

CO - Course Outcomes,

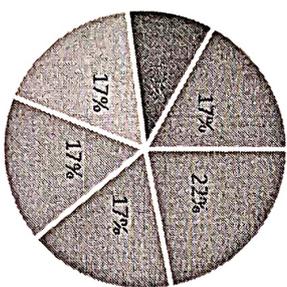
KL - Knowledge Level,

PO - Program Outcome

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| CO1 | Know various unit operations used in Pharmaceutical industries. |
| CO2 | Understand the material handling techniques. |
| CO3 | Perform various processes involved in pharmaceutical manufacturing process. |
| CO4 | Carry out various test to prevent environmental pollution. |
| CO5 | Appreciate and comprehend significance of plant layout design for optimum use of resources. |
| CO6 | Appreciate the various preventive methods used for corrosion control in Pharmaceutical industries. |

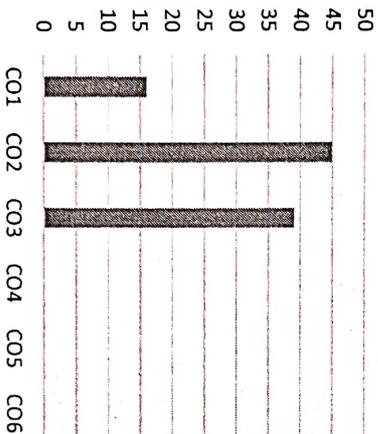
GRAPHICAL REPRESENTATION

Bloom's Level Wise Marks Distribution



■ K1 ■ K2 ■ K3 ■ K4 ■ K5 ■ K6

Course Outcome Wise Marks Distribution



ARKA JAIN
University
Jharkhand



2nd INTERNAL EXAMINATION
School of Pharmacy

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|-----------------------------|---|---------------------------------|----------------------------------|
| Branch | B. Pharmacy | Program | Pharmacy |
| Subject Name | Pharmaceutical Engineering | Semester | III |
| | | Year | October 2025 |
| Time: 1 Hour Max. Marks: 30 | <ul style="list-style-type: none"> Answer all Questions of Section A (Compulsory) Answer Any <i>One</i> out of <i>Two</i> of Section B Answer Any <i>Two</i> out of <i>Three</i> of Section C Possession of Mobile Phones or any kind of Written Material Arguments with the Invigilator or Discussing with Co-Student will come under <u>Unfair Means</u> and will Result in the Cancellation of the Papers. | | |
| Knowledge Level (KL) | K1 : Remembering K2 : Understanding | K3 : Applying K4 : Analysing | K5 : Evaluating K6 : Creating |

Section A (Each question Carry 01 Marks from Q1-i to Q1-x) - 10 Marks

| Q.N | QUESTIONS | Marks | COs | KL | PO |
|-----|---|-------|----------|--------|-----|
| i | Distillation under reduced pressure is mainly used for: a) High melting point solids b) Heat-sensitive liquids c) Non-volatile substances d) Azeotropic mixtures निम्न दाब पर आसवन का उपयोग मुख्यतः निम्न के लिए किया जाता है: a) उच्च गलनांक वाले ठोस b) ऊष्मा-संवेदनशील द्रव c) अवाष्पशील पदार्थ d) स्थिर-आवेशी मिश्रण | 1 | CO3 | KL, K2 | PO1 |
| ii | The main purpose of drying in pharmaceutical industry is: a) To reduce particle size b) To remove water c) To increase viscosity d) To increase solubility दवा उद्योग में सुखाने का मुख्य उद्देश्य है: a) कण आकार को कम करना b) पानी निकालना c) स्थानता बढ़ाना d) घुलनशीलता बढ़ाना | 1 | CO3 | K1, K2 | PO1 |
| iii | In a fluidized bed dryer, the material is: a) Dried by conduction b) Suspended and dried by hot air stream c) Dried under vacuum d) Spread in thin films on a heated surface द्रवीकृत बेड ड्रायर में, पदार्थ को: | 1 | CO2, CO3 | K1, K2 | PO2 |

