First Semester

Chemistry

كلية الحرس التقنية

(Answers)

مركز القياس والتقويم التربوي
The Center for Educational Assessment and Measurement (CEAM)

سلطنة عمان
وزارة التربية والتعليم

MARKING GUIDE

GENERAL EDUCATION DIPLOMA

ROYAL GUARD OF OMAN TECHNICAL COLLEGE

SEMESTER ONE – FIRST SESSION

CHEMISTRY

2023 / 2024

General Education Diploma, Oman Royal Guard Technical College,
Semester One, First Session, Chemistry, 2023/2024.

Detailed Exam Specifications for Semester One:

Topics of the units	Weighting %	Multiple choice (20%)					Extended response (80%)					Total marks
		No. of Questions	marks	Cognitive levels			No. of questions	Marks	Cognitive levels			
				Knowledge (30%)	Application (50%)	Reasoning (20%)			Knowledge (30%)	Application (50%)	Reasoning (20%)	
Introduction to organic chemistry	12.5%	14	1	1	-	-	10	7	3	3	1	8
Alcohols	25%		4	1	2	1		14	4	7	3	18
Aldehydes & ketones	25%		4	1	2	1		14	4	7	3	18
Carboxylic acids	25%		4	1	2	1		14	4	7	3	18
Polymers	12.5%		1	-	1	-		7	2	4	1	8
Total	100%		14	4	7	3		56	17	28	11	70

General Education Diploma, Oman Royal Guard Technical College.
Semester One, First Session, Chemistry, 2023/2024.

Distribution of cognitive domains and marks.

QUESTION ONE: Multiple choice (14 marks)

Item	Mark	Unit	page	Cognitive domain	Output
1	**1**	Introduction to organic chemistry	18	Knowledge	**4**
2	**1**	Alcohols	36	Knowledge	**3**
3	**1**	Alcohols	32-33	Application	**2v**
4	**1**	Alcohols	32-33	Application	**2v**
5	**1**	Alcohols	30-33	Reasoning	**1**
6	**1**	Aldehyde and ketones	47	Knowledge	2i
7	**1**	Aldehyde and ketones	44	Application	1
8	**1**	Aldehyde and ketones	50	Application	2viii
9	1	Aldehyde and ketones	47-50	Reasoning	2
10	1	Carboxylic Acids	44	Knowledge	1
11	1	Carboxylic Acids	59	Application	3-iii
12	1	Carboxylic Acids	57-58	Reasoning	3
13	1	Carboxylic Acids	58	Application	3 ii-v
14	1	Polymers	67	Application	2

QUESTION TWO: Extended response (56 marks)

Item	Mark	Unit	page	Cognitive domain	Output
15.a	1	Introduction to organic chemistry	19	Knowledge	3
15.b	2	Introduction to organic chemistry	19	Application	3
15.c	1	Introduction to organic chemistry	19-18	Application	2
15.d.	2	Introduction to organic chemistry	23	Knowledge	5
15.e	1	Introduction to organic chemistry	20	Reasoning	6
16.a	1	Alcohols	30-31	Application	1
16.b	1	Alcohols	30-31	Application	2iv
16.c	4	Alcohols	30-31	Knowledge	1
17.a.i	1	Alcohols	32-33	Application	2v
17.a.ii	1	Alcohols	32-33	Reasoning	2v
17.a.iii	2	Alcohols	28	Application	2v
17.a.iv	1	Alcohols	32	Application	2v
17.b.i	1	Alcohols	35	Reasoning	2vi
17.b.ii	1	Alcohols	35	Application	2vi
17.c	1	Alcohols	32-33	Reasoning	1
18a	1	Aldehyde and ketones	48	Knowledge	2iii
	1	Aldehyde and ketones	46	Knowledge	2
18b	1	Aldehyde and ketones	46	Application	2iii
	1	Aldehyde and ketones	46	Application	2
18ci	2	Aldehyde and ketones	47	Application	2ii
18cii	1	Aldehyde and ketones	47	Application	2ii
18d	2	Aldehyde and ketones	44-43	Knowledge	1
19ai	1	Aldehyde and ketones	49-48	Reasoning	2iv
19aii	1	Aldehyde and ketones	49-48	Reasoning	2ii
19aiii	1	Aldehyde and ketones	49-48	Reasoning	2ii
19b	2	Aldehyde and ketones	49-47	Application	2iv

