



Faculty of Health Sciences
Bachelor of Science Honours in Industrial Pharmaceutical Science
IPS 4233 – Pharmacognosy II
Batch – 05
4th year 2nd semester
End Semester SEQ Examination (Resit)

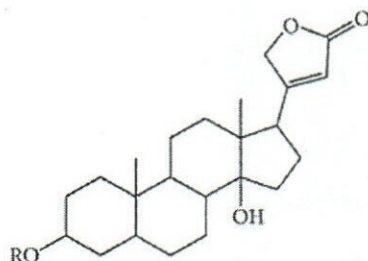
Date : 30th of April 2026
 Time : 09.00 a.m. – 12.00 noon (Three hours)

INSTRUCTIONS TO CANDIDATES

- This question paper consists of **SIX** questions.
- Answer **ALL** questions.
- You should write legibly in black or blue ink.

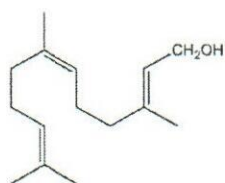
Question 01 **(100 marks)**

- 1.1. Classify the glycosides based on the linkage. (20 marks)
- 1.2. State **one (01)** plant that contains this specific glycoside. (10 marks)
- 1.3. Why does glycosides react with Molish's reagent after hydrolysis? (20 marks)
- 1.4. (20 marks)
- 1.4.1. Identify the type of cardiac glycoside given below. (20 marks)

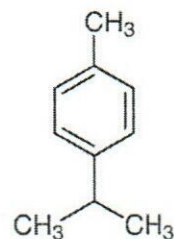


- 1.4.2. Mention the scientific name of **one (01)** natural source that contains this glycoside. (10 marks)
- 1.4.3. Draw the other type of cardiac glycoside structure based on the above given structure. (20 marks)
- Question 02** **(100 marks)**
- 2.1. State **three (03)** characteristics of volatile oil. (15 marks)
- 2.2. Identify the types of terpenoids given below according to the isoprene rule. (30 marks)

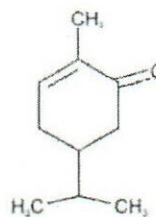
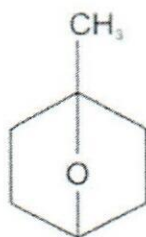
2.2.1



2.2.2

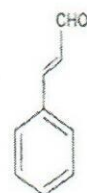
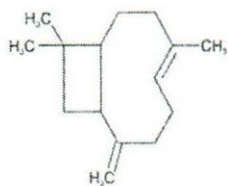


2.3. Identify the chemical structures present in the volatile oil given below. (40 marks)



2.3.1.....

2.3.2.....



2.3.4.....

2.3.3.....

2.4. State how you should store the volatile oils.

(15 marks)

Question 03

(100 marks)

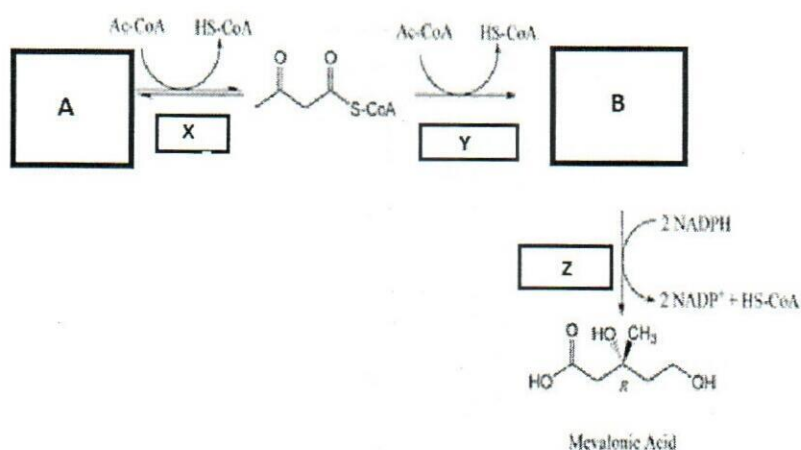
3.1. State the importance of aromatic polyketides.

