Coaching Report

Participant	roby SEl	**Student detail**	User_58
Group	ntc.it ats.perugia.it	**Status**	Ended normally
Assessment name	Organic Chemistry 3 - EN V4	**Final Score**	5
Time Used	00:02:09	**Time limit (min)**	90
Date taken	15-09-2016 18:38:10		

Questions - presented: 30, answered: 30

1 **Use the marker to select which one of the following saccharides is not sensitive to the Fehling Reagent (Cu2++ in the presence of a tartrate buffer).**

Question type	Hotspot
Topic	Biomolecules
Difficulty	3/3
Score	0.0
Score max	1
Answer choosen	not ok
Answer	0) 5,3,206,149

2 **Select from the list below which two statements about the compound shown are correct.**

Question type	Multiple Response

Topic	Biomolecules
Difficulty	3/3
Score	0.00
Score max	1
Answer choosen	the compound is an oil at ambient conditions the compound is soluble in water
Answer	0) the compound is soluble in chloroform 1) the compound gives glycerol and fatty acids on hydrolysis 2) the compound is soluble in water 3) the compound is an oil at ambient conditions 4) the compound is a typical detergent

3	**Use the marker to select which one of the dimethylcyclohexane isomers shown below exists at RT predominantly in form of two (rapidly interconverting) diastereomeric chair conformers which are both chiral.**

Question type	Hotspot
Topic	Stereochem Cpds 2+ St.genic, Cyclic Cpds
Difficulty	3/3
Score	0.0
Score max	1
Answer choosen	not ok
Answer	0) 115,23,201,102

4	**Which one of the following statements is correct?**

Question type	Multiple Choice
Topic	Stereochem Cpds 2+ St.genic, Cyclic Cpds
Difficulty	3/3
Score	0.00
Score max	1
Answer choosen	Structures 1 and 2 represent two enantiomers (in different conformations).
Answer	0) Structures 1 and 2 represent identical molecules in the same conformation. 1) Structures 1 and 2 represent identical molecules in different conformations. 2) Structures 1 and 2 represent two diastereomers (configurational isomers). 3) Structures 1 and 2 represent two enantiomers (in different conformations).

5 **Use the marker to select which one of the compounds shown below is predominantly formed in the reaction of pyrrole with acetic anhydride.**

Question type	Hotspot
Topic	Ar Subst of Heteroaromatics
Difficulty	3/3
Score	0.0
Score max	1
Answer choosen	not ok
Answer	0) 118,196,230,284

6 **Use the marker to select which one of the following compounds would satisfy**

these observations:

1. a compound was found to be insoluble in NaOH-solution;2. a solution of the compound in dry benzene gave a colourless gas on the addition of sodium metal; 3. on shaking with alcoholic silver nitrate solution a yellow precipitate was formed.

Question type	Hotspot
Topic	Adv. Struct. Elucidation using Spectro
Difficulty	2/3
Score	0.0
Score max	1
Answer choosen	not ok
Answer	0) 371,3,442,139

7	**Which two of the following statements are correct?**

Question type	Multiple Response
Topic	Adv. Struct. Elucidation using Spectro
Difficulty	2/3
Score	1.00
Score max	1
Answer choosen	1 and 2 are easily distinguished by 1H NMR 1 and 2 are easily distinguished by 13C NMR
Answer	0) 1 and 2 are easily distinguished by IR (n C=O) 1) 1 and 2 are easily distinguished by 1H NMR

2) 1 and 2 are easily distinguished by UV (l max)

3) 1 and 2 are easily distinguished by 13C NMR

8 **Select which one of the following statements concerning the structures 1 and 2 is correct.**

Question type	Multiple Choice
Topic	Resonance, Aromaticity
Difficulty	2/3
Score	0.00
Score max	1
Answer choosen	1 and 2 represent resonance structures of the same molecule
Answer	0) 1 and 2 represent resonance structures of the same molecule 1) 1 and 2 represent tautomers 2) 1 and 2 represent two not easily interconvertable isomers 3) 1 and 2 represent two easily interconvertable molecules (not tautomers)

9 **Select which one of the following statements concerning the structures 1 and 2 is correct.**

Question type	Multiple Choice
Topic	Resonance, Aromaticity

Difficulty	2/3
Score	1.00
Score max	1
Answer choosen	1 and 2 represent two not easily interconvertable isomers
Answer	0) 1 and 2 represent resonance structures of the same molecule 1) 1 and 2 represent tautomers 2) 1 and 2 represent two not easily interconvertable isomers 3) 1 and 2 represent two easily interconvertable molecules (not tautomers)