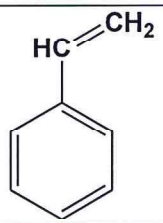
Item	Mark	Unit	page	Cognitive domain	Output
20a- i	1	Carboxylic Acids	61	Knowledge	4
20a- ii	1	Carboxylic Acids	61	Knowledge	
20a- iii	1	Carboxylic Acids	58	Application	3 iii
20a- iv	1	Carboxylic Acids	58	Application	3 ii
20b	1	Carboxylic Acids	58	Reasoning	3-v
21a	1	Carboxylic Acids	59	Knowledge	3 iii
21b- i	1	Carboxylic Acids	58	Application	3 ii
21b- ii	1	Carboxylic Acids	59	Application	3 iii
21b- iii	1	Carboxylic Acids	57	Application	2
21c	1	Carboxylic Acids	57	Reasoning	3 i
22a	1	Carboxylic Acids	56	Knowledge	1
22b-i	1	Carboxylic Acids	58-60	Application	3 iv
22b-ii	1	Carboxylic Acids		Application	3 ii
22c	1	Carboxylic Acids	57	Reasoning	3 i
23a	2	Polymers	66-70	Application	1-6
23b	2	Polymers	66-70	Application	7
23c	1	Polymers	68-69	Reasoning	4
23d	2	Polymers	74	Knowledge	8

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Semester One, First, Chemistry, 2023/2024.

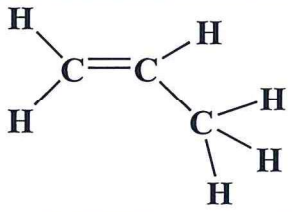
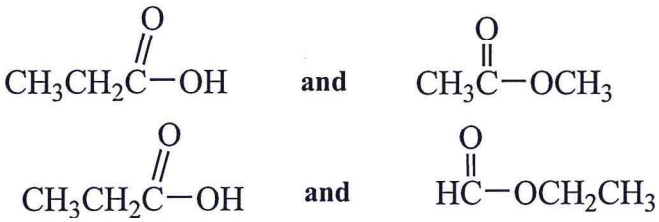
TOTAL MARKS: 70 **PAGES: 6**

Question One (14 Marks)

There are 14 multiple-choice items. Each correct answer worth ONE marks.

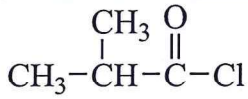
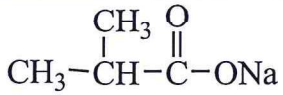
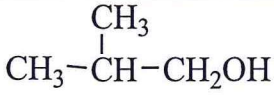
Item	Correct option	
1	**a**	Aldehyde
2	**b**	Presence of Oxygen
3	**d**	pentan-2-ol
4	**c**	$CH_3\ CH_2\ CH_2\ OH$ | Aldehyde
5	**a**	Tertiary | 2-methylpropan-2-ol
6	**c**	A red/orange precipitate
7	**c**	Aldehyde
8	**a**	An alkaline solution of $NaOH/I_2$.
9	**a**	3 and 4
10	**d**	CH_3CH_2COOH
11	**b**	CH_3CH_2COOH and CH_3CH_2OH
12	**a**	It reacts with $LiAlH_4$ to produce octanone.
13	**a**	$(HCOO)_2Mg$ | $(HCOO)_2Mg$
14	**b**	

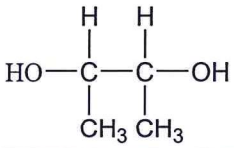
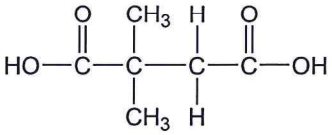
Question Two (56 Marks)

