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MANIPAL UNIVERSITY, MANIPAL

FOURTH SEMESTER M.Sc. (CHEMISTRY)
END SEMESTER EXAMINATION, May, 2016
SUBJECT: Chemistry of Natural Products (CHM 702)

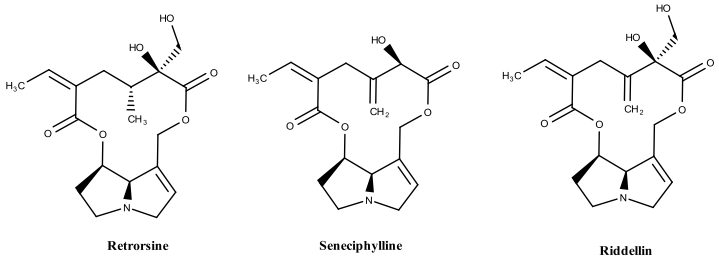
Time: 3 Hrs. **Date: 05 May 2016** **Max. Marks: 50**

Note: a) Answer any five full questions.
b) Write diagrams or equations wherever necessary

1A Explain the principle behind isolation of alkaloids using a flow chart.
B Propose the structure of terpenoid having empirical formula $C_{10}H_{16}O$ which are (i) acyclic (ii) monocyclic and (iii) bicyclic.
C Write the difference between (i) phyto and zoo carotenoids (ii) xanthophyll esters and apocarotenoids. **(3+3+4)**

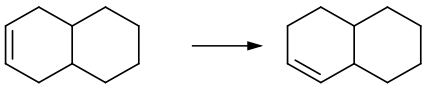
2A How do you identify the position of double bond or bonds in (i) terminal (ii) conjugated and (iii) non-conjugated?
B Explain any three methods of isolating essential oils from plant source.
C Explain Barbier – Weiland degradation reaction by taking suitable example. **(3+3+4)**

3A Propose the chemical tests to differentiate the following molecules.



Retrorsine Seneciphylline Riddellin

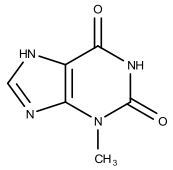
B Propose the synthetic scheme for the following conversion.



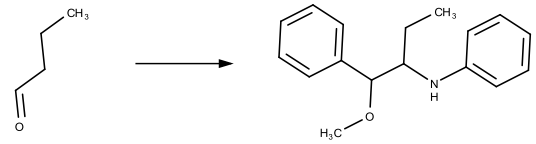
C (i) Explain why β-carotene is known as provitamin A.
(ii) What are juvenile hormones and pheromones? **(3+3+4)**

4A Identify A to D from the following data;
Molecule A with empirical formula $C_5H_{11}OBr$ is treated B. The product formed, C further reacts with HI to give product D. A does not give acetylation product, while D does. Further B, C and D give broad peak at 3400 cm^{-1}.
B Name any three functional groups that can be present in alkaloids. Write the chemical tests to identify them.

C Propose the chemical test to elucidate the structure of the following alkaloid. **(3+3+4)**

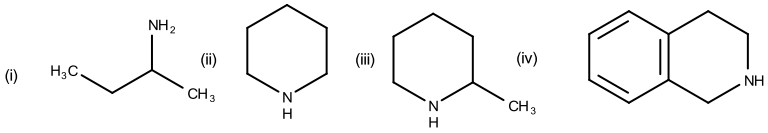


5A Propose the synthetic scheme for the following conversion.

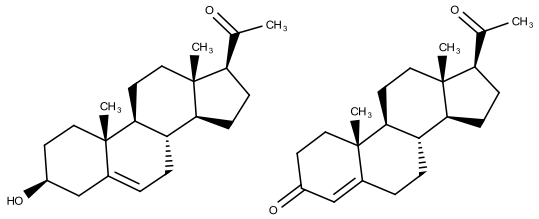


B Explain Baker-Venkatraman flavone synthesis.

C Write the product formed when Hoffmann degradation reaction is carried out on the following molecules. **(3+3+4)**

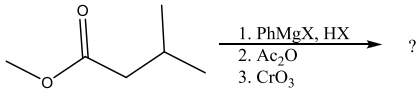


6A. Why is it difficult to differentiate pregnenolone and progesterone? Comment on the inter-conversion of these two molecules.

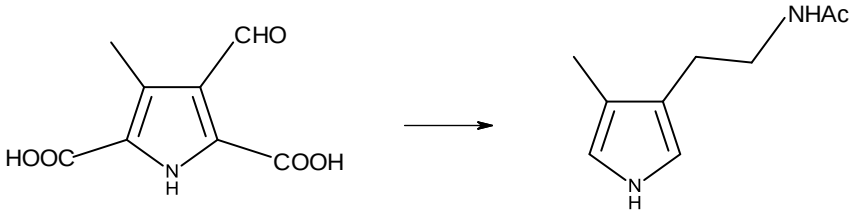


Pregnenolone **Progesterone**

B. Write the final product for the following reaction. Write the structure of intermediates formed.



C. Write the reaction scheme for the following conversion



(3+3+4)

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