JHARKHAND Rai University
RANCHI

PRACTICE SET FOR SUBJECTIVE QUESTIONS
End Semester (5th Semester) Examination

Program: B. Pharm

Subject: Pharmacognosy & Photochemistry-II(Theory)

Subject Code: BP504T

Course Learning Objective (CLO)

- **CLO1:** Detailed knowledge about metabolic pathways in higher plants and their determination
- **CLO2:** Detailed knowledge about composition, chemistry & chemical classes, bio sources, therapeutic uses andcommercial applications of secondary metabolites
- **CLO3:** Detailed knowledge about Isolation, Identification and Analysis of Phyto-constituents.
- **CLO4:** Detailed knowledge about Industrial production, estimation and utilization of Phyto-constituents
- **CLO5:** Detailed knowledge about Basics of Phyto-chemistry

Unit I			
S No.	**Questions**	**CO**	**Bloom's Taxonomy Level**
Section II			**Questions for 5 marks**
1	Summarize the major steps involved in the biosynthetic pathway of secondary metabolites.	CO1	Understand
2	Explain the applications of tracer techniques in biological and pharmaceutical research.	CO1	Remember
3	Describe the role of shikimic acid pathway in the biosynthesis of secondary metabolites.	CO1	Understand
4	Elucidate the concept of tracer techniques and distinguish between the two principle categories of isotopes employed in its application.	CO1	Understand
5	Compare and contrast primary and secondary metabolites in living organisms, highlighting their functions, occurrence and examples.	CO1	Remember
6	What are the pivotal significance of tracer techniques in elucidating biochemical and pharmaceutical processes	CO1	Remember
7	Elucidate the concept of common biogenetic pathway involved in the formation of secondary metabolites.	CO1	Understand
Section III			**Questions for 10 marks**
8	Analyze the biosynthetic pathway linking shikimic acid to the formation of aromatic amino acids—phenylalanine, tyrosine, and tryptophan—highlighting the key intermediates, enzymes, and points	CO1	Analyze

	of metabolic divergence.		
9	Analyze the acetate–mevalonate pathway involved in isoprenoid biosynthesis by identifying the sequence of reactions from acetyl-CoA to isopentenyl pyrophosphate (IPP) and dimethylallyl pyrophosphate (DMAPP), emphasizing the key intermediates, enzymes, and regulatory steps.	CO1	Analyze
10	Illustrate the inter-relationship among amino acid families derived from α-ketoglutarate, oxaloacetate and pyruvate.	CO1	Apply
Unit II			
S No.	**Questions**	**CO**	**Bloom's Taxonomy Level**
Section II			**Questions for 5 marks**
11	Discuss the general introduction, chemical constituents, bio sources, therapeutic uses and applications of Rauwolfia.	CO2	Remember
12	Discuss in detail about the general introduction, chemical constituents, bio sources, therapeutic uses and applications of Ruta.	CO2	Remember
13	Briefly write the general introduction, chemical constituents, bio sources, therapeutic uses and applications of Dioscorea.	CO2	Remember
14	Discuss the general introduction, chemical constituents, bio sources, therapeutic uses and applications of Fennel.	CO2	Remember
15	Discuss in detail about the general introduction, chemical constituents, bio sources, therapeutic uses and applications of Pterocarpus.	CO2	Remember
16	Briefly write the general introduction, chemical constituents, bio sources, therapeutic uses and applications of Asafoetida.	CO2	Remember
17	Mention the general introduction, chemical constituents, bio sources, therapeutic uses and applications of Senna.	CO2	Remember
Section III			**Questions for 10 marks**
18	Illustrate about the general introduction, chemical constituents, bio sources, therapeutic uses and applications of i. Belladonna. ii. Opium iii. Tea	CO2	Apply
19	Illustrate general introduction, chemical constituents, bio sources, therapeutic uses and applications of i. Liquorice ii. Cinnamon iii. Catechu	CO2	Apply
20	Illustrate in detail about the general introduction, chemical constituents, bio sources, therapeutic uses and applications of i. Colophony ii. Aloes iii. Gentian	CO2	Apply
Unit III			
S No.	**Questions**	**CO**	**Bloom's Taxonomy Level**
Section II			**Questions for 5 marks**
21	Explain, with the help of a labelled diagram, the working principle and process of steam distillation used for isolating volatile oils.	CO3	Understand
22	Recall and label the key components of a hydro-distillation setup and state the basic steps involved in the isolation of volatile oils	CO3	Remember