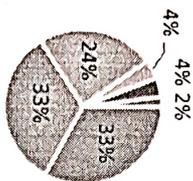
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|------|---|---|-------------|-----------|-------------|
| | a) चालन द्वारा सुखाया जाता है b) गर्म वायु धारा द्वारा निलंबित और सुखाया जाता है c) निर्वर्त में सुखाया जाता है d) गर्म सतह पर पतली फिल्मों में फैलाया जाता है | | | | |
| iv | Lymphatization is also known as: a) Spray drying b) Freeze drying c) Vacuum oven drying d) Drum drying लाइफिलिजेशन को निम्न नामों से भी जाना जाता है: a) स्प्रे ड्राइंग b) फ्रीज ड्राइंग c) वैक्यूम ओवन ड्राइंग d) ड्रम ड्राइंग | 1 | CO2 | K1, K2 | PO2 |
| v | Mixing of powders is usually carried out to: a) Increase density b) Achieve uniform distribution of ingredients c) Reduce hygroscopicity d) Increase particle size पाउडरों का मिश्रण आमतौर पर निम्नलिखित उद्देश्यों के लिए किया जाता है: a) घनत्व बढ़ाना b) अवयवों का एकसमान वितरण प्राप्त करना c) आर्द्रताग्रहीता कम करना d) कण आकार बढ़ाना | 1 | CO3 | K1, K2 | PO2 |
| vi | A double cone blender is mainly used for: a) Mixing liquids b) Mixing powders and granules c) Emulsification d) Drying of powders डबल कॉन ब्लेंडर का उपयोग मुख्यतः निम्न के लिए किया जाता है: a) तरल पदार्थों को मिलाना b) पाउडर और कणिकाओं को मिलाना c) पायसीकरण d) पाउडर को सुखाना | 1 | CO2, CO3 | K1, K2 | PO1, PO2 |
| vii | The efficiency of mixing depends on: a) Type of mixer used b) Particle size and density c) Speed of mixing d) All of the above मिश्रण की दक्षता इस पर निर्भर करती है: a) प्रयुक्त मिक्सर का प्रकार b) कण का आकार और घनत्व c) मिश्रण की गति d) उपरोक्त सभी | 1 | CO3 | K1, K2 | PO1, PO2 |
| viii | Spray drying is especially suitable for: a) Thermo labile drugs b) Heat-stable liquids and slurries c) Solid crystalline drugs d) Oily substances only स्प्रे ड्राइंग विशेष रूप से निम्नलिखित के लिए उपयुक्त है: a) ताप-अस्थिर औषधियाँ b) ताप-स्थिर द्रव और घोल c) ठोस क्रिस्टलीय औषधियाँ d) केवल तैलीय पदार्थ | 1 | CO2 | K1, K2 | PO1, PO2 |
| ix | In a spray dryer, atomization of feed is usually done by: a) Centrifugal disc or nozzle b) Vacuum suction c) Roller press d) Paddle agitator | 1 | CO1, CO2 | K1, K2 | PO2 |

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| x | स्प्रे ड्राइंग में, फीड का परमाणुकरण आमतौर पर निम्नलिखित द्वारा किया जाता है: a) सेंट्रीफ्यूगल डिस्क या नोजल b) वैक्यूम सक्शन c) रोलर प्रेस d) पैडल एजिटेटर Drum dryers are commonly used for drying: a) Solutions, slurries and pastes b) Free-flowing powders c) Only volatile liquids d) Thermo labile substances ड्रम ड्राइंग का उपयोग आमतौर पर निम्नलिखित को सुखाने के लिए किया जाता है: a) विलयन, घोल और पेस्ट b) मुक्त-प्रवाही पाउडर c) केवल वाष्पशील द्रव d) ताप-अस्थिर पदार्थ | 1 | CO2 | K1, K2 | PO1, PO10 |
| Section B Answer any One out of Two [1 x 10 = 10 Marks] | | | | | |
| Q. No. | QUESTIONS | Marks | COs | KL | PO |
| 2 | Explain the construction, working, advantages, disadvantages, and applications of a fluidized bed dryer. द्रवीकृत बिस्तर के निर्माण, कार्य, लाभ, हानि और अनुप्रयोगों की व्याख्या करें। | 10 | CO1, CO2 | K4, K6 | PO1 |
| 3 | Explain the principle, construction, working, advantages, and applications of fractional distillation. प्रभाजी असावन के सिद्धांत, निर्माण, कार्य, लाभ और अनुप्रयोगों की व्याख्या करें। | 10 | CO2, CO3 | K3, K5 | PO2 |
| Section C Answer any Two out of Three [2 x 5 = 10 Marks] | | | | | |
| Q. No. | QUESTIONS | Marks | COs | KL | PO |
| 4 | Draw and explain the typical drying curve for a solid material. किसी ठोस पदार्थ के लिए विशिष्ट सुखाने वाला वक्र बनाइए और समझाइए। | 5 | CO3 | K4, K6 | PO2 |
| 5 | Define filtration. Mention its pharmaceutical applications. निस्पंदन को परिभाषित कीजिए। इसके औषधीय अनुप्रयोगों का उल्लेख कीजिए। | 5 | CO3 | K1, K3 | PO2 |
| 6 | Write short notes on double cone blender. डबल कॉन ब्लेंडर पर संक्षिप्त नोट्स लिखें। | 5 | CO2 | K1, K2 | PO1, PO2 |

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| Course Outcomes | CO1 | Understand the reactions with mechanisms of benzene and orientation of groups in aromatic compounds |
| | CO2 | Understand the reaction the reactions of some aromatic alcohols. |
| | CO3 | Understand the reactions of some aromatic organic compounds. |
| | CO4 | Understand the reactions of Fatty acids with significance and principle involved in their determination. |
| | CO5 | Understand structure, reactions and medicinal uses of polynuclear hydrocarbons. |
| | CO6 | Understand the stability and reactions of cycloalkanes. |

