

RAJASTHAN PUBLIC SERVICE COMMISSION, AJMER

SYLLABUS OF SCREENING TEST FOR THE POST OF LECTURER – PHARMACOGNOSY MEDICAL & HEALTH DEPARTMENT

- 1 (A) History & Scope of Pharmacognosy, Sources of Crude drugs.**
 - (B) Classification of Crude drugs with special emphasis to Chemotaxonomy.**
 - (C) Plant Cell, Cell division- mitosis and meiosis different types of plant tissues.**
 - (D) Techniques in microscopy, quantitative microscopy, lycopodium spore method, leaf constants viz. Stomatal number, Stomatal index, Vein islet number, Vein termination number and Palisade ratio and micro-chemical analysis of crude drugs.**
- 2 Phytochemical Screening: Preparation of extracts,**
- Screening of alkaloids, saponins, glycosides, tannins, polyphenols, amino acids and carbohydrates in plant extracts.**
- 3 Study of Biological Sources cultivation, collection, commercial varieties, macroscopic and microscopic characters, chemical constituents, uses and chemical tests for the following groups of crude drugs:**
- A Saponin glycosides – Liquorice, Ginseng, Dioscorea**
 - B Cardiac glycosides – Digitalis, Squill, Strophanthus.**
 - C Anthraquinone glycosides – Aloe, Senna, Rhubarb.**
 - D Miscellaneous glycosides – Gentian, Saffron, Quassia.**
 - E Pyridine-Piperidine alkaloids – Tobacco, Areca, Lobelia.**
 - F Tropane alkaloids – Belladonna, Datura, Withania.**
 - G Quinoline & Isoquinoline alkaloids – Cinchona, Ipecac, Opium.**
 - H Indole alkaloids – Nuxvomica, Ergot, Rauwolfia.**
 - I Steroidal alkaloids – Kurchi.**
 - J Alkaloidal amines – Ephedra, Colchicum.**
 - K Purine alkaloids – Tea, Coffee, Cola.**
 - L Carbohydrate derivatives – Acacia, Honey, Ispaghul, Starch.**
 - M Volatile oils – Eucalyptus, Clove, Fennel, Caraway, Coriander.**
 - N Fixed Oils – Olive oil, Castor oil, Cod-liver oil.**
 - O Fats – Suet, Lard.**

- P Waxes – Bees wax, Spermaceti, Wool fat.**
- Q Tannins – Gambir, Myrobalan, Black catechu.**
- R Resins – Colophony, Benzoin.**
- S Gum resin – Myrrh, Asafoetida**
- T Oleo-resin – Balsom of tolu, Storax.**
- U Glandular products – Pepsin, Pancreas, Musk.**

4 General techniques of biosynthetic studies & basic metabolic pathways. Brief introduction to biogenesis of metabolites of pharmaceutical importance.

Basic principles and applications of chromatographic techniques such as Column, Paper, TLC, HPLC, HPTLC, GC in the isolation and purification of phytopharmaceuticals.

5. Plant Tissue Culture:

- a. General Techniques, media constituents and laboratory requirements for tissue culture.**
- b. Regeneration of plants from tissue culture.**
- c. Applications of plant tissue culture in Pharmacognosy.**

6 Marine Pharmacognosy:

- a. Introduction to Marine biodiversity.**
- b. Drugs isolated from marine sources like algae, sponges, star fishes, corals, and other marine microorganisms.**

7 Principles of plant genetics. Genetic factors affecting plant drugs and their constituents: hybridization, polyploidy, chemical races, gene mutation and selection.

8 Biochemical & physiological aspects of different classes of plant growth regulators. Effect of growth hormones on production of secondary plant metabolites.

9 Exogenous and endogenous factors affecting plant growth and genesis of secondary metabolites.

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Pattern of Question Papers:

- 1. Objective Type Paper**
- 2. Maximum Marks : 100**
- 3. Number of Questions : 100**
- 4. Duration of Paper : Two Hours**
- 5. All Questions carry equal marks**
- 6. There will be Negative Marking**

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