

MANIPAL UNIVERSITY

M. PHARM. PART-I DEGREE EXAMINATION – MAY/JUNE 2011

SUBJECT: ADVANCED PHARMACOGNOSY AND PHYTOCHEMISTRY (PCO 601) (SPECIALIZATION: PHARMACOGNOSY)

Tuesday, May 24, 2011

Time: 10:00 – 13:00 Hrs.

Max. Marks: 100

✍ **Answer ALL questions. Draw neat labeled diagrams wherever necessary.**

✍ **All questions carry equal marks.**

1A. Write an essay on the extrinsic factors that affect the production of crude drugs.

1B. Describe the role of cytokinins and ethylene in plant growth.

2A. Describe the cultivation and post harvest technology employed for Senna.

2B. Classify pesticides with suitable examples. Discuss the different methods used for pest control.

3A. Discuss briefly the chemotaxonomic significance of alkaloids.

3B. Give a brief account of important antiinflammatory phytopharmaceuticals.

4A. Elucidate the structure of citral.

4B. What are phenols? Give their classification. Describe the chemistry and distribution of the flavonoids.

5. Write short notes on the following:

5A. Mineral antioxidants.

5B. Anticancer drugs of marine origin.

5C. Classification and description of plant disease.

5D. Cause of extinction of medical plants and steps for their conservation.



MANIPAL UNIVERSITY**M. PHARM. PART-I DEGREE EXAMINATION – MAY/JUNE 2011****SUBJECT: HERBAL PRODUCT DEVELOPMENT AND FORMULATION (PCO 602)**
(SPECIALIZATION: PHARMACOGNOSY)

Thursday, May 26, 2011

Time: 10:00 – 13:00 Hrs.

Max. Marks: 100

✍ **Answer ALL questions. ALL questions carry equal marks.**

✍ **Draw neat labeled diagrams wherever necessary.**

- 1A. Discuss the development of monoherbal and polyherbal tablet formulations with their merits and demerits.
- 1B. Classify the excipients used in herbal formulations and discuss at least one from each category.

- 2A. Write a detailed account on the general status, importance and role of natural product and herbal medicines in health care.
- 2B. Write an essay on the safety of herbals and pharmacovigilance.

- 3A. How do you conduct the stability studies on herbal formulations?
- 3B. Describe the various quality control tests for liquid orals.

- 4A. Write an essay on the quantitative analysis of herbal raw materials by chromatographic and spectrometric methods.
- 4B. Write an essay on the choice of solvent for the extraction of raw materials.

5. **Write short notes on:**
 - 5A. Packaging and labeling of herbal product.
 - 5B. Leaf constants.
 - 5C. Drawbacks of nutraceuticals.
 - 5D. Determination of bitterness value and swelling index.



MANIPAL UNIVERSITY**M. PHARM. PART-I DEGREE EXAMINATION – MAY/JUNE 2011****SUBJECT: MEDICINAL PLANT BIOTECHNOLOGY (PCO 603)****(SPECIALIZATION: PHARMACOGNOSY)**

Saturday, May 28, 2011

Time: 10:00 – 13:00 Hrs.

Max. Marks: 100

- ✍ **All questions are compulsory.**
- ✍ **Answer should be specific to the questions.**
- ✍ **Draw neat labeled diagrams and chemical structures wherever necessary.**

1. Classify various culture methods and explain how transformation is effected. (20 marks)
2. Explain screening methods and selection of high yielding cells lines. Give an account of plant genome analysis by PCR. (20 marks)
- 3A. Give suitable reasons for immobilization.
- 3B. How protoplast fusion is carried out? (10+10 = 20 marks)
- 4A. How hairy root culture is established and give its applications?
- 4B. Give a detailed account of plant cloning. (10+10 = 20 marks)
- 5A. Auxins and Gibberellins.
- 5B. Suspension cultures.
- 5C. Mechanically agitated bioreactors.
- 5D. Significance of somoclonal variation. (5×4 = 20 marks)



MANIPAL UNIVERSITY**M. PHARM. PART-I DEGREE EXAMINATION – MAY/JUNE 2011****SUBJECT: BIOLOGICAL SCREENING OF HERBAL DRUGS (PCO 604)****(SPECIALIZATION: PHARMACOGNOSY)**

Tuesday, May 31, 2011

Time: 10:00 – 13:00 Hrs.