Part	Section	The answer	The mark
15	a	A family of compounds that have a common functional group **or** a sequence of compound with the same functional group that differ by a molecular formula of CH_2.	1
	b	A: alkenes C: alcohols	2
	c		1
	d	- Addition Reaction **or** hydration • **If a student writes one answer gets a mark** - Oxidation	1 1
	e	**Acid** **Ester**  **or** •**If the student writes one of these answers he gets a mark**	1
16	a	Butanol	1
	b	Primary **or** 1°	1
	c	**Number of reaction** | **1** | **2** **Structural formula of the organic product compound** | | $CH_3CH_2CH_2CH_2Cl$ **Type of reaction** | substitution | **The reagent used** | PI_3 | PCl_5	4

Part	Section	The answer	The mark
17	a.i	oxidation	1
	a.ii	$CH_3\ CH_2\ CHO$	1
	a.iii	- Aldehyde - Carboxylic acid	1 1
	a.iv	$(K_2Cr_2O_7)$ /H_2SO_4 **or** [O] **or** acidified potassium dichromate. •**Both compounds are required**	1
	b.i	$CH_3CH_2COOCH_2CH_2CH_3$	1
	b.ii	Ester	1
	c	Because it is a secondary alcohol **or** it oxidized to ketone.	1
18	a	Reaction (1) : Reduction	1
		Reaction (2) : Oxidation	1
	b	Compound (B): CH_3CH_2OH	1
		Compound (D): $CH_3—COOH$ or $CH_3—\overset{\overset{O}{\|}}{C}—OH$	1
	c.i	$CH_3COO^- + 2Ag$ • **Each product one mark**	2
	c.ii	Silver mirror	1
	d	Aldehydes: has a hydrogen atom bonded to the carbonyl group. Ketones: has two carbon atoms bonded to the carbonyl group.	1 1

Part	Section	The answer	The mark
19	a.i	Ketone **or** methyl ketone	1
	a.ii	aldehyde	1
	a.iii	ketone	1
	b	Compound (X):  • pentan-2-one only **pentan-3-one not accepted**	1
		Compound (Y): 	1
20	a-i	F	1
	a-ii	A	1
	a-iii	B	1
	a-iv	C	1
	b	2K	1

Part	Section	The answer	The mark
21	a	H^+ **or** H_2SO_4 **or** strong acid	1
	b i	$CH_3(CH_2)_3COONa$	1
	b ii	$CH_3(CH_2)_3COOCH_3$	1
	b iii	$CH_3(CH_2)_3CHO$	1
	c	Because $LiAlH_4$ is a strong reducing agent.	1
22	a	Carboxylic acid	1
	b	Compound 2: 	1
		Compound 3: 	1
	c		1

Part	***Section***	***The Answer***	***The mark***
23	a	M: addition	1
		S: condensation	1
	b	Compound 1 (alcohol) 	1
		Compound 2 (carboxylic acid)  **If the student reflects between the two compounds, they get a full mark**	1
	c.	Because they have a weak force between chains **or** the chain is not cross linked together. **or** its chain can't join together in a regular pattern.	1
	d.	- destroy animal habitats. - take land that could be use for farming or building. - smelly and an eyesore. - noisy lorries coming back and forth.	2

This is the end of the Marking Guide

MARKING GUIDE

GENERAL EDUCATION DIPLOMA

OMAN ROYAL GUARD TECHNICAL COLLEGE

SEMESTER ONE – FRIST SESSION

CHEMISTRY

2022 / 2023

General Education Diploma, Oman Royal Guard Technical College,
Semester One, Frist Session, Chemistry, 2022/2023.

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Alcohols	25%		4	1	2	1		14	4	7	3	18
Aldehydes & ketones	25%		4	1	2	1		14	4	7	3	18
Carboxylic acids	25%		4	1	2	1		14	4	7	3	18
Polymers	12.5%		1	-	1	-		7	2	4	1	8
Total	**100%**		**14**	**4**	**7**	**3**		**56**	**17**	**28**	**11**	**70**

General Education Diploma, Oman Royal Guard Technical College,
Semester One, Frist Session, Chemistry, 2022/2023.

Distribution of cognitive domains and marks.