10 **Use the marker to select which one of the following structures represents a chiral molecule.**

Question type	Hotspot
Topic	Stereochem Cpds 2+ St.genic, Cyclic Cpds
Difficulty	2/3
Score	1.0
Score max	1
Answer choosen	not ok
Answer	0) 242,3,335,109

11 **Decide whether the following two structures represent identical molecules, enantiomers, diastereomers or constitutional isomers.**

Question type	Multiple Choice

Topic	Stereochem Cpds 2+ St.genic, Cyclic Cpds
Difficulty	2/3
Score	1.00
Score max	1
Answer choosen	1 and 2 are diastereomers
Answer	0) 1 and 2 are identical
	1) 1 and 2 are enantiomers
	2) 1 and 2 are diastereomers
	3) 1 and 2 are constitutional isomers

12 **Use the marker to select the most stable conformer of**

(R,S)-2,3-dibromobutane using the data outlined below.

Interaction(gauche)

Energy cost(kJ mol-1)

CH3----CH3Br----BrCH3----Br

3.83.01.0

Question type	Hotspot
Topic	Stereochem Cpds 2+ St.genic, Cyclic Cpds
Difficulty	2/3
Score	0.0
Score max	1

Answer choosen	not ok
Answer	0) 340,3,436,121

13 **Select from the list below which type of mechanism is involved in the transformation shown in the scheme.**

Question type	Multiple Choice
Topic	C+ Rearrgt, Beckman B-V, Hofman,Curtius
Difficulty	2/3
Score	0.00
Score max	1
Answer choosen	the reaction proceeds via a radical mechanism
Answer	0) the reaction proceeds as a concerted single-step process 1) the reaction proceeds via a carbocationic intermediate 2) the reaction proceeds via a carbanionic intermediate 3) the reaction proceeds via a radical mechanism

14 **Use the marker to select which one of the compounds shown below will undergo an E2 elimination most rapidly.**

Question type	Hotspot
Topic	Further Substn & Elim Rx, StChem of Elim
Difficulty	2/3
Score	0.0

Score max	1
Answer choosen	not ok
Answer	0) 131,1,202,162

15 **Use the marker to select which one of the compounds shown below is the major product in the following reaction.**

Question type	Hotspot
Topic	Further Substn & Elim Rx, StChem of Elim
Difficulty	2/3
Score	0.0
Score max	1
Answer choosen	not ok
Answer	0) 179,261,311,325

16 **Use the marker to select which would be the major product from the reaction of 1 under the conditions given below.**

Question type	Hotspot
Topic	Enolate Anion Chem, Michael Reactions
Difficulty	2/3
Score	0.0
Score max	1
Answer choosen	not ok
Answer	0) 2,167,150,239

17 **Use the marker to select which one of the following compounds has an absolute configuration which would be specified as R according to the IUPAC rules.**

Question type	Hotspot
Topic	Stereochem Cpds 2+ St.genic, Cyclic Cpds
Difficulty	1/3
Score	0.0
Score max	1
Answer choosen	not ok
Answer	0) 2,3,203,66

18	**Which one of the following statements is correct ?**

Question type	Multiple Choice
Topic	Acids and Bases Strength
Difficulty	1/3
Score	0.00
Score max	1
Answer choosen	not ok
Answer	0) At pH 7, a-aminoacids never exist in a zwitterionic form. 1) Acetic acid, CH3COOH, (pKa = 4.75) is a stronger acid than formic acid. 2) Lewis acids do not necessarily contain acidic hydrogen atoms. 3) Amides, RCONH2, are stronger bases than are amines, RNH2.

19	**Rank the following bases in the order of their base strength : pyridine (1) 4-N,N-dimethylaminopyridine (2) 4-nitropyridine (3) 4-methylpyridine (4)**

Question type	Multiple Choice
Topic	Acids and Bases Strength
Difficulty	1/3
Score	0.00
Score max	1
Answer choosen	3 1 2 4
Answer	0) 1 3 2 4
	1) 2 4 1 3
	2) 3 1 2 4
	3) 4 3 1 2

20 **Select from the following sets of reagents and conditions the one which most likely will lead to the product shown in the reaction scheme.**

Question type	Multiple Choice
Topic	Electrophilc Ar Subst of Bz der & Napht
Difficulty	1/3
Score	1.00
Score max	1
Answer choosen	1. C6H5COCl, AlCl3; 2. 2Br2/FeBr3; 3. Zn/Hg, HCl
Answer	0) 1. C6H5COCl, AlCl3; 2. 2Br2/FeBr3; 3. Zn/Hg, HCl
	1) 1. C6H5CH2Cl, AlCl3; 2. 2Br2/Fe
	2) 1. C6H5COCl, AlCl3; 2. 2Br2/Fe; 3. LiAlH4

