	TANTA UNIVERSITY FACULTY OF PHARMACY DEPARTMENT OF PHARMACOGNOSY			
	FINAL EXAM FOR SECOND YEAR CLINICAL STUDENTS			
	COURSE TITLE:	Phyochemistry 1		COURSE CODE: PG 404
DATE:	3/9/2016	TERM: SUMMER	TOTAL ASSESMENT MARKS: 50	TIME ALLOWED: 2 HOURS

The exam includes three parts in 14 pages

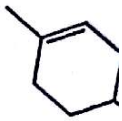
Part (1): Tannins, bitter principles, resins and resin combinations **(10 marks, 25 minutes)**

Part (2): Volatile oils **(25 marks, 60 minutes)**
Question No. (1): **(12 marks, 25 minutes)**
Question No. (2): **(13 marks, 35 minutes)**

Part (3): Carbohydrates **(15 marks, 35 minutes)**

All questions must be answered in the specified places using blue pen.
Answers using pencils will not be accepted.

entify the name of the



Part (1): Tannins, bitter principles, resins and resin combinations

(10 marks, 25 minute

A- Draw the chemical structure of the following natural products: 3.75 points

1a-Xanthotoxin

2a-m-digallic acid

3a-Catechin

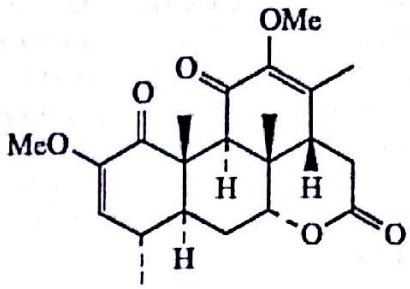
4a-β–Asarone

5a-Caffeic acid

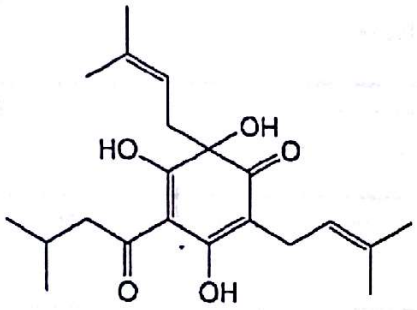
arks, 25 minute
oints

Identify the name of the following natural products. **1.25 points**

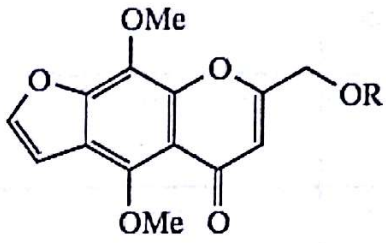
(1b) .....



(2b).....

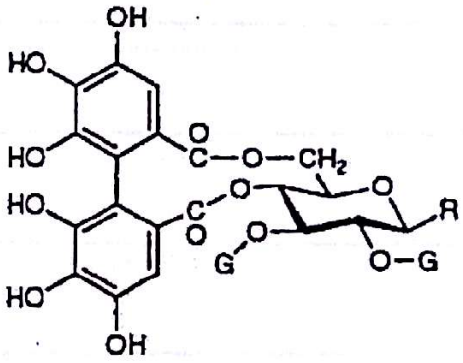


(3b).....



R = Glc,

(4b).....



(5b).....

C-Identify the answer of the following statements with listing answers in Table 1 **5 points**

1-The source of compound 1a
2-The type of tannin containing compound 2a.
3-A chemical test specific for compound 3a.
4-Precursors of biosynthesis of compound 4a.
5-A chemical test for compound 1b.
6-An example of glycosidal resin.
7-A test for detection of compound 2b.
8-Biosynthetic and chemical classes of compound 3b.
9-One use of compound 2b.
10-Isolation of compound 4a from plant source.
11-One structural differences between hydrolysable and condensed tannins.
12-The biosynthetic class of compound 5a.

13-A test to detect true tannins.
14-Chemical class of compound 4b.
15- An example of oleo gum resin.
16-One therapeutic use of balsam Peru
17- Results of acid hydrolysis of compound 5b.
18-The resin that contains compound 5a.
19-One method for assay of tannins.
20-One use of compound 2b.