QUESTION ONE: multiple choice (14 marks)

Item	Mark	Unit	Cognitive domain	Output
1	1	Introduction to organic chemistry	Knowing	**1**
2	1	Alcohols	Knowing	3
3	1	Alcohols	Applying	1
4	1	Alcohols	Appling	2.v
5	1	Alcohols	Reasoning	3.v
6	1	Aldehydes & ketones	Knowing	**2**
7	1	Aldehydes & ketones	Applying	**1**
8	1	Aldehydes & ketones	Applying	**2.iii**
9	1	Aldehydes & ketones	Reasoning	**2.ii**
10	1	Carboxylic acids	Knowing	3.ii
11	1	Carboxylic acids	Applying	1
12	1	Carboxylic acids	Applying	3.iii
13	1	Carboxylic acids	Reasoning	2
14	1	Polymers	Applying	6

QUESTION TWO: Extended response (56 marks)

Item	Mark	Unit	Cognitive domain	Output
15.a	1	Introduction to organic chemistry	Knowing	6
15.b	1	Introduction to organic chemistry	Knowing	5
15.c	3	Introduction to organic chemistry	Applying	6
16.a	1	Introduction to organic chemistry	Knowing	5
16.b	1	Introduction to organic chemistry	Reasoning	3
17.a	1	Alcohol	Knowing	3
17.b	1	Alcohol	Knowing	3.i
17.c	1	Alcohol	knowing	2v
17.d	2	Alcohol	Applying	2v
17.e	1	Alcohol	Applying	3.iv
18.a	3	Alcohol	Applying	1
18.b	1	Alcohol	Applying	3.ii
18.c	1	Alcohol	Reasoning	3.i
19.a	2	Alcohol	Reasoning	3.vi

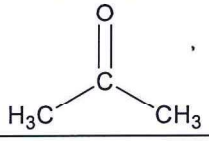
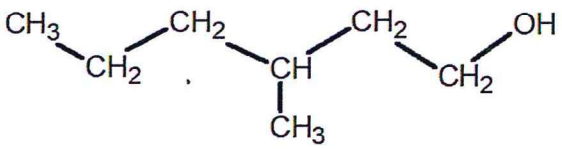
19.b	1	Alcohol	Knowing	3.vi
20.a.i	1	Aldehydes & ketones	Applying	1
20.a.ii	1	Aldehydes & ketones	Knowing	2.iv
20.a.iii	1	Aldehydes & ketones	Knowing	2.iv
20.b.i	1	Aldehydes & ketones	Applying	1
20.b.ii	1	Aldehydes & ketones	Applying	1
20.b.iii	1	Aldehydes & ketones	Knowing	1
20.b.iv	1	Aldehydes & ketones	Reasoning	2.iv
20.b.v	1	Aldehydes & ketones	Reasoning	2.iv
20.c.i	1	Aldehydes & ketones	Applying	1
20.c.ii	1	Aldehydes & ketones	Applying	1
20.c.iii	1	Aldehydes & ketones	Applying	1
20.c.iv	1	Aldehydes & ketones	Applying	1
20.c.v	1	Aldehydes & ketones	Knowing	2.i
20.c.vi	1	Aldehydes & ketones	Reasoning	4
21.a.i	3	Carboxylic acids	Knowing	4
21.a.ii	1	Carboxylic acids	Reasoning	2
21.a.iii	1	Carboxylic acids	Reasoning	3.i
21.b.i	1	Carboxylic acids	Reasoning	3.iii
21.b.ii	1	Carboxylic acids	Applying	2
22.a.i	1	Carboxylic acids	Applying	3.iii
22.a.ii	1	Carboxylic acids	Knowing	3.ii
22.b.i	1	Carboxylic acids	Applying	3.ii
22.b.ii	2	Carboxylic acids	Applying	3.v
22.c	2	Carboxylic acids	Applying	3.iv
22.a	2	Polymers	Knowing	8
22.b	4	Polymers	Applying	2,6
22.c	1	Polymers	Reasoning	4

General Education Diploma, Oman Royal Guard Technical College.
Semester One, Frist Session, Chemistry, 2022/2023.