23	Compare the properties and therapeutic roles of atropine and caffeine.	CO3	Remember
24	List the identification tests and analytical parameters used for the standardization of podophyllotoxin.	CO3	Remember
25	Outline the chemical basis of isolation and identification of artemisin.	CO3	Understand
26	Explain briefly the isolation procedure of curcumin from turmeric.	CO3	Understand
Section III			**Questions for 10 marks**
27	Analyze the isolation and identification of menthol from essential oils, highlighting the steps involved in extraction, the chemical tests employed, and the analytical parameters used to evaluate its purity and quality.	CO3	Analyze
28	Assess the efficiency and reliability of modern instrumental techniques used in the extraction and analytical characterization of quinine.	CO3	Apply
29	Assess the effectiveness of various extraction and analytical methods for reserpine, emphasizing interpretation of its chromatographic profile.	CO3	Apply
Unit IV			
S No.	**Questions**	**CO**	**Bloom's Taxonomy Level**
Section II			**Questions for 5 marks**
30	Write down the industrial processing parameters in taxol production.	CO4	Remember
31	Discuss and explain the methods used for estimation of sennosides from senna leaves.	CO4	Understand
32	Describe the alcoholic extraction method of diosgenin from Dioscorea species.	CO4	Remember
33	Explain the official assay method for atropine sulphate as per pharmacopoeial standards.	CO4	Understand
34	Briefly explain the extraction and purification steps for large-scale production of vincristine and vinblastine.	CO4	Understand
35	Compare the estimation and utilization of podophyllotoxin and forskolin.	CO4	Remember
36	Mention the methods of estimation of digoxin and caffeine.	CO4	Remember
Section III			**Questions for 10 marks**
37	Assess the procedure used in the industrial processing of Digitalis leaves for the extraction of digoxin and its quantitative estimation	CO4	Apply
38	Analyze the industrial extraction techniques and analytical evaluation methods of vincristine and vinblastine, highlighting the processes involved, key intermediates, and factors affecting yield and purity.	CO4	Analyze
39	Evaluate the industrial process flow for artemisinin extraction and assess the effectiveness of its analytical quality control parameters in ensuring product purity and consistency.	CO4	Evalaute
Unit V			
S No.	**Questions**	**CO**	**Bloom's Taxonomy Level**
Section II			**Questions for 5 marks**
40	Outline the criteria for selecting a good solvent for the extraction of bioactive constituents.	CO5	Understand
41	Describe the systematic workflow of medicinal plant extraction and processing.	CO5	Remember

42	Write down the process cycle involved in Soxhlet extraction.	CO5	Remember
43	Enumerate the applications of GC and HPLC in standardization of herbal formulations.	CO5	Understand
44	Outline the applications and drawbacks of paper chromatography in drug analysis.	CO5	Remember
45	Illustrate the industrial setup and applications of the percolation method.	CO5	Understand
46	Explain in detail the principle and working of supercritical fluid extraction.	CO5	Understand
Section III			**Questions for 10 marks**
47	Evaluate the reliability of TLC by assessing its principle, components, and industrial applications in qualitative and quantitative analysis.	CO5	Evaluate
48	Evaluate the effectiveness of HPLC based on its principle, instrumentation, and industrial applications in ensuring analytical accuracy and efficiency.	CO5	Evaluate

Course Outcome (CO)

On the successful completion of the Course, students will be able to:-

CO1: To understand the basic metabolic pathways for synthesis of metabolites.

CO2: To carryout isolation and identification of Phyto-constituents.

CO3: To understand the herbal drug interactions

CO4: To understand the preparation and development of herbal formulation.

CO5: To know the modern extraction techniques, characterization and identification of the herbal drugs and Phyto-constituents.

Summary Sheet

CO Wise

CO	Q. No	Marks
CO1	1,2,3,4,5,6,7,8,9,10	65
CO2	11,12,13,14,15,16,17,18,19,20	65
CO3	21,22,23,24,25,26,27,28,29	60
CO4	30,31,32,33,34,35,36,37,38,39	65
CO5	40,41,42,43,44,45,46,47,48	55
Total		**310**

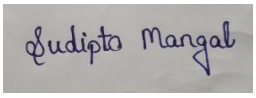
Unit Wise

Unit	Q. No	Marks
Unit 1	1,2,3,4,5,6,7,8,9,10	65
Unit 2	11,12,13,14,15,16,17,18,19,20	65
Unit 3	21,22,23,24,25,26,27,28,29	60
Unit 4	30,31,32,33,34,35,36,37,38,39	65
Unit 5	40,41,42,43,44,45,46,47,48	55
Total		**310**

Blooms Taxonomy Level (BTL) Wise

BTL	Q. No	Marks
LOT	1,2,3,4,5,6,7,11,12,13,14,15,16,17,21,22,23,24,25,26,30,31,3233,34,35,36,40,41,42,43,44,45,46	170
HOT	8,9,10,18,19,20,27,28,29,37,38,39, 47,48	140
Total		**310**

Note: All questions from **Section II** will be considered as **LOT.**
All questions from **Section III** will be considered as **HOT.**



Prepared By:

Reviewed By:

Disclaimer: -This is a Practice Set. The Question in End term examination will differ from the Practice Set. This Practice Set is meant for practice only.