Table (1):

Number	Answer
1	
2	
3	
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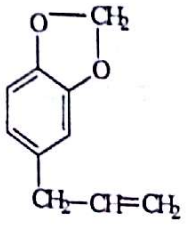
Part (2): Volatile oils (25 marks, 60 minu

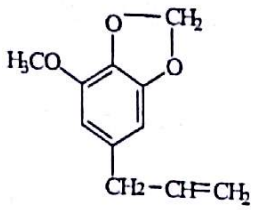
Question No. (1): (12 marks, 25 minute

A- Complete the following sentences and write your answers in Answer Table (2):

- Thymol is prepared from ... (1) ... by isopropylation and from ... (2) ... by reduction
- Thymol + phthalic anhydride → ... (3) ... color after addition of alkali give ... (4)... which is called ... (5) ...
- a drop of oil + a drop of 3% NaOH saturated with NaBr → ... (6) .... crystals of ... (7) ...

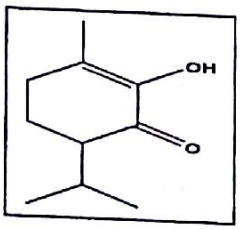


Oxidation by Pot. Dichromate → ... (8) .... which is used as ... (9) ...



This volatile oil is called ... (10) ...., which present in ... (11) ... In large dose has ... (12) ... effect due to the formation of ... (13)..

- ... (14) .... is used as diuretic and uterine stimulant.
- Tiemann's procedures are used to separate ... (15) ... from ... (16) ...



This volatile oil is called .... (17) ..... which give intense green color with ... (18) ....and is used as ... (19) ...

- Na (OH) is used for the detection of ... (20) .... which is precipitated by ... (21) ...
- .... (22) ...is the reagent specific for natural camphor, while ... (23) ... test is specific for synthetic camphor
- ... (24) ... gives intense red color with aniline acetate.

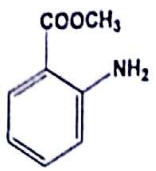
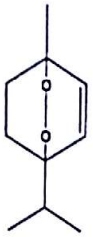
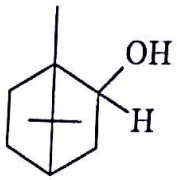
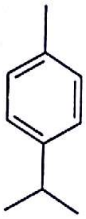
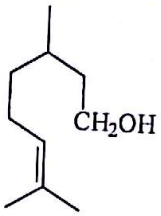
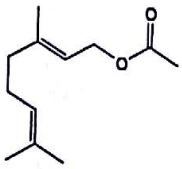
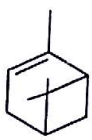
marks, 60 minute
2 marks, 25 minutes
Answer

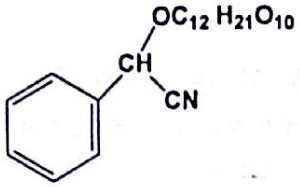
Answer Table (2)

No.	Word	No.	Word
1		13	
2		14	
3		15	
4		16	
5		17	
6		18	
7		19	
8		20	
9		21	
10		22	
11		23	
12		24	

Question No. (2): **(13 mark, 35 minute**

A) Complete the following sentences and write your answers in Answer Table (3): **(7 marks, 15 minutes)**

 - Name:….(1a)…. - It has ……..(1b)….apparent in any oil containing it.	 - Method for determination of this compound …(2)…..
 - Source:… .(3a)…. - One use :…(3b)… - Quantitative determination….(4)….	 - Name: ….(5)…. - It can be separated from camphor by ….(6)…….(only one method).
 - Identification:….(7)…… - This compound can be synthesized from …..(8)…. by dehydrogenation.	 - Name: ….(9)…. - Separation from geraniol: ….(10)…
 - Isolation:…(11)… - Identification:…(12)…	 - Biosynthetic pathway: …(13)…. - Purified by forming ….(14a)…liberated by…(14b)…..