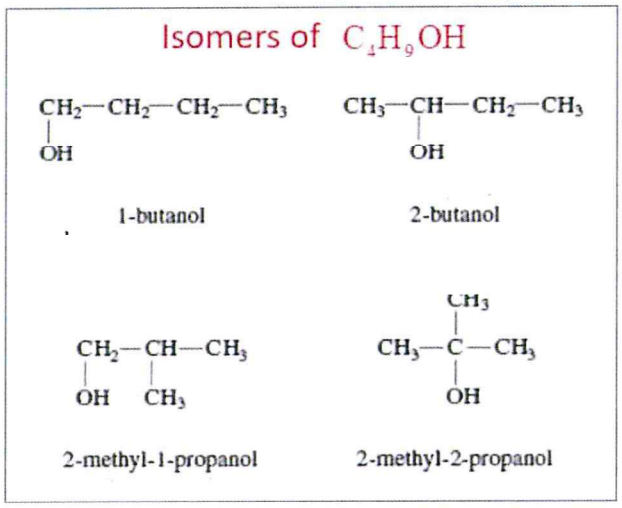
TOTAL MARKS: 70 **PAGES: 5**

Question One (14 Marks)

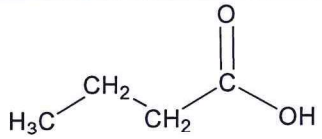
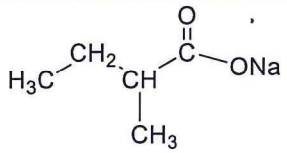
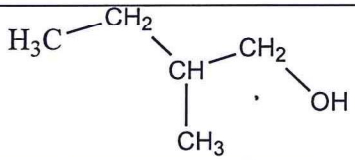
There are 14 multiple-choice items. Each correct answer worth ONE marks.

Item	Correct option	
1	c	H_2CO_3
2	d	Ethanol and CO_2
3	b	3-ethylpentan-2-ol
4	a	
5	d	$CH_3CH_2CH_2OH$
6	a	Reduced to primary alcohols.
7	c	CH_3COCH_3
8	a	Reduction CH_3CH_2CH2OH
9	c	Propanal CH_3CH_2COOH Silver mirror
10	b	An alcohol.
11	a	Carboxylic acid
12	a	CH_3COCH_3
13	c	
14	c	**Condensation Polyamide**

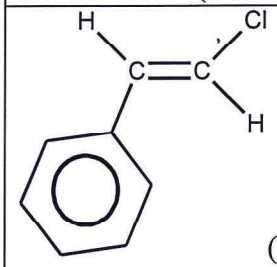
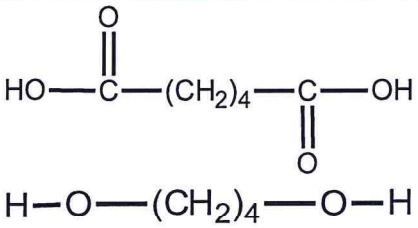
Question Two (56 Marks)

Part	Section	The answer	The mark
15	a	Compounds with the same molecular formula but a different formula	1
	b	Dehydration	1
	c	 **Note: three of four these alcohol isomers are enough to get full marks.**	3
16	a	Substitution or halogenation reaction	1
	b	C_3H_8	1
17	a	Ethene OR $CH_2{=}CH_2$ (C_2H_4)	1
	b	Oxidation	1
	c	$K_2Cr_2O_7$ or [O]	1
	d	Compound B: **Aldehyde** Compound C: **Carboxylic Acid**	2
	e	$3CH_3CH_2OH + PI_3 \longrightarrow 3CH_3CH_2I + H_3PO_3$	1

Part	Section	The answer	The mark
	a	Compound A: Secondary alcohol Compound B: Primary alcohol Compound C: Tertiary alcohol	3
	b	2-chloropentane	1
	c	Compound C	1
19	a	CH_3COOH, CH_3CH_2OH	1
	b	As catalyst	1

Part	Section	The answer	The mark
20	a.i	Butanal	1
	a.ii	Cu_2O	1
	a.iii		1
	b.i		1
	b.ii	3-methylpentan-2-ol	1
	b.iii	NaIO OR iodoform	1
	b.iv	Because compound 2 has methyl group next to -OH grpoup.	1
	b.v	5	1
	c.i	2-methylbutanal	1
	c.ii	Reduction	1
	c.iii		1
	c.iv	2-methylbutan-1-ol	1
	c.v	Oxidation	1
	c.vi	-COOH or Carboxylic acid	1