(20 marks)

3.2. Outline the synthesis pathway of Erythromycin A.

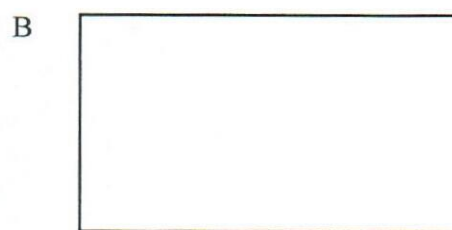
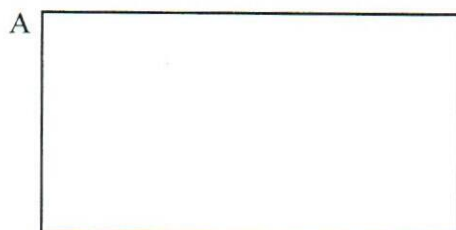
(30 marks)

3.3. Given below is the synthesis pathway of mevalonic acid.



3.3.1. Draw the chemical structures of the compounds A and B and in the given pathway.

(20 marks)



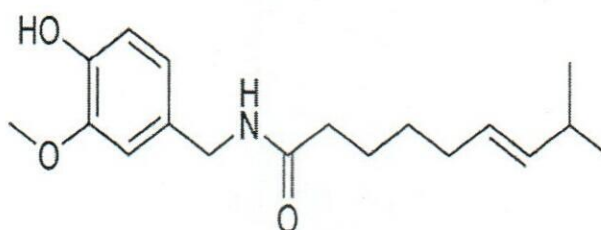
3.3.2. Identify the enzymes X, Y and Z which catalyze the reaction.

(30 marks)

Question 04

(100 marks)

4.1.



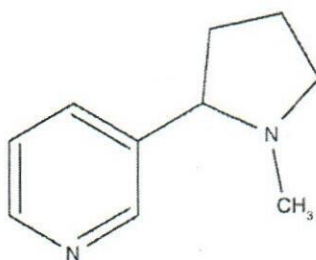
4.1.1. Identify the type of the above given alkaloid.

(10 marks)

4.1.2. State the basis for placing this alkaloid in the given type.

(20 marks)

4.2.



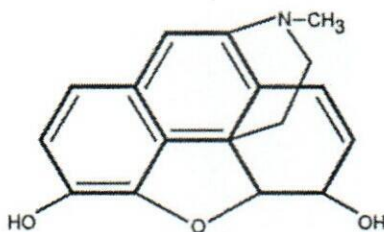
4.2.1. Identify the above given alkaloid.

(10 marks)

4.2.2. Draw the ring structure present in the above alkaloid.

(20 marks)

4.3.



4.3.1. Identify the above mentioned plant alkaloid.

(10 marks)

4.3.2. State **two (02)** other alkaloids derived from this alkaloid.

(20 marks)

4.3.3. State the scientific name of the plant found with the mentioned alkaloid in 4.3.1

(10 marks)

Question 05**(100 marks)**

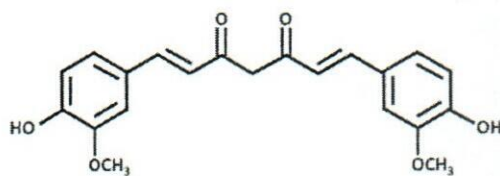
5.1. Outline the classification of pharmaceutical dyes according to their natural sources with an example for each.

(20 marks)

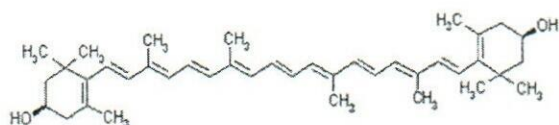
5.2. Identify the following pharmaceutical dyes by their chemical structures.

(10 marks x 2)

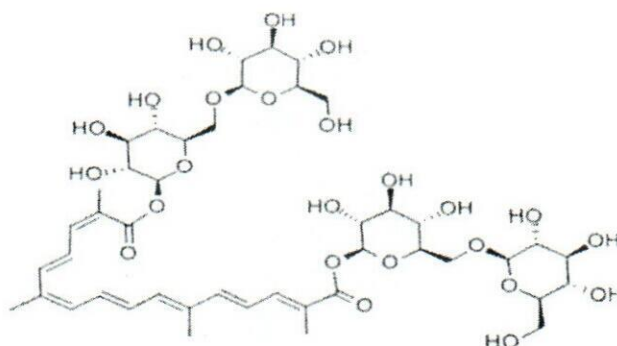
5.2.1.



5.2.2.



5.3.