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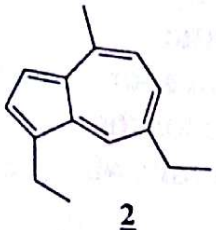

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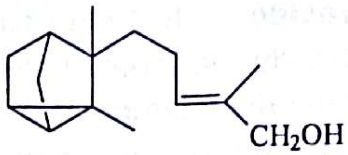

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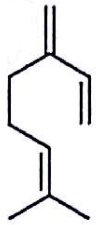

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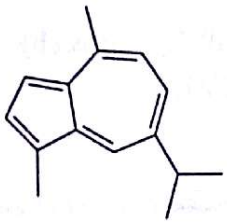

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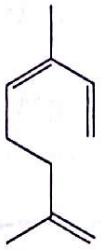

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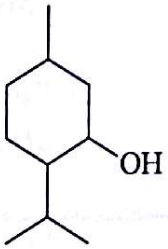

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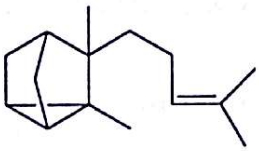

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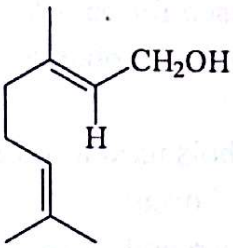


10

11) Water and steam distillation	12) Eculle à piquer	13) Camphene
14) Eugenol	15) Concrete	16) Resinoid
17) Rose oil	18) $ZnCl_2$	19) Lighter
20) Heavier	21) Direct steam distillation	22) Hydro-diffusion
23) $CaCl_2$	24) Enfleurage	25) Anise oil

Part III (Carbohydrates):

Q1 (15 points in 35 minutes)

You are provided with 15 statements:

A- Justify the underlined word in each statement by correction for the false statement, while for the true one only choose a suitable figure litter from the following figures sheet.

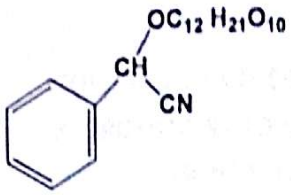
(0.5 point each)

B- After justification of all the statements, mention the name of another type of sugar of the same class.

(0.5 point each)

C- Put all your unrepeated answers in the underline Table, otherwise it will be neglected.

1. D-Digitoxose is a 6-deoxyhexose, which is specific to cardiac glycosides.
2. Mucilages is an amino sugar used for pain relief of cartilage.
3. α- D-xylopyranose is a pentose sugar obtained from corncobs by boiling with dil. HCl.
4. Nitroglycerine is a sugar alcohols used as coronary vasodilator.
5. Dextrin is a glucan of microbial origin.
6. Stachyose is consisting of hexose units, sequentially linked as: gal(α1→6)gal(α1→6)glc(α1↔2β)fru.
7. Carrageenans are sulfated polymers of D-galactose, which have many pharmaceutical applications.
8. Alginic acid is a glycanoglycouronans, consists of D-mannuronic acid and L-guluronic acid with β (1-4) type linkage between monomers.
9. Agar is a saccharine deposited in honeycomb, it contains sucrose, carbohydrates, volatile oil, pigments and pollen grain.
10. Amylose is hydrolyzed by β- amylase enzyme into glucose.
11. Periodate oxidation method is used to determine the configuration of glycoside linkages in inulin.
12. Ca gluceptate is used parentrally as a source of Calcium.
13. Cyclodextrin is a cyclic oligosaccharides produced by enzymatic degradation of sucrose.
14. Sucralfate is 4-*O*-β-D-glucopyranosyl-D-glucpyranose.