Part	Section	The answer	The mark
21	a	Flavourings Perfumes Synthetic fibers	3 (each 1 mark)
	b.i	CH_3CH_2CHO or $CH_3CH_2CH_2OH$	1
	b.ii	CH_3COOH or CH_3CHO	1
	b.iii	$CH_3CH_2COOCH_2CH_3$	1
	c.i	Redox reaction.	1
	c.ii	Esterification.	1
	d.i	Salts.	1
	d.ii	CH3CH2COONa	1
	e.i	$2CH3CH2COOH + Mg \longrightarrow (CH3CH2COO)2Mg + H2$ 1 mark 1 mark	2
	e.ii	$CH_3CH_2COOH + PCl_5 \longrightarrow CH_3CH_2COCl + POCl_3 + HCl$ 1 mark 1 mark	2

Part	***Section***	***The answer***	***The mark***
22	**a**	Advantage: cheap and easy way to dispose of plastics, can be used for providing energy. (1 mark) Disadvantage: take up valuable land, destroys animal habitats and waste can leak into the water system, smelly, an eyesore and noisy. (1 mark)	2
	b	Addition (1 mark)  (1 mark) **Condensation** (1 mark)  (1 mark)	4
	c	Polymer (A)	1

This is the end of the Marking Guide

MARKING GUIDE



GENERAL EDUCATION DIPLOMA

OMAN ROYAL GUARD TECHNICAL COLLEGE

SEMESTER ONE - FIRST SESSION

CHEMISTRY

2021 / 2022

Detailed Exam Specifications for Semester One:

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Introduction to organic chemistry	12.5%	14	1	1	-	-	10	7	3	3	1	8
Alcohols	25%		4	1	2	1		14	4	7	3	18
Aldehydes & ketones	25%		4	1	2	1		14	4	7	3	18
Carboxylic acids	25%		4	1	2	1		14	4	7	3	18
Polymers	12.5%		1	-	1	-		7	2	4	1	8
Total	**100%**		**14**	**4**	**7**	**3**		**56**	**17**	**28**	**11**	**70**

Distribution of cognitive domains and marks.

QUESTION ONE: multiple choice (14 marks)

Item	Mark	Unit	Page	Cognitive domain	Output
1	1	Introduction to organic chemistry	163	Knowing	6
2	1	Alcohols	198	Knowing	2.ii
3	1	Alcohols	196	Applying	1,2.v
4	1	Alcohols	199	Applying	2.iv
5	1	Alcohols	196	Reasoning	2.v
6	1	Aldehydes and ketones	43-50	Knowing	2v
7	1	Aldehydes and ketones	48	Applying	2iii
8	1	Aldehydes and ketones	48	Applying	2iii
9	1	Aldehydes and ketones	47-48	Reasoning	2ii
10	1	Carboxylic acids	229-232	Knowing	1
11	1	Carboxylic acids	230	Applying	3ii
12	1	Carboxylic acids	231	Applying	3iii
13	1	Carboxylic acids	231	Reasoning	3i
14	1	Polymers	75*	Knowing	8

*** Study Guide**

General Education Diploma, Oman Royal Guard Technical College
Semester One, First Session , Chemistry, 2021/2022.

QUESTION TWO: Extended response (56 marks)

Item	Mark	Unit	Page	Cognitive domain	Output
15.a	1	Introduction to organic chemistry	162	Knowing	6
15.b	1	Introduction to organic chemistry	163	Applying	6
15.c	1	Introduction to organic chemistry	159	Applying	2
15.d	1	Introduction to organic chemistry	158	Applying	3
15.e.i	1	Introduction to organic chemistry	199	Knowing	5
15.e.ii	1	Introduction to organic chemistry	163	Knowing	5
15.f	1	Introduction to organic chemistry	200	Reasoning	2,6
16	4	Alcohols	196	Knowing	3
17.a.i	1	Alcohols	196	Reasoning	2.v
17.a.ii	1	Alcohols	196	Reasoning	2.v
17.b.i	2	Alcohols	196	Applying	2.v
17.b.ii	2	Alcohols	196	Applying	2.v
17.c	1	Alcohols	196	Reasoning	2.v
17.d.i	1	Alcohols	198	Applying	2.iii
17.d.ii	1	Alcohols	199	Applying	2.iii
17.e	1	Alcohols	197	Applying	2.vi
18.a.i	1	Aldehydes and ketones	46	Knowing	2v
18.a.ii	1	Aldehydes and ketones	48	Knowing	2iii
18.b.i	1	Aldehydes and ketones	47-48	Applying	2iv
18.bii	1	Aldehydes and ketones	49-50	Applying	2ii
18.ci	2	Aldehydes and ketones	47	Applying	2ii-2iv