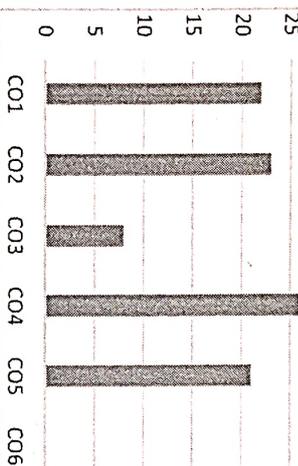
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2nd INTERNAL EXAMINATION
School of Pharmacy

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|---|--|---------------|----------------|---------------|
| Branch | B. Pharmacy | | Program | Pharmacy |
| Subject Name | Pharmaceutical Organic Chemistry II (Theory) | | Semester | III |
| | | | Year | October 2025 |
| Time: 1 Hour | <ul style="list-style-type: none"> Answer all Questions of Section A (Compulsory) Answer Any <i>One</i> out of <i>Two</i> of Section B Answer Any <i>Two</i> out of <i>Three</i> of Section C Possession of Mobile Phones or any kind of Written Material, Arguments with the Invigilator or Discussing with Co-Student will come under <u>Unfair Means</u> and will <u>Result in the Cancellation of the Papers.</u> | | | |
| Marks: 30 | | | | |
| Knowledge Level (KL) | K1: Remembering | K3: Applying | K5: Evaluating | |
| | K2: Understanding | K4: Analysing | K6: Creating | |
| Section A (Each question Carry 01 Marks from Q1-1 to Q1-4) - 10 Marks | | | | |
| Q.N1 | QUESTIONS | | Marks | COs |
| i | Which of the following is <i>not</i> an essential fatty acid? A) Oleic acid B) Linoleic acid C) Arachidonic acid निम्नलिखित में से कौन सा आवश्यक वसीय अम्ल नहीं है? A) ओलिक अम्ल B) लिनोलिक अम्ल C) एराकिडोनिक अम्ल D) रिनोलीनिक अम्ल | | 1 | CO3, CO4 |
| ii | The non-protein part of rhodopsin is: A) Retinal B) Retinol C) Carotene D) Opsin रोडोप्सिन का गैर-प्रोटीन भाग है: A) रेटिनल B) रेटिनॉल C) कैरोटीन D) ऑप्सिन | | 1 | CO1, CO3, CO4 |
| iii | The saponification number indicates: A) Unsaturation in fat B) Average molecular weight of fatty acids C) Acetyl number D) Acid number साबुनीकरण संख्या दर्शाती है: A) वसा में असंतुति B) वसा अम्लों का औसत अणुविकार भार C) एसिटिल संख्या D) अम्ल संख्या | | 1 | CO1, CO3, CO4 |
| iv | Saponification number is: A) mg of KOH required to saponify our gm of fat or old B) mg of KOH required to neutralize free fatty acids of one C) mg of KOH required to neutralize the acetyl arid obtained by saponification of ane gre of fat after it has been acryband D) None of these साबुनीकरण संख्या है: | | 1 | CO2, CO4 |
| | | | | K4, K5, K6 |
| | | | | PO2 |

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| v | Electrolytic reduction of nitrobenzene in weakly acidic medium gives: A) Aniline C) N-Phenylhydroxylamine D) Nitrobenzene B) p-Hydroxylamine D) Nitrobenzene | 1 | CO1, CO2, CO4 | K1, K2, K3 | PO2 |
| vi | By heating 4-phenyl-3-butenic acid at 300 °C, it forms: A) Naphthalene C) α-Naphthol B) Naphthoic acid D) Phthalic acid 4-फेनिल-3-ब्यूटेनोइक अम्ल को 300°C पर गर्म करने पर बनता है: A) नैफथलीन C) α-नैफथॉल B) नैफथोइक अम्ल D) फथैलिक अम्ल | 1 | CO2, CO5 | K1, K2, K4, K5 | PO1, PO2 |
| vii | Phenanthrene is a fused polycyclic compound containing how many benzene rings? A) Two C) Four B) Three D) Five फेन्थेन एक संलयित बहुवर्णीय यौगिक है जिसमें कितने बेंजीन वलय होते हैं? A) दो C) चार B) तीन D) पांच | 1 | CO5 | K1, K2 | PO1, PO2 |
| viii | Which among the following is not a property of aromatic hydrocarbons? A) These compounds have very good aromaticity B) These compounds have excellent stability C) These compounds do not undergo electrophilic nucleophilic substitutions but they undergo electrophilic substitutions D) There must be a strong ratio between carbon and hydrogen निम्नलिखित में से कौन सा ऐरोमैटिक हाइड्रोकार्बन का गुण नहीं है? A) इन यौगिकों में बहुत अच्छी ऐरोमैटिकता होती है। B) इन यौगिकों में उत्कृष्ट स्थायित्व होता है। C) ये यौगिक नाभिकसही प्रतिस्थापन नहीं करते, बल्कि विद्युत्सेही प्रतिस्थापन करते हैं। D) कार्बन और हाइड्रोजन के बीच एक प्रबल अनुपात होना चाहिए। | 1 | CO5 | K1, K2, K3 | PO1, PO2 |
| ix | Pyridine is an: A) Aromatic compound C) Alicyclic compound B) Unsaturated aliphatic compound D) Aliphatic compound पाइरीडीन एक है A) ऐरोमैटिक यौगिक C) ऐलिसाइक्लिक यौगिक B) असंतृप्त ऐलिकैटिक यौगिक D) ऐलिकैटिक यौगिक | 1 | CO3, CO5 | K1, K2 | PO2 |