Max. Marks: 100

- ✍ **Answer ALL the questions.**
✍ **Draw neat labelled diagrams wherever necessary.**

- 1A. Describe the biochemical assays employed in High throughput screening of natural Products.
1B. Discuss the different models and the techniques in the screening of immunomodulatory agents.
- (10+10 = 20 marks)

2. Describe the various methods of screening of:

- 2A. Antihepatotoxic drugs
2B. Antibacterial drugs

(20 marks)

3A. Describe the following with suitable examples:

- i) Chi-square test ii) Unpaired t test.

3B. Describe the objectives, methods and execution of phase II & III clinical trials.

(10+10 = 20 marks)

4. Describe the following pharmacological experiments with its applications:

- 4A. Urate induced synovitis
4B. PVC sponge implantation
4C. Schultz- Dale reaction
4D. Antimitotic activity in onion root method

(20 marks)

5. Write short notes on the following:

- 5A. Describe rat as common laboratory animal in conducting various experiments along with its applications.
5B. Describe the various signs of inflammation and add a note on paw oedema.
5C. Wilcoxon tests and Mann-Whitney U test with its importance.
5D. List out the ICMR guidelines for conducting clinical trials.

(5×4 = 20 marks)



MANIPAL UNIVERSITY

M. PHARM. PART-I DEGREE EXAMINATION – MAY/JUNE 2011

SUBJECT: SPECTROSCOPIC AND CHROMATOGRAPHIC TECHNIQUES FOR NATURAL PRODUCTS (PCO 605)

(SPECIALIZATION: PHARMACOGNOSY)

Thursday, June 02, 2011

Time: 10:00 – 13:00 Hrs.

Max. Marks: 100

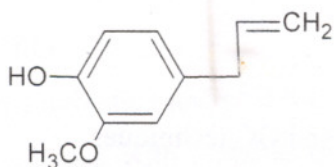
Answer ALL the questions.

1A. Compare the chemical shift values and factors affecting these values in ^1H NMR and ^{13}C NMR. Write the δ values for the following types of protons and ^{13}C carbons.

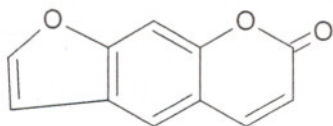
i) $-\text{OCH}_3$ ii) $-\text{H}_2\text{C}-\text{CH}_3$ iii) $-\text{CHO}$ iv) $-\text{CO}-\text{CH}_3$

1B. Assign the following ^{13}C δ values to the appropriate carbons in the following compounds