18.c.ii	2	Aldehydes and ketones	49-50	Applying	2ii-2iv
18.d.i	1	Aldehydes and ketones	47	Reasoning	2ii
18.d.ii	1	Aldehydes and ketones	49-50	Reasoning	2iii
18.e	3	Aldehydes and ketones	50	Applying	2iv
18.f	1	Aldehydes and ketones	46	Reasoning	1
19.a	1	Aldehydes and ketones	50	Applying	2iv
19.b	1	Aldehydes and ketones	46	Applying	2v
20.a	**1**	Carboxylic acids	**236**	Knowing	**4**
20.b	**1**	Carboxylic acids	**229-230**	Knowing	**1**
20.c	**1**	Carboxylic acids	**231**	Knowing	**3iv**
20.d	**1**	Carboxylic acids	**230**	Knowing	**3ii**
21.a.i	1	Carboxylic acids	231	Applying	3ii
21.a.ii	1	Carboxylic acids	231	Reasoning	3ii
21.a.iii	1	Carboxylic acids	231	Applying	3ii
21.a.iv	2	Carboxylic acids	231	Applying	4
21.b.	1	Carboxylic acids	231	Applying	3i
21c.	1	Carboxylic acids	231	Reasoning	3iv
21.d	1	Carboxylic acids	230	Reasoning	3ii
22	3	Polymers	68	Knowing	3
23.a	1	Polymers	71	Applying	8
23.b	1	Polymers	71	Applying	7
23.c	1	Polymers	70	Applying	7
23.d	1	Polymers	69	Reasoning	4

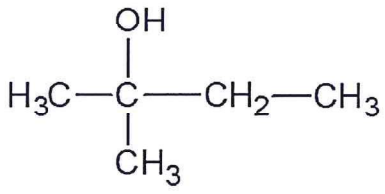
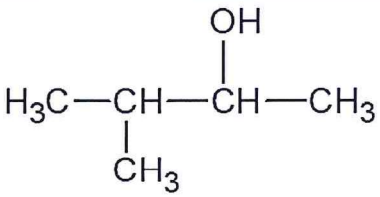
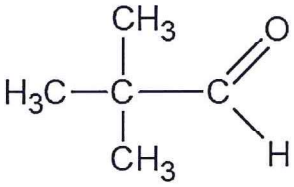
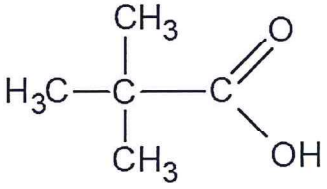
TOTAL MARKS: 70 **PAGES: 4**

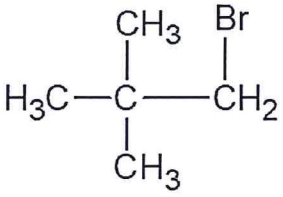
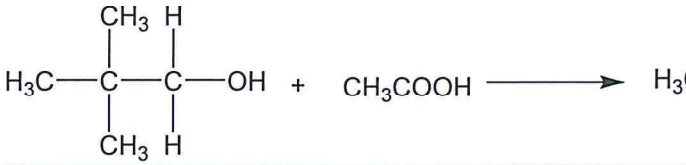
Question One (14 Marks)

There are 14 multiple-choice items. Each correct answer worth ONE mark.