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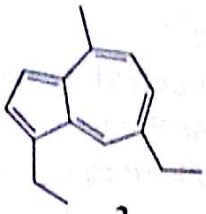

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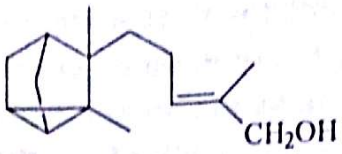

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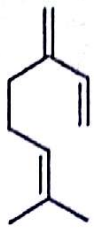

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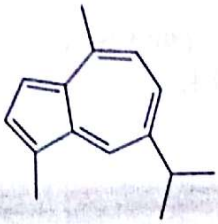

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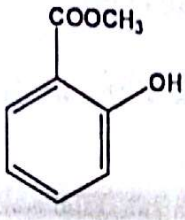

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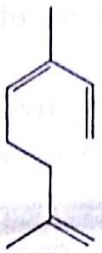

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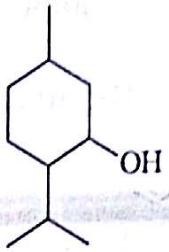

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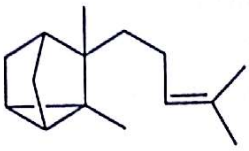

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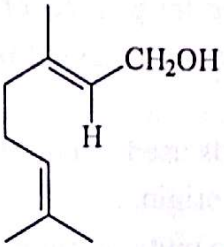

10

11) Water and steam distillation	12) Eculle à piquer	13) Camphene
14) Eugenol	15) Concrete	16) Resinoid
17) Rose oil	18) $ZnCl_2$	19) Lighter
20) Heavier	21) Direct steam distillation	22) Hydro-diffusion
23) $CaCl_2$	24) Enfleurage	25) Anise oil

Part III (Carbohydrates):

Q1 (15 points in 35 minutes)

You are provided with 15 statements:

A- Justify the underlined word in each statement by correction for the false statement, while for the true one only choose a suitable figure litter from the following figures sheet.

(0.5 point each)

B- After justification of all the statements, mention the name of another type of sugar of the same class.

(0.5 point each)

C- Put all your unrepeated answers in the underline Table, otherwise it will be neglected.

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11. Periodate oxidation method is used to determine the configuration of glycoside linkages in inulin.
12. Ca gluceptate is used parentrally as a source of Calcium.
13. Cyclodextrin is a cyclic oligosaccharides produced by enzymatic degradation of sucrose.
14. Sucralfate is 4-*O*-β-D-glucopyranosyl-D-glucpyranose.

13	
14	a- b-

B- You are provided with **18 sentences**, match each sentence with **only one** suitable chemical structure or word (s) and put the number corresponding to each sentence in the answer table (4) below: **(6 mark, 20 minutes)**

Answer Table (4)

Sentence	No.
.....is an extract of characteristic odor obtained from a fresh starting materials of vegetable origin by extraction with non aqueous solvent.	
.....is the anthelmintic principle of palmrosa oil.	
..... is used for mooth-proofing and cosmetics.	
It can be prepared by hydrogenation of pulegone or thymol.	
Wintergreen oil is .....than water.	
.....consists of sending pulses of steam under low pressure through the plant material from top to bottom.	
With lead salt→ needle crystals	
A colored sesquiterpene hydrocarbon occurs in oil of chamomile.	
An example of scarification and expression method, used in extraction of citrus oil.	
.....becomes solid at 18 °C.	
Borneol and isoborneol are separated by heating with .....in benzene.	
Steam pressure and temperature can be modified in	
Anticariogenic agent.	
.....is a method of extraction using non volatile solvents.	
With lead salt→ rhombic crystals	
Leaf of cinnamon tree is rich in	
Sesquiterpene alcohol are used as diuretic and antiseptic.	
An essential oil don't pre-exist but formed by decomposition of a glycoside.	

15. Lactulo
is us

Answer Table (3)

No.	Answer
1	a- b-
2	
3	a- b-
4	
5	
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8	
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10	
11	
12	

15. Lactulose is prepared by alkaline epimerization of lactose, which is used in the treatment of portal systemic encephalopathy.

Table

Word no.	CORRECTION	FIGURE TITLED	OTHER TYPE
1.			
2.			
3.			
4.			
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9.			
10.			
11.			
12.			
13.			
14.			
15.			