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| x | Naphthalene on reaction with CH_3COCl and AlCl_3 in the presence of nitrobenzene as solvent gives: A) 2-Acetonaphthalene C) 3-Acetonaphthalene B) 1-Acetonaphthalene D) 4-Acetonaphthalene नाइट्रोबेंजीन विलायक की उपस्थिति में CH_3COCl और AlCl_3 के साथ अभिक्रिया करने पर नैफथलीन देता है: A) 2-एसिटोनैफथलीन C) 3-एसिटोनैफथलीन B) 1-एसिटोनैफथलीन D) 4-एसिटोनैफथलीन | 1 | CO5 | K1, K2, K3 | PO1, PO2 |
| Section B Answer any One out of Two [1 x 10 = 10 Marks] | | | | | |
| Q.No. | QUESTIONS | Marks | COs | KL | PO |
| 2 | Discuss the analytical constants of fats and oils - acid value, saponification value, ester value, iodine value, and acetyl value. वसा और तेलों के विश्लेषणात्मक स्थिरांकों पर चर्चा करें - अम्ल मान, साबुनीकरण मान, एस्टर मान, आयोडीन मान और एसिटेटाइल मान। | 10 | CO1, CO2, CO4 | K1, K2 | PO1, PO10 |
| 3 | Explain the structure, electrophilic substitution reactions, and applications of phenanthrene. फेन्थेन की संरचना, इलेक्ट्रोफिलिक प्रतिस्थापन अभिक्रियाओं और अनुप्रयोगों की व्याख्या करें। | 10 | CO1, CO2, CO5 | K1, K2, K3 | PO1, PO2 |
| Section C Answer any Two out of Three [2 x 5 = 10 Marks] | | | | | |
| Q.No. | QUESTIONS | Marks | COs | KL | PO |
| 4 | Explain the principle involved in the determination of Reichert-Meissl (RM) value. रीचर्ट-मीसल (आरएम) मान के निर्धारण में शामिल सिद्धांत की व्याख्या करें। | 5 | CO4 | K1, K2, K3 | PO1, PO2 |
| 5 | Describe hydrogenation of oils and its industrial importance. तेलों के हाइड्रोजनीकरण और इसके औद्योगिक महत्त्व का वर्णन करें। | 5 | CO4 | K1, K2 | PO1, PO9 |
| 6 | Draw the structure of naphthalene, phenanthrene and anthracene and its applications in medicine. नैफथलीन, फेन्थेन और एन्थ्रासीन की संरचना और चिकित्सा में इसके अनुप्रयोगों का चित्र बनाइए। | 5 | CO3, CO5 | K1, K2, K3 | PO1, PO2, PO9 |

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| | निम्नलिखित में से कौन सा एंटीबोटिक नेत्र संक्रमी योत में परीक्षण के रूप में उपयोग किया जाता है? a. अल्कोहल b. चतुर्थक अमोनियम लवण c. फिनोल d. एंजिडलाइड | | | | |
| v | DOP (Dioctylphthalate) test is used for validation of _____ a. membrane filter. b. HEPA filter c. autoclave d. hot air oven डीओपी (डायोक्टिलफ्थालेट) परीक्षण का उपयोग _____ के सत्यापन के लिए किया जाता है। a. फिल्ट्री फिल्टरा b. HEPA फिल्टर c. ऑटोक्लेव d. गर्म हवा ओवन | 1 | CO4 | K1, K2, K3 | PO1 |
| vi | Which of the following agents is used as a preservative in ophthalmic solutions? a. Alcohol b. Quaternary ammonium salts c. Phenol d. Aldehydes निम्नलिखित में से कौन सा एंटीबोटिक नेत्र संक्रमी योत में परीक्षण के रूप में उपयोग किया जाता है? a. अल्कोहल b. चतुर्थक अमोनियम लवण c. फिनोल d. एंजिडलाइड | 1 | CO3 | K1, K2, K3 | PO1, PO2 |
| vii | Which of the following are generally applied on living animal tissues? a. Antiseptics b. Disinfectants c. Preservatives d. Sanitizer निम्नलिखित में से कौन सा सामान्यतः जीवित पशुओं के ऊतकों पर लगाया जाता है? a. एंटीसेप्टिक्स b. कीटाणुनाशक c. परिरक्षक d. सैनिटाइजर | 1 | CO5 | K1, K2, K3 | PO1, PO2 |
| viii | The velocity of HEPA-filtered air is measured using _____ a. An air velometer b. Anemometer c. Rain gauge d. Barometer HEPA-फिल्टर की गति हवा का वेग _____ का उपयोग करके मापा जाता है। a. एयर वेलोमीटर b. एनोमीटर c. रेन गेज d. बैरोमीटर | 1 | CO4 | K1, K2, K3 | PO1, PO2 |
| ix | For reduction of fungal growth _____ may be added to the paint. a. 1% of 8-hydroxyquinoline b. 2% of 8-hydroxyquinoline c. 5% of 8-hydroxyquinoline d. 10% of 8-hydroxyquinoline फंगस की वृद्धि को कम करने के लिए पेंट में _____ फिल्टरा या सकता है। a. 8-हाइड्रोक्सीक्विनोलीन का 1% b. 8-हाइड्रोक्सीक्विनोलीन का 2% c. 8-हाइड्रोक्सीक्विनोलीन का 5% d. 8-हाइड्रोक्सीक्विनोलीन का 10% | 1 | CO4 | K1, K2, K3 | PO1 |
| x | Which of the following is not true of virions? a. Reproduce independently b. Contain DNA c. Contain RNA d. Are extracellular | 1 | CO5 | K1, K2 | PO1 |

