Reg. No.										

MANIPAL UNIVERSITY

M. PHARM. PART–I DEGREE EXAMINATION – MAY/JUNE 2009

SUBJECT: ADVANCED PHARMACOGNOSY AND PHYTOCHEMISTRY (PCO 601)

SPECIALIZATION: PHARMACOGNOSY

Wednesday, May 27, 2009

Time: 10.00-13.00 Hrs. Max. Marks: 100

- **Answer ALL the questions. All questions carry equal marks.**
- **Draw neat labeled diagrams wherever necessary.**

1A. Give a brief account of the plant growth regulatory role of auxins.

1B. Give an account of important antidiabetic phytopharmaceuticals.

2A. Briefly discuss the chemotaxonomic significance of flavonoids.

2B. Elucidate the structure of nicotine.

3A. Give an account of the exogenous factors that influence the production of crude drugs.

3B. Define an alkaloid. Discuss its occurrence and distribution in plants. Describe the properties, method of extraction and classification.

4A. Describe the cultivation and post harvest care for aswagandha.

4B. Discuss the role of Vitamins as dietary antioxidants.

5. Write short notes on the following:

5A. Plant phenols and phenolic acids.

5B. Common diseases in medicinal plants.

5C. Extraction of vasicine from Vasaka.

5D. Marine antiinflammatory agents.

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M. PHARM. PART–I DEGREE EXAMINATION – MAY/JUNE 2009

SUBJECT: HERBAL PRODUCT DEVELOPMENT AND FORMULATION (PCO 602)

SPECIALIZATION: PHARMACOGNOSY

Thursday, May 28, 2009

Time: 10.00-13.00 Hrs. Max. Marks: 100

- **Answer ALL the questions. ALL questions carry equal marks.**
- **Draw neat labeled diagrams wherever necessary.**

1A. Write an essay on the standardization of semi-solid herbal extracts with at least two examples as per CCMP guidelines.

1B. Write an essay on the regulatory requirements for herbal medicines.

2A. Write a detailed account on the general status, importance and role of natural products and herbal medicine in health care.

2B. Write an essay on the choice of solvent for the extraction of raw materials.

3A. How do you assess the potential adverse effects herbal cosmetics?

3B. Discuss the salient features of cGMP.

4A. Give a detailed discussion on the use of herbs as raw materials.

4B. Write an essay on the safety of herbals and pharmacovigilance.

5. Write short notes on:

5A. Supercritical fluid extraction.

5B. WHO policy on herbal medicine.

5C. Polyherbal formulations, their merits and demerits.

5D. Diluents used in tablets.

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M. PHARM. PART–I DEGREE EXAMINATION – MAY/JUNE 2009

SUBJECT: MEDICINAL PLANT BIOTECHNOLOGY (PCO 603)

SPECIALIZATION: PHARMACOGNOSY

Friday, May 29, 2009

Time: 10.00-13.00 Hrs. Max. Marks: 100

- **Answer ALL the questions.**
- **Answers should be specific to the questions.**
- **Draw neat labeled diagrams and chemical structures wherever necessary.**

1. Discuss the process of cryopreservation in detail.

(20 marks)

2. How screening methods and selection of high yielding cell lines is done? Write a note on ELISA method used to detect pathogen in plants.

(20 marks)

3A. Describe gene identification, localization and sequencing.

3B. Define a bioreactor. Classify them. Give an account of air lift bioreactor for immobilized cell culture.

(10+10 = 20 marks)

4A. Give reasons, factors and effect of somoclonal variation.

4B. What is protoplast fusion? Give the techniques and applications of protoplast cultures.

(10+10 = 20 marks)

5A. Review of historical development in plant tissue culture.

5B. Transgenic plants.

5C. Factors affect secondary metabolism in plant tissue culture. Discuss the effect of each factor.

5D. Techniques used in the production of secondary metabolites.

(5×4 = 20 marks)

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M. PHARM. PART–I DEGREE EXAMINATION – MAY/JUNE 2009

SUBJECT: BIOLOGICAL SCREENING OF HERBAL DRUGS (PCO 604)

SPECIALIZATION: PHARMACOGNOSY

Saturday, May 30, 2009

Time: 10.00-13.00 Hrs. Max. Marks: 100

Answer ALL the questions. Draw neat labelled diagrams wherever necessary.

1A. Explain how transgenic animals are generated and maintained. Discuss the chief difficulties encountered with the breeding and maintenance of transgenic animals.

1B. Write a precise note on OECD guidelines for testing of chemicals.

(10+10 = 20 marks)

2A. Explain the various methods for the induction of hepatotoxicity in experimental animals and discuss the important models used in the screening of hepatoprotective drugs.

2B. Discuss the different models and the techniques in the screening of immunomodulatory agents.

(10+10 = 20 marks)

3. Describe the major pre-clinical screening procedure for the following:

3A. Anti cancer agents

3B. Antimicrobial drugs

(20 marks)

4A. Discuss how Phase-I, II and III clinical studies are carried out on a new drug.

4B. Illustrate various methods involved in high throughput screening of natural products.