3) 1. CH2Cl2, AlCl3; 2. 2Br2/FeBr3

21 **Which one of the following solvents is suitable for performing Grignard reactions ?**

Question type	Multiple Choice
Topic	Safety, Solvents
Difficulty	1/3
Score	0.00
Score max	1
Answer choosen	Dimethylformamide
Answer	0) Diethyl ether 1) Acetone 2) Chlorobenzene 3) Dimethylformamide 4) Pyridine

22 **Consider the UV spectroscopic properties of the compounds shown below. Which two of the statements are correct?**

Question type	Multiple Response
Topic	Adv. Struct. Elucidation using Spectro
Difficulty	1/3
Score	0.00
Score max	1
Answer choosen	3 has a UV maximum at a higher wavelength than 4 2 has a UV maximum at a higher wavelength

	than 1
Answer	0) 1 has a UV maximum at a higher wavelength than 2 1) 2 has a UV maximum at a higher wavelength than 1 2) 3 has a UV maximum at a higher wavelength than 4 3) 4 has a UV maximum at a higher wavelength than 3

23 **Which one of the following aromatic compounds has three peaks in its 13C NMR spectrum?**

Question type	Multiple Choice
Topic	Adv. Struct. Elucidation using Spectro
Difficulty	1/3
Score	0.00
Score max	1
Answer choosen	not ok
Answer	0) o-xylene (1) 1) m-xylene (2) 2) p-xylene (3) 3) ethylbenzene (4)

24 **Use the marker to select which one of the compounds shown below has 13C NMR signals atd= 115.7 (doublet); 121.4 (doublet); 130.1 (doublet); 155.1 (singlet).**

Question type	Hotspot
Topic	Adv. Struct. Elucidation using Spectro
Difficulty	1/3
Score	0.0
Score max	1
Answer choosen	not ok
Answer	0) 1,0,98,70

25 **Select from the list below the one correct explanation of why a tertiary carbocation (carbenium ion) is usually more stable than either a secondary or primary carbocation.**

Question type	Multiple Choice
Topic	Reactive Intermediates
Difficulty	1/3
Score	0.00
Score max	1
Answer choosen	not ok
Answer	0) it carries three positive charges 1) it is trigonal planar 2) it possesses three electron-donating substituents 3) the approach of nucleophiles is more hindered

26 **Use the marker to select which one of the compounds shown below would be the major product in the reaction of compound 1 with 2 equiv. of N-bromosuccinimide (NBS) under irradiation.**

Question type	Hotspot
Topic	Radical Halogenation of Alkanes
Difficulty	1/3
Score	0.0
Score max	1
Answer choosen	not ok
Answer	0) 114,102,209,221

27 **Select from the list below the correct name for structure 1 according to IUPAC rules.**

Question type	Multiple Choice
Topic	Nomenclature
Difficulty	1/3
Score	0.00
Score max	1
Answer choosen	not ok
Answer	0) methyl 6-hydroxy-6-methylhept-2-ynoate 1) methyl 6-hydroxy-6,6-dimethylhex-2-ynoate 2) 6-methoxycarbonyl-2-methylhex-5-yn-2-ol 3) 1-methoxycarbonyl-2-(3-hydroxy-3-methylbutyl)-ethyne

28 **Use the marker to select which would be the major product in the following reaction.**

Question type	Hotspot
Topic	Enolate Anion Chem, Michael Reactions
Difficulty	1/3
Score	0.0
Score max	1
Answer choosen	not ok
Answer	0) 129,130,253,235

29 **Which one of the following compounds is not formed in the reaction of ethene with bromine water containing nitrate and chloride ions ?**

Question type	Multiple Choice
Topic	Cyclo-Add Rx, Rad add to Alkenes, StChem
Difficulty	1/3
Score	0.00
Score max	1
Answer choosen	Br(CH2)2ONO2
Answer	0) Cl(CH2)2Cl 1) Br(CH2)2ONO2 2) Br(CH2)2OH 3) Br(CH2)2Cl 4) Br(CH2)2Br

30 **Use the marker to select which one of the following compounds forms acetone and cyclohexanol on treatment with acid.**

Question type	Hotspot

Topic	Simple Synthesis
Difficulty	1/3
Score	0.0
Score max	1
Answer choosen	not ok
Answer	0) 118,3,208,145