| निम्नलिखित में से कौन सा कथन विरिऑन के संरचना में सत्य नहीं है? a. स्वतंत्र रूप से प्रजनन करते हैं b. डीएनए युक्त होते हैं c. आरएनए युक्त होते हैं d. बाह्यकोशिकीय होते हैं | | | | | |
|---|--|-------|-----|------------|----------|
| Section B Answer any One out of Two [1 x 10 = 10 Marks] | | | | | |
| Q. No. | QUESTIONS | Marks | COs | KL | PO |
| 2 | Describe the various methods of sterilization with specific examples of their applications for different pharmaceutical products and materials. विभिन्न औषधि उत्पादों और सामग्रियों के लिए उनके अनुप्रयोगों के विभिन्न उदाहरणों के साथ स्टीराइजेशन की विभिन्न विधियों का वर्णन कीजिए। | 10 | CO3 | K1, K2, K3 | PO1, PO2 |
| 3 | Discuss the principles and methods of microbiological assay for the standardization of vitamins. विटामिन और अमीनो एसिड के मानकीकरण के लिए सूक्ष्मजीवविज्ञानी परीक्षण के सिद्धांतों और विधियों पर वर्णन करें। | 10 | CO4 | K1, K2, K3 | PO1, PO2 |
| Section C Answer any Two out of Three [2 x 5 = 10 Marks] | | | | | |
| Q. No. | QUESTIONS | Marks | COs | KL | PO |
| 4 | Explain the differences and applications of primary, established, and transformed cell cultures in the pharmaceutical industry. प्रथमसृष्टिकृत उच्चार में प्राथमिक, स्थापित और रूपांतरित कोशिका संस्कृतियों के अंतर और अनुप्रयोगों की व्याख्या करें। | 5 | CO5 | K1, K2, K3 | PO1, PO2 |
| 5 | What are the specific biochemical tests (IMVIC) used for bacterial identification? जीवाणु पहचान के लिए प्रयुक्त विभिन्न जैवरासायनिक परीक्षण (IMVIC) क्या हैं? | 5 | CO3 | K1, K2, K3 | PO1, PO2 |
| 6 | Elaborate on the classification and mode of action of disinfectants. कीटाणुनाशकों के वर्गीकरण और क्रियाविधि पर विस्तार से प्रकार्य उदाहरण | 5 | CO4 | K1, K2, K3 | PO1, PO2 |

CO- Course Outcomes,

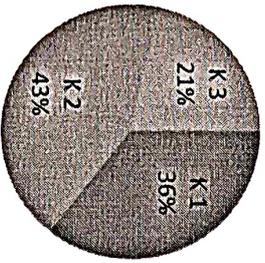
KL- Knowledge Level,

PO – Program Outcome

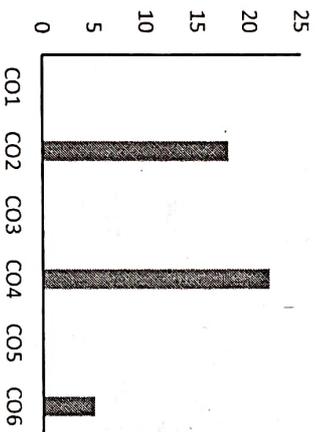
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|----------------|-----|--|
| Course Outcome | CO1 | Acquire knowledge about solubility phenomena and its application in pharmaceutical practice. |
| | CO2 | Acquire knowledge about physical principles of states of matter |
| | CO3 | Understanding various physicochemical properties of drug molecules and its application. |
| | CO4 | Illustrate the knowledge and concept of surface tension and interfacial tension and its importance in dispersion stability |
| | CO5 | Acquire knowledge about drug complexes, protein binding in pharmacy. |
| | CO6 | Understand electrophoretic methods |

