MANIPAL
ACADEMY of HIGHER EDUCATION
(Deemed to be University under Section 3 of the UGC Act, 1956)

| Reg. No. | | | | | | | | | | |
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## DEPARTMENT OF SCIENCES, IV SEMESTER M.Sc (CHEMISTRY)
## END SEMESTER EXAMINATIONS, APRIL 2018

### Subject: CHEMISTRY OF NATURAL PRODUCTS [CHM 702]
### (REVISED CREDIT SYSTEM)

Time: 3 Hours Date:17-04-2018 MAX. MARKS: 50

Note: (i) Answer any **FIVE FULL** questions

(ii) Draw diagrams, and write equations wherever necessary

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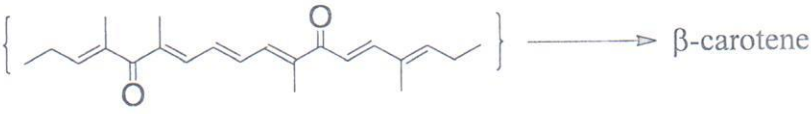
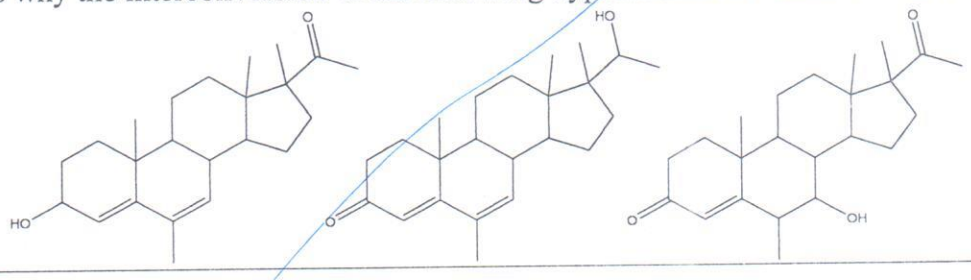
| 1A. | Write the reaction sequence for the conversion of 4-hydroxycoumaric acid to chalcone in the flavonoid biosynthesis. | 3 |
| B. | Write a note on bile pigments. Draw the structure of bilirubin. | 3 |
| C. | i) What are the structural differences between flavones, isoflavones and anthocyanidins?<br>ii) Describe the synthesis of isoflavones by Baker-Ollis method. | 4 |
| 2A. | Explain how to carryout the following conversions?<br>i) β-ionone to acetylinic carbinol<br>ii)  β-carotene<br>iii) β-carotene to sem β-carotenone | 3 |
| B. | Outline the detailed scheme for the synthesis of dipyrrylmethane-A | 3 |
| C. | Write notes on i) Juvenile Hormone ii) Pheromones | 4 |
| 3A. | Write the mechanism for Birch reduction and Dieckmann condensation reactions. | 3 |
| B. | The compound A is a terpenoid. It is converted into tetrahydro derivative on catalytic hydrogenation. On dehydrogenation with sulphur it forms $C_{15}H_{18}$ which forms a picrate, but does not react with bromine. Ozonolysis of A produces a compound containing same number of carbon atoms. Identify A and write the reaction scheme for its synthesis. | 3 |
| C. | Describe the structural elucidation of squalene. | 4 |
| 4A. | Discuss why the interconversion of the following hypothetical molecules are difficult.<br>  | 3 |

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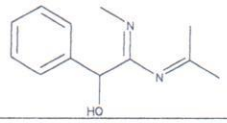
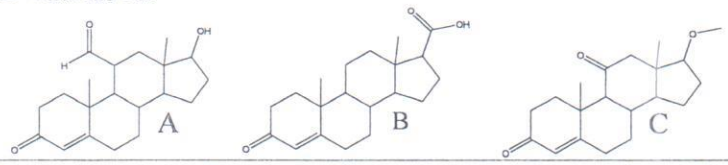
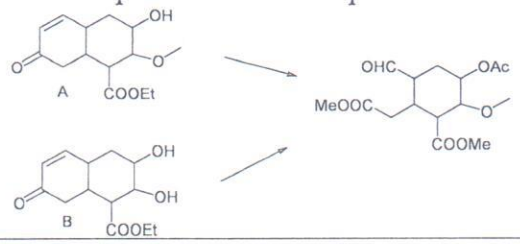
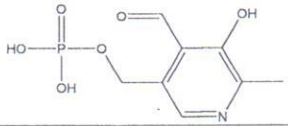
| B. | Propose the synthetic route for the preparation of the following molecule starting with benzaldehyde.  | 3 |
| C. | Propose a possible molecular structure for an alkaloid, Muscimol, with empirical formula $C_4H_8N_2O_2$ and with the following data: (i) consumes 2 equivalents of acetyl chloride (ii) gives salt with HI (iii) gives characteristic colour with $FeCl_3$. Does not answer (iv) bromine water and (v) 2,4 DNP | 4 |
| 5A. | Propose the chemical tests to differentiate the following hypothetical molecules having empirical formula $C_{20}H_{28}O_3$.   | 3 |
| B. | Explain the conditions and significance of Emde and Hoffmann degradation reactions. | 3 |
| C. | Propose the reaction scheme for the conversion of compound A to the product. Explain why is it difficult to get the same product from compound B.   | 4 |
| 6A. | Propose any three chemical reactions of the following vitamin B6  | 3 |
| B. | Explain the Blanc's rule with suitable example | 3 |
| C. | What should be the reaction conditions for the following to react the corresponding substrates (i) methyl group and nitro group of nitromethane and (ii) bromo and aldehyde of 2-bromo acetaldehyde reacts with suitable substrates. | 4 |