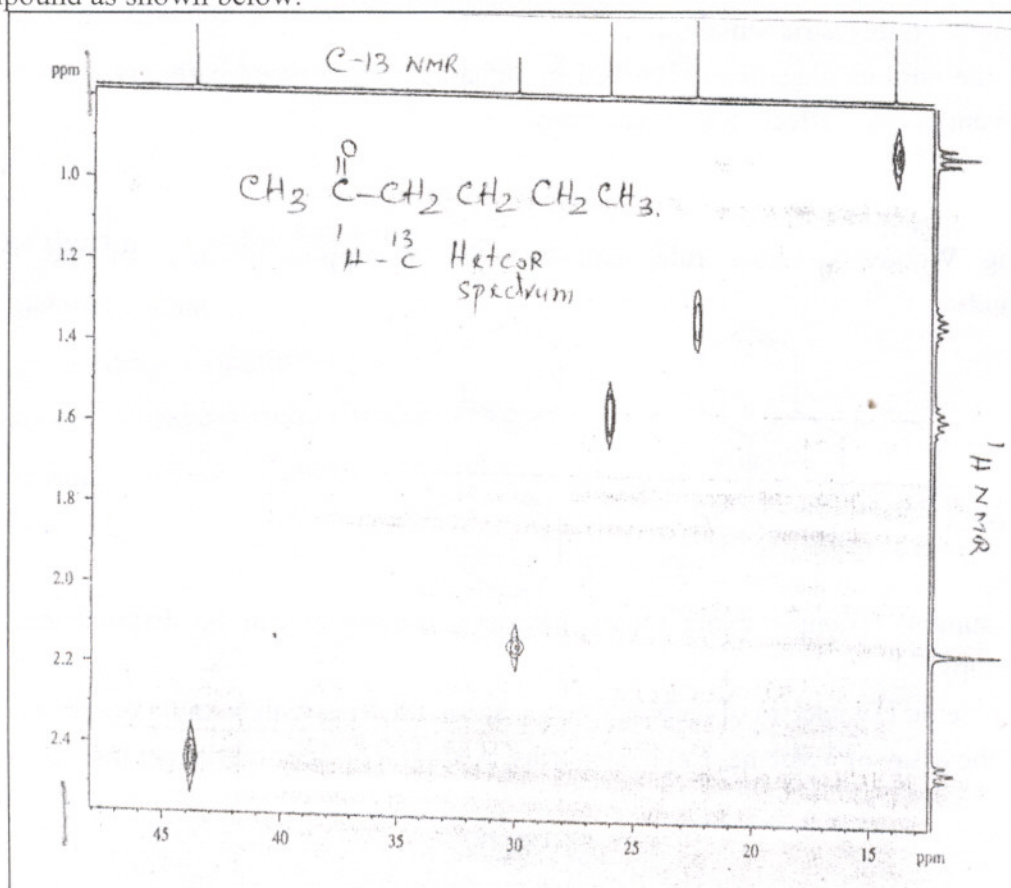
i) 55, 84, 146.6, 144, 39.9 in Eugenol



ii) 160.9, 103.6, 151.5, 155.9 in Psoralen



1C. ^1H and ^{13}C δ values for the following compound $\text{H}_3\text{C}-\text{CO}-\text{CH}_2-\text{CH}_2-\text{CH}_2-\text{CH}_3$ are given below. Arrange them properly and interpret the HETCOR NMR spectrum of the same Compound as shown below:

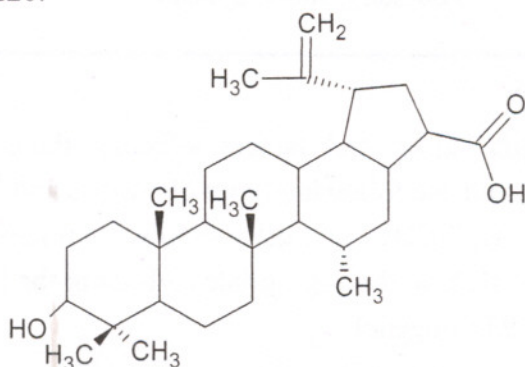


^1H (δ , ppm values): 2.1, 0.7, 1.6, 2.4, 1.3

^{13}C (δ , ppm values): 30, 43, 26, 14, 22

(10+8+2 = 20 marks)

- 2A. Explain the principle and techniques of GC-MS and LC-MS.
2B. Write the mass fragmentation pattern of betulinic acid, identifying the following fragments 456, 207, 248, 189 and 220.



(15+5 = 20 marks)

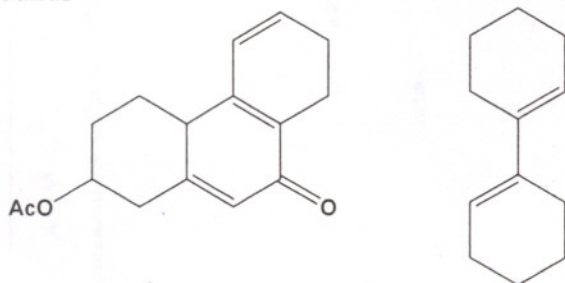
- 3A. Describe any two detectors commonly used in HPLC and GC techniques.
3B. What are the advantages of the nitrogen gas and application of the spot in band form in HPTLC?

((7+7)+6 = 20 marks)

- 4A. Explain the following terminologies used explicitly in IR spectrometry
i) Group frequency region ii) Vibrational coupling
iii) Electronic effect iv) Hydrogen bonding
4B. Write a note on IR instrumentation.
4C. Explain the various transitions observed in alpha-beta unsaturated carbonyl compounds and how solvent polarity affects these transitions.

(10+5+5 = 20 marks)

- 5A. Applying Woodward-Fieser rule, calculate the absorption maxima of the following compounds



- 5B. With a suitable example explain how geometrical isomers can be distinguished by UV spectroscopy.
5C. Write a note on UV spectra of anthraquinones and coumarins with suitable examples.
5D. Explain the assay of Vasicine, Cephalosporins, Andrographolide and human insulin by HPLC.

(3+3+6+8 = 20 marks)