GRAPHICAL REPRESENTATION

Bloom's Level wise Marks Distribution



Course outcome wise marks distribution



ARKA JAIN
University
Jharkhand



2nd INTERNAL EXAMINATION
School of Pharmacy

| | | | |
|-----------------------------|---|----------|-------------|
| Branch | B. Pharmacy | Program | Pharmacy |
| Subject Name | Physical Pharmaceutics I (Theory) | Semester | III |
| | | Year | August 2025 |
| Time: 1 Hour Max. Marks: 30 | <ul style="list-style-type: none"> Answer all Questions of Section A (Compulsory) Answer Any One out of Two of Section B Answer Any Two out of Three of Section C Possession of Mobile Phones or any kind of Written Material, Arguments with the Invigilator or Discussing with Co-Student will come under Unfair Means and will Result in the Cancellation of the Papers. | | |

| | | | |
|----------------------|-------------------|---------------|----------------|
| Knowledge Level (KL) | K1: Remembering | K3: Applying | K5: Evaluating |
| | K2: Understanding | K4: Analysing | K6: Creating |

| | | | | | |
|-------|-----------|-------|-----|----|----|
| Q. N1 | QUESTIONS | Marks | COs | KL | PO |
|-------|-----------|-------|-----|----|----|

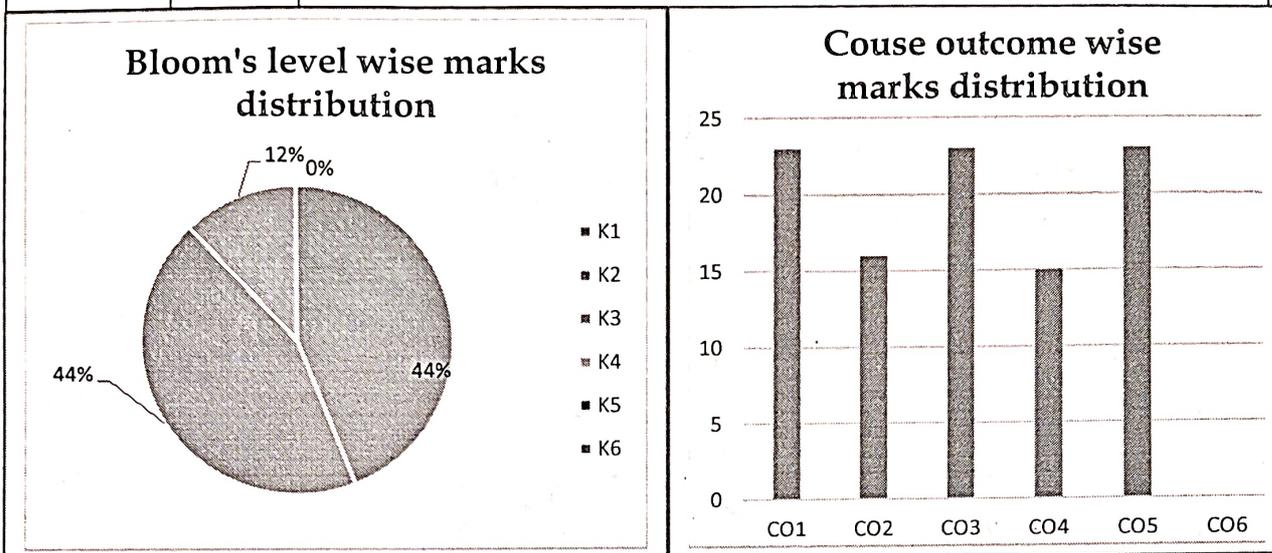
| | | | | | |
|-----|---|---|-----|----|-----|
| i | Surface tension is measured in which unit? a) J/mol b) N/m c) Pa d) J/kg | 1 | CO4 | K1 | PO1 |
| ii | Which force is responsible for capillary rise in liquids? किस बल के कारण द्रवों में केपिलरी वृद्धि (Capillary rise) होती है? a) Cohesive force/आसंजक बल b) Adhesive force/आसंजन बल c) Gravitational force/गुरुत्वाकर्षण बल d) Centrifugal force/अपकेंद्रीय बल | 1 | CO4 | K2 | PO2 |
| iii | A surfactant has HLB value 18. It will be more suitable for: a) Water-in-oil emulsions /जल-में-तेल इमल्शन b) Oil-in-water emulsions/ तेल-में-जल इमल्शन c) Solid suspensions/ठोस निलंबन d) Micelle breaking/माइसेल टूटना | 1 | CO4 | K1 | PO9 |
| iv | Critical Micelle Concentration (CMC) decreases when: क्रिटिकल माइसेल सांद्रता (CMC) कब घटती है? a) Hydrocarbon chain length decreases/हाइड्रोकार्बन शृंखला की लंबाई कम होने पर b) Salt is added to ionic surfactants/ आयनिक सर्फैक्टेंट में नमक मिलाने पर c) Head group hydration increases/ आयनिक सर्फैक्टेंट में नमक मिलाने पर d) Temperature decreases/तापमान घटने पर | 1 | CO4 | K3 | PO7 |