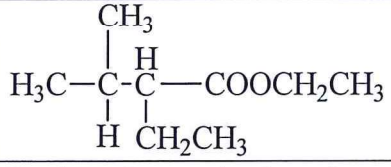
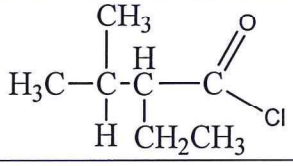
Item No.	Correct answer
1	**c.** Alcohol with ether
2	**c.** It involves the substitution of oxygen by Cl.
3	b. Secondary Ketone
4	a. PI_3 $CH_3CH_2CH_2CH_2I$
5	**a.** 3-methylhexan-1-ol
6	d) both reduced to carboxylic acids
7	reduction $LiAlH_4$ $CH_3CH_2CH_2CH_2OH$
8	b) $C_5H_{11}CHOHCH_3$
9	No reaction occurs
10	b. It produces $H_{2(g)}$ when it reacts with bases.
11	c. Salt H_2O
12	b. $CH_3CH_2CH_2OH$ and HCOOH
13	d. $LiAlH_4$ reduction $CH_3(CH_2)_5OH$
14	a. Recommended to be used for power production.

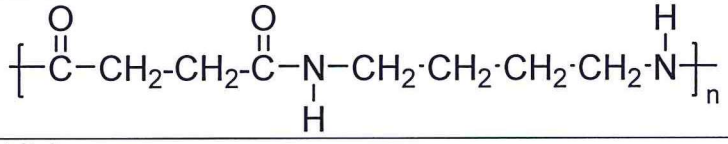
Question Two (56 Marks)

Part	Section	The answer	The mark
15	a	Isomers are molecules with the same molecular formula but different structural formulae.	1
	b	Chain isomerism.	1
	c	C_4H_6O	1
	d	Aldehyde	1
	e.i	Hydration.	1
	e.ii	Steam or Water, using a catalyst of acid (H^+).	1
	f	$CH_3COCH=CH_2$	1
16		Ethene / Sugar Requires a lot of energy / Uses less energy	4 (each 1mark)
17	a.i		1
	a.ii		1
	b.i	 Aldehyde, 1 mark for the name, 1 mark for the structural formula.	2
	b.ii	 Carboxylic acid, 1 mark for the name, 1 mark for the structural formula.	2
	c		1
	d.i	Halogenation or substitution reaction.	1

	d.ii		1
	e		1
18	18.a.i	Oxidation	1
	18.a.ii	Reduction	1
	18.b.i	CHI_3	1
	18.bii	Ag	1
	18.ci	Compound (A): Aldehyde,(1 mark) because it gave a positive result with Tollen' reagent but not with iodoform reaction. (1 mark)	2
	18.c.ii	Compound (B): Ketone, (1 mark) because it gave a positive result with iodoform reaction but not with Tollen' reagent. (1 mark)	2
	18.d.i	$CH_3CH_2CH_2CH_2CH_2COO^-$ OR $CH_3CH_2CH_2CH_2CH_2COH$	1
	18.d.ii	$CH_3CH_2CH_2CH_2CHOHCH_3$	1
	18.e	$CH_3CH_2CH_2CH_2COCH_3 + 3\ I_2 + 4\ NaOH$ ----- $CH_3CH_2CH_2CH_2COONa + CHI_3 + 3\ H_2O$	3
	18.f	$H_3CH_2CH_2COCH_2CH_2CH_3$	1
19	a	$NaOH/I_2$	1
	b	3,3-dimethyl pentanal	1

Part	***Section***	***The answer***	***The mark***
20	a.	CH_3COOCH_3 or E	1
	b.	HCOOH or A	1
	c.	$CH_3CH_2CH_2COCl$ or C	1
	d.	CH_3CH_2COONa or B	1

Part	Section	The answer	The mark
21	a.i	Esterification	1
	a.ii		1
	a.iii	By heating or by heating under reflux	1
	a.iv	Gives sweet smells and tastes, flavorings, perfumes, solvents, food preservative, plasticisers, synthetic fibers (cloths), polyesters -(any two correct answers from the above a mark is given)	2
	b	Alcohol or primary alcohol	1
	c.		1
	d	salt	1

Part	Section	The answer	The mark
22		Low / High Weak / Strong Food wraping / Water pipes Each answer 0.5 mark.	3
23.	a		1
	b	Nylon	1
	c	H_2O	1
	d	Because of the weak intermolecular forces.	1

This is the end of the Marking Guide