aldehydes containing four or more carbon atoms can exhibit:
A. chain isomerism B. position isomerism C. metamorphism D. tautomerism
- Carboxylic acids that contain four or more carbon atoms can exhibit:
A. chain isomerism B. position isomerism C. metamorphism D. tautomerism
- The temperature at which enzyme shows maximum activity is called:
A. maximum temperature B. minimum temperature C. optimum temperature D. transition temperature
- One gram of lipid on complete oxidation produces heat of:
A. 9.3 kcal B. 8.3 kcal C. 7.3 kcal D. 6.3 kcal
- The type of thermoplastic polymer is: 126234
A. epoxy resin B. Polyvinyl Chloride C. polyurethane D. polyester resin
- The troposphere contains SO_x and NO_x gases which are responsible for:
A. photochemical smog B. industrial smog C. acid rain D. fog
- The colourless, odourless and toxic gas among the following is:
A. carbon dioxide B. carbon monoxide C. carbon soot D. carbonic acid
- Atomic and molecular masses are determined by:
A. UV/visible spectroscopy B. IR spectroscopy C. NMR spectroscopy D. mass spectroscopy
- Group-IA elements are very good:
A. oxidizing agents B. reducing agents C. active agents D. passive agents
- The least electropositive element of group-IIA is:
A. beryllium B. magnesium C. calcium D. strontium
- The MCl_2 that does not react with water is:
A. CCl_4 B. SiCl_4 C. GeCl_4 D. SnCl_4
- Coordination compound, cisplatin, is used as a drug for the treatment of:
A. malaria B. typhoid C. sleeplessness D. cancer
- The chemically active portion of the organic molecule is:
A. functional group B. alkyl group C. aryl group D. vinyl group
- Stereoisomers are:
A. constitutional isomers B. different compounds with same connectivity C. conformational isomers D. identical isomers
- Bond breaking is: 126234
A. exothermic process B. endothermic process C. physical process D. chemical process
- A two-step nucleophilic substitution mechanism among the following is:
A. $\text{S}_\text{N}1$ B. $\text{S}_\text{N}2$ C. $\text{E}1$ D. $\text{E}2$
- The IUPAC name of isopropyl alcohol is:
A. propan-1-ol B. propan-2-ol C. propane-2-ol D. propen-3-ol
- The functional group of alcohols is:
A. formyl group B. carbonyl group C. carboxyl group D. hydroxyl group

Write Roll No. in the boxes and shade the appropriate circle.

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0	0	0	0	0	0
1	1	1	1	1	1
2	2	2	2	2	2
3	3	3	3	3	3
4	4	4	4	4	4
5	5	5	5	5	5
6	6	6	6	6	6
7	7	7	7	7	7
8	8	8	8	8	8
9	9	9	9	9	9

Shade the correct answers for each question below.

1.	☒	☐	☐	☐
2.	☐	☐	☒	☐
3.	☐	☐	☒	☐
4.	☒	☐	☐	☐
5.	☐	☒	☐	☐
6.	☐	☐	☒	☐
7.	☐	☒	☐	☐
8.	☐	☐	☐	☒
9.	☐	☒	☐	☐
10.	☒	☐	☐	☐
11.	☒	☐	☐	☐
12.	☐	☐	☐	☒
13.	☒	☐	☐	☐
14.	☐	☐	☒	☐
15.	☐	☒	☐	☐
16.	☒	☐	☐	☐
17.	☐	☒	☐	☐
18.	☐	☐	☐	☒
19.	☐	☐	☐	☐
20.	☐	☐	☐	☐

Section "B"

Marks: 40

Note: Attempt any TEN questions. All questions carry equal marks.

- Q.1.** Define oxides and give two examples. Write the chemical formulas of any four oxides of the third-period elements. Also, mention the oxidation states of these elements in their oxides. 2+1+1
- Q.2.** Write the complete and balanced chemical reactions of the following with water. Also mention the nature of product formed in each case. (a) sodium oxide (b) phosphorus trichloride (c) phosphorus pentoxide (d) sulphur dioxide 1+1+1+1
- Q.3.** Explain the effect of heat on the nitrates of Group IA elements. Why is lithium nitrate decomposed at a lower temperature than the nitrates of other Group IA elements? 2+2
- Q.4.** Define coal. Mention its composition. How is it formed in nature? 1+1+2
- Q.5.** Write the structures of the following: 1+1+1+1
(a) 2-methylpropane (b) 2, 2-dimethylpropane
(c) 2, 2, 4-trimethylpentane (d) 2-ethyl-4-methylpentane
- Q.6.** Define hydrogenation of alkenes. Write the reaction of ethene with hydrogen. Also mention catalysts and reaction conditions. 1+2+1
- Q.7.** Write the reaction of methylmagnesium bromide with formaldehyde and acetaldehyde. Also write the names of products formed. 1+1+1+1
- Q.8.** Define sulphonation of benzene. How is benzenesulphonic acid prepared? How is phenol prepared from benzenesulphonic acid? Give complete and balanced equation in each case. 1+1+2
- Q.9.** Define carboxylation of Grignard's reagent. How is carboxylic acid prepared from this reaction? Give significance of the reaction. 1+2+1
- Q.10.** What are monosaccharides? How are they subdivided? Give two examples of each. 1+1+2
- Q.11.** What is fractional distillation? Why is it used? Explain how crude oil is refined. 1+1+2
- Q.12.** Define NMR spectroscopy. What types of information does it provide? Explain why does hydrogen nuclei act like small magnets and how is this property used in proton NMR spectroscopy. 1+1+2
- Q.13.** Define spectroscopy. Explain its basic principle. Also mention its significance. 1+2+1

Section "C"

Marks: 27

Note: Attempt any THREE questions. All questions carry equal marks.

- Q.14.** a). Define oxidizing agent. Explain how halogens act as oxidizing agents in redox reactions with two suitable examples. 1+2+2
b). What is coordination number of a central metal ion? Give an example. Explain how does the coordination number help in determining the geometry of coordination compounds. 1+1+2
- Q.15.** a). Define hydration of alkynes. Explain with chemical equations how are acetaldehyde and acetone prepared from this reaction? Also mention reaction conditions. 1+1.5+1.5+1
b). What is meant by β -elimination reaction? Why is it so called? Write its general chemical equation. 1+1+2
- Q.16.** a). What are phenols? Give one example. Describe the two main types of reactions they undergo. Also explain how the $-\text{OH}$ group affects their reactivity. 1+1+2+1
b). Write the balanced chemical equations of ozone with the following: 2+2
(i) but-2-ene (ii) 2-methylbut-2-ene
- Q.17.** a). Define atomic spectroscopy. Explain its principle. How are elements identified using this technique? Why is it used? 1+2+1+1
b). Define ozone and state its location in the atmosphere. Explain the role of ozone in protecting life on earth from ultraviolet radiation. 1+1+2