| | | | | | |
|------|--|---|-----|----|----------|
| v | Which method is most suitable for determining surface tension with high accuracy? उच्च सटीकता के साथ सतही तनाव निर्धारित करने के लिए कौन-सी विधि सबसे उपयुक्त है? a) Drop count method / ड्रॉप काउंट विधि b) Drop weight method / ड्रॉप वेट विधि c) Ring detachment method d) Capillary rise method | 1 | CO4 | K2 | PO1 |
| vi | If you want to design a shampoo formulation that is mild for babies, which type of surfactant will you choose? यदि आप बच्चों के लिए एक सौम्य शैम्पू तैयार करना चाहते हैं, तो आप किस प्रकार का सर्फैक्टेंट चुनेंगे? a) Anionic/एनायनिक b) Cationic/कैटायनिक c) Non-ionic/नॉन-आयनिक d) Amphiphilic (Zwitterionic)/ एम्फोटेरिक (ज़्विटरायोनिक) | 1 | CO4 | K4 | PO9 |
| vii | Which one best explains the role of micelles in the solubilization of poorly soluble drugs? कम घुलनशील दवाओं के विलेयन में माइसेल की भूमिका को कौन सा विकल्प सबसे अच्छी तरह समझता है? a) Hydrophobic drugs dissolve in the aqueous phase. हाइड्रोफोबिक दवाएं जलीय चरण में घुल जाती हैं। b) Hydrophobic drugs hide inside micelle core. हाइड्रोफोबिक दवाएं माइसेल के कोर में छिप जाती हैं। c) Drugs form hydrogen bonds with water. दवाएं जल के साथ हाइड्रोजन बंध बनाती हैं। d) Drugs directly reduce surface tension दवाएं सीधे सतही तनाव को कम करती हैं। | 1 | CO4 | K2 | PO1, PO2 |
| viii | Which state of matter has a definite volume but no definite shape? किस अवस्था में निश्चित आयतन होता है लेकिन निश्चित आकार नहीं होता? a) Solid/ ठोस b) Liquid/ द्रव c) Gas/ गैस d) Plasma/ प्लाज्मा | 1 | CO2 | K1 | PO1 |
| ix | Why does sweating help to cool the body? पसीना आने से शरीर ठंडा क्यों होता है? a) Sweat absorbs oxygen from the air. / पसीना वायु से ऑक्सीजन अवशोषित करता है। b) Evaporation of sweat uses latent heat of vaporization. / पसीने के वाष्पीकरण में गुप्त वाष्पन ऊष्मा का उपयोग होता है। c) Sweat lowers the body's melting point. / पसीना शरीर का गलनांक कम कर देता है। d) Latent heat of fusion is released during sweating. / पसीने में गुप्त ऊष्मा का उत्सर्जन होता है। | 1 | CO2 | K2 | PO2 |

| | | | | | |
|--|---|-------|-----|--------|----------|
| x | Which of the following correctly matches the change of state with its example? a) Sublimation - Frost formation on leaves/ उर्ध्वगमन - पत्तियों पर पाला जमना b) Deposition - Camphor changing to vapor/ जमाव कफूर का वाष्प में बदलना c) Condensation - Dew drops on grass/ संघनन - घास पर ओस की बूंदें d) Vaporization - Ice changing to water / वाष्पीकरण - बर्फ का पानी में बदलना | 1 | CO2 | K4 | PO1 |
| Section B Answer any One out of Two [1 x 10 = 10 Marks] | | | | | |
| Q. No. | QUESTIONS | Marks | COs | KL | PO |
| 2 | Define Hydrophilic-Lipophilic Balance (HLB). Explain any two methods in details with example for determining HLB value of surfactants हाइड्रोफिलिक-लिपोफिलिक संतुलन (HLB) को परिभाषित कीजिए। सर्फैक्टेंट के HLB मान को निर्धारित करने की किन्हीं दो विधियों को उदाहरण सहित विस्तार से समझाइए। | 10 | CO4 | K3 | PO1, PO2 |
| 3 | What is a eutectic mixture? Give an example. Explain the changes in state of matter with the help of a schematic diagram. यूटैक्टिक मिश्रण क्या है? एक उदाहरण दीजिए। पदार्थ की अवस्था में होने वाले परिवर्तन को योजनाबद्ध आरेख की सहायता से समझाइए। | 10 | CO2 | K1, K2 | PO1, PO2 |
| Section C Answer any Two out of Three [2 x 5 = 10 Marks] | | | | | |
| Q. No. | QUESTIONS | Marks | COs | KL | PO |
| 4 | What is the spreading coefficient? Write its formula and explain the condition for the spreading of one liquid over another. प्रसार गुणांक क्या है? इसका सूत्र लिखिए और एक द्रव के दूसरे द्रव पर प्रसार की स्थिति समझाइए। | 5 | CO4 | K3 | PO1, PO9 |
| 5 | Explain the concept of latent heat with the help of a suitable graph. उपयुक्त ग्राफ की सहायता से गुप्त ऊष्मा की संकल्पना को समझाइए। | 5 | CO2 | K2 | PO1, PO2 |
| 6 | What is a buffer system? Explain its significance in pharmaceutical applications. बफर सिस्टम क्या है? फार्मास्यूटिकल अनुप्रयोगों में इसका महत्व समझाइए। | 5 | CO6 | K1 | PO1, PO2 |