5.3.1. Identify the above mention chemical structure the pigment. (10 marks)

5.3.2. State **one (01)** usage of this pharmaceutical dye. (20 marks)

5.4. Identify the enzymes extract from following plants. (30 marks)

5.4.1. *Carica papaya* - 5.4.2. *Ananas comosus* -**Question 06** (100 marks)6.1. List **two (02)** uses of absorbent cotton wool in the pharmaceutical industry. (10 marks)

6.2. Outline the steps of preparing jute fiber. (25 marks)

6.3. Write a short note on the biosynthesis of tetraterpenes. (25 marks)

6.4. Illustrate the biosynthetic pathway of tyrosine starting from chorismic acid. (40 marks)



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Faculty of Health Sciences

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IPS 4233 – Pharmacognosy II

Batch – 04

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INDEX NUMBER:

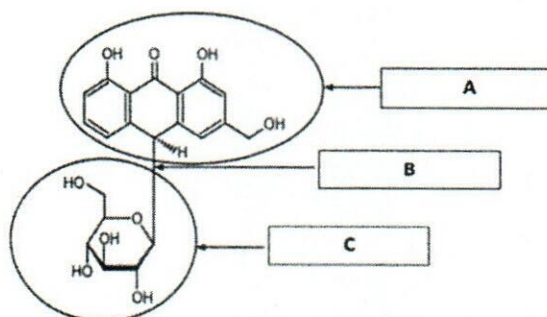
Date : 11th of June 2025
Time : 09.00 a.m. – 12.00 p.m. (Three hours)

INSTRUCTIONS TO CANDIDATES

- This question paper consists of **SIX** questions.
- Answer **ALL** questions.
- You should write legibly in black or blue ink.

Question 01

(100 marks)



1.1. Identify the A, B, and C parts of a glycoside molecule. (30 marks)

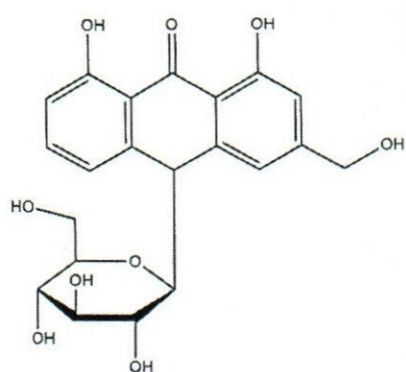
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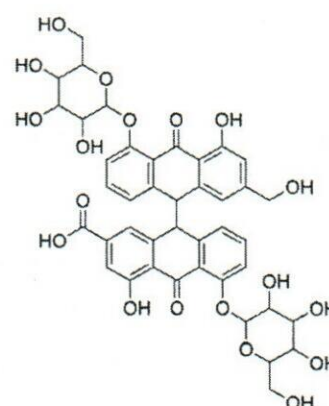
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1.2. Identify the type of glycosides given below based on the linkage. (20 marks)

1.2.1.



1.2.2.

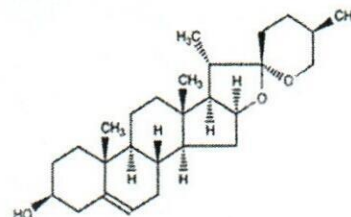
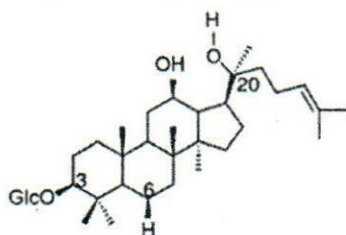


1.3. Write **two (02)** plant-based enzymes and mention their sources with scientific names.

(20 marks)

1.4. Identify follow given glycosides are steroidal or triterpenoidal.

(30 marks)



1.4.1

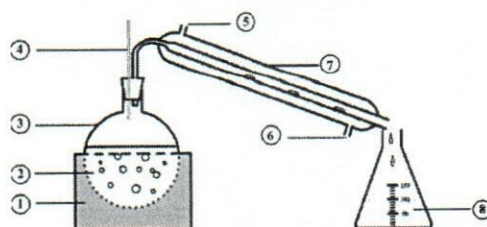
1.4.2.

Question 02

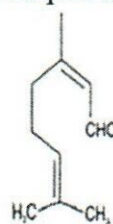
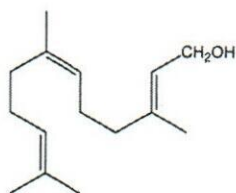
(100 marks)

2.1. Identify the follow given extraction method of volatile oils.

(10 marks)



2.2. Identify the types of terpenoids given below according to the isoprene rule. (30 marks)

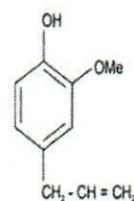
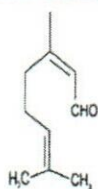


2.2.1.....

2.2.2.....

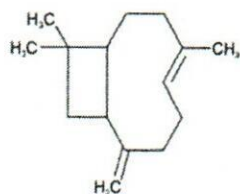
2.3. Identify the chemical structures given below.

(40 marks)



2.3.1.....

2.3.2.....



2.3.4.....

2.3.3.....

2.4. State how you would store volatile oils.

(20 marks)

.....

Question 03

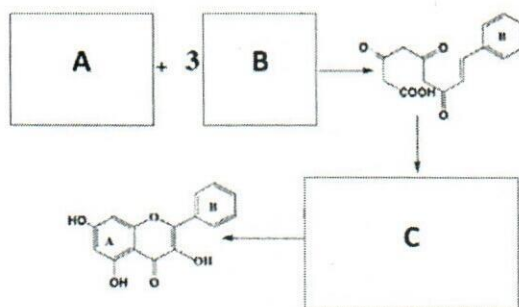
3.1. State the importance of aromatic polyketides.

(100 marks)

(25 marks)

.....

3.2. Given below is the synthesis pathway of flavonoids. Identify the compounds A, B and C in the given pathway. (30 marks)



A

B

C

3.3. Name the synthesis pathway of compound you mentioned in A in the above figure. (10 marks)

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3.4. Outline the biosynthesis pathway of mevalonic acid. (35 marks)

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Question 04

(100 marks)

4.1. Define the following terms.

(10 marks x 3)

4.1.1. True alkaloids

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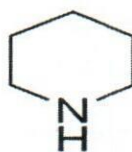
 4.1.2. Proto alkaloids

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 4.1.3. Pseudo alkaloids

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 4.2.



4.2.1. Identify the above mentioned alkaloid ring structure.

(05 marks)

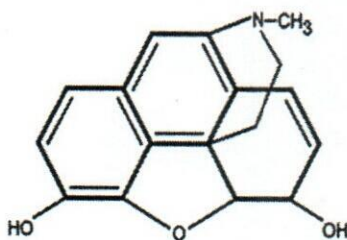
.....
 4.2.2. State **one (01)** plant alkaloid derived from the alkaloid ring mentioned above.

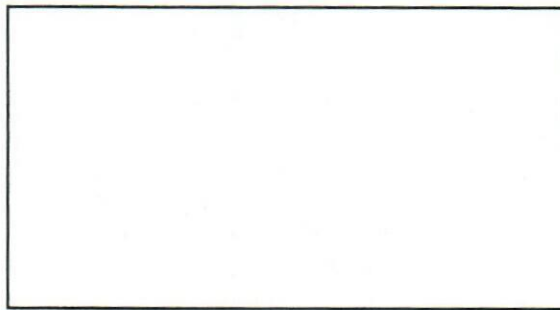
(15 marks)

.....
 4.3.

4.3.1. Draw the main ring structure present in the following alkaloid.

(20 marks)





4.3.2. State the scientific name of the plant found with the mentioned alkaloid in 4.3.1 (20 marks)

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4.3.3. Mention one clinical use of the alkaloid mentioned in 4.3.1. (10 marks)

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Question 05 (100 marks)

5.1. State the classification of pharmaceutical dyes according to their natural sources with an example for each. (20 marks)

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5.2. State how a spectrum of beautiful natural colours ranging from yellow to black exist in plants. (30 marks)

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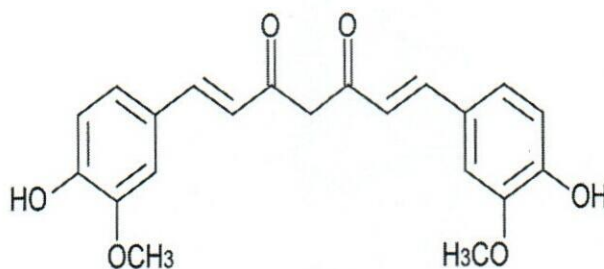
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5.3



5.3.1. Identify the above mention chemical structure found in a plant that is responsible for yellow colour pigment. (20 marks)

.....

5.3.2. Write the scientific name of the plant that consists the above pharmaceutical dye. (10 marks)

.....

5.3.3. State **two (02)** other constituents that produce a yellow color dye in the plants. (20 marks)

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Question 06 (100 marks)

6.1. Name the starting compound/s in the biosynthesis of each of the following substances. (30 marks)

6.1.1. Piperidines

6.1.2. β Carotene

6.1.3. Gallitanins

6.2. Outline the biosynthetic pathway of tyrosine starting from chorismic acid. (40 marks)

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6.3. Draw the pathway to prepare absorbent cotton wool to be used in the pharmaceutical industry from raw cotton. (30 marks)

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