(10+10 = 20 marks)

5. Write short notes on the following:

5A. Volunteer for clinical trials.

5B. Paired and unpaired Student's t-test.

5C. Mann-Whitney U test.

5D. Oxygen free radicals.

(5×4 = 20 marks)

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MANIPAL UNIVERSITY

M. PHARM. PART–I DEGREE EXAMINATION – MAY/JUNE 2009

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

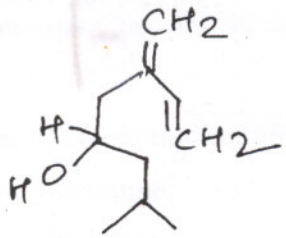
SPECIALIZATION: PHARMACOGNOSY

Monday, June 01, 2009

Time: 10.00-13.00 Hrs. Max. Marks: 100

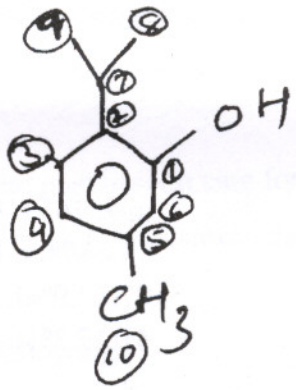
✍ **Answer ALL the questions. Draw neat labelled diagrams wherever necessary.**

1A. Discuss the HMBC and HMQC spectra of 'IPSENOL'.

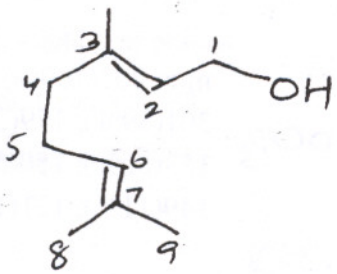


1B. Explain the DEPT spectra of

i) Thymol



ii) Geraniol



(10+5+5 = 20 marks)

2A. Explain the various types of electronic transitions. Write a note on how polarity of a solvent affect K and R bands.

2B. Describe the methods used in u.v. spectroscopy for quantitative analysis of multicomponent samples.

2C. Write why absorption bands are formed in u.v. spectroscopy instead of sharp peaks or lines.

2D. What are the various steps involved in the HPTLC technique? Explain the sample preparation and selection of chromatographic layer and plates technique.

(5+4+1+10 = 20 marks)

3A. Explain the different columns and elution techniques used in HPLC.

3B. Explain how one may use HPLC to accomplish the following:

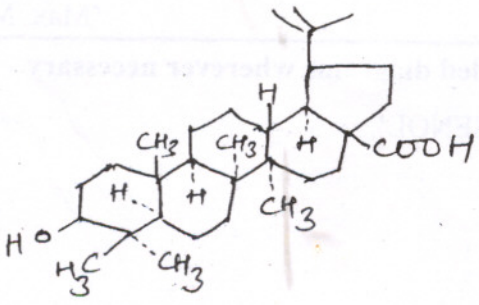
i) Isolation of alkaloid and glycoside.

ii) Control of microbiological processes. Give suitable examples in support of your answer.

(10+10 = 20 marks)

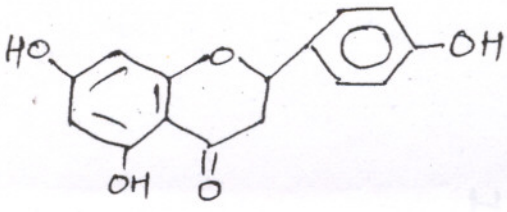
4A. Identify the mass fragments in relation to the structures given and comment on the fragmentation pattern in the following compounds.

i) Betulinic acid



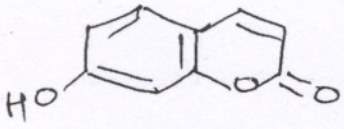
m/z : 456(53%), 457(18.2%)
438(18%), 411(6%),
248(56%), 234(30%)
235(12.7%), 189(100%)

ii) Naringenin



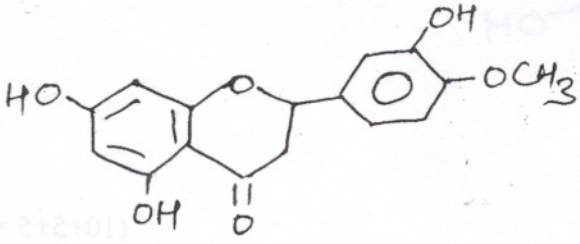
m/z: 272(100%), 271(39.3)
179, 153, 120, 119, 91

iii) Umbelliferone



m/z: 163 (10%), 162(100%)
134(87%), 105(18.8%),
77(12.9%), 78(25.2%),
51(17.3%)

iv) Hesperetin



m/z: 302(100%)
301(39%), 179(25%)
153(80%), 150(52%)
149(11%), 121(15%)

4B. Discuss the principles of the following:

i) GC-MS ii) CI-MS

(12+8 = 20 marks)

5A. Explain FT-NIR spectroscopy.

5B. Differentiate Benzoic acid, salicylic acid and Benzamide using IR spectroscopy.

5C. Discuss the different columns used in GLC.

(6+6+8 = 20 marks)