| SCHOOL OF PHARMACY | |  | | 2 nd INTERNAL EXAMINATION | |
|----------------------|--|---|------------------------------------|--------------------------------------|--------------------------|
| Program Name | BACHELOR OF PHARMACY | Program Code | B. PHARM | | |
| Course Name | Pharmaceutical Organic Chemistry II (Practical) | Semester | 3 rd Semester (Group-A) | | |
| Course Code | PHM23028 | Year | October 2025 | | |
| Time: 4 Hours | All the Questions are Compulsory | Maximum Marks | 40 | | |
| Knowledge Level (KL) | K1 : Remembering | K3 : Applying | K5 : Evaluating | | |
| | K2 : Understanding | K4 : Analysing | K6 : Creating | | |
| Section A | | | | | |
| [1 x 10 = 10 Marks] | | | | | |
| Q. No. | Questions | Marks | COs | KL | PO |
| I | Synopsis- i) Write a synopsis on principle, use and properties of 2,4,6 tribromo aniline. 2,4,6 ट्राइब्रोमो एनिलिन के सिद्धांत, उपयोग और गुणों पर एक सारांश लिखें। | 10 | CO1, CO5 | K1, K2, | PO1, PO2, PO3, PO10 |
| Section B | | | | | |
| [15 + 10=25 Marks] | | | | | |
| Q. No. | Questions | Marks | COs | KL | PO |
| II | a. Major- Explain the Aim, Principal, reaction, material required, procedure, calculation and report for the preparation of 1-phenyl azo-2-naphthol from aniline by diazotization and coupling reaction. प्रमुख- डायजोटाइजेशन और युग्मन प्रतिक्रिया द्वारा एनिलिन से 1-फेनिल एज़ो-2-नेफ्थॉल की तैयारी के लिए उद्देश्य, सिद्धांत, प्रतिक्रिया, आवश्यक सामग्री, प्रक्रिया, गणना और रिपोर्ट की व्याख्या करें। | 15 | CO1, CO2, CO3, CO4 | K1, K2, K3, K4 | PO1, PO2, PO3, PO9, PO10 |
| | b. Minor- Explain the Aim, reaction, material required, procedure, calculation and report for the preparation of Benzoic acid from benzyl chloride by oxidation reaction. लघु- ऑक्सीकरण अभिक्रिया द्वारा बेंजाइल क्लोराइड से बेंजोइक एसिड तैयार करने के उद्देश्य, अभिक्रिया, आवश्यक सामग्री, प्रक्रिया, गणना और रिपोर्ट की व्याख्या करें। | 10 | CO1, CO2, CO4, CO5 | K1, K2, K3, | PO1, PO2, PO3, PO9, PO10 |
| Section C | | | | | |
| [05 Marks] | | | | | |
| Q. No. | Questions | Marks | COs | KL | PO |
| III | Viva voce | 05 | | | |

| | | |
|-----------------|-----|--|
| Course Outcomes | CO1 | Understand the mechanism of drug action and its relevance in the treatment of different diseases |
| | CO2 | Demonstrate isolation of different organs/tissues from the laboratory animals by simulated experiments |
| | CO3 | Demonstrate the various receptor actions using isolated tissue preparation. |
| | CO4 | Appreciate correlation of pharmacology with related medical sciences |
| | CO5 | Discuss the basic concept and technique of in-vitro pharmacology. |



| SCHOOL OF PHARMACY | |  ARKA JAIN University Jharkhand  | | 2 nd INTERNAL EXAMINATION | |
|----------------------|---|--|------------------------------------|--------------------------------------|--------------------------|
| Program Name | BACHELOR OF PHARMACY | Program Code | B. PHARM | | |
| Course Name | Pharmaceutical Organic Chemistry II (Practical) | Semester | 3 rd Semester (Group-B) | | |
| Course Code | PHM23028 | Year | October 2025 | | |
| Time: 4 Hours | All the Questions are Compulsory | Maximum Marks | 40 | | |
| Knowledge Level (KL) | K1: Remembering | K3: Applying | K5: Evaluating | | |
| | K2: Understanding | K4: Analysing | K6: Creating | | |
| Section A | | | | | |
| [1 x 10 = 10 Marks] | | | | | |
| Q. No. | Questions | Marks | COs | KL | PO |
| I | Synopsis- i) Write a synopsis on principle, use and properties of Benzoic acid. बेन्जोइक एसिड के सिद्धांत, उपयोग और गुणों पर एक सारांश लिखें। | 10 | CO1, CO4, CO5 | K1, K2 | PO1, PO2, PO3, PO10 |
| Section B | | | | | |
| [15 + 10=25 Marks] | | | | | |
| Q. No. | Questions | Marks | COs | KL | PO |
| II | a. Major- Explain the Aim, Principal, reaction, material required, procedure, calculation and report for the preparation of Phenyl benzoate from Phenol by Benzoylation reaction. प्रमुख- बेन्जॉयलेशन अभिक्रिया द्वारा फिनोल से फिनाइल बेन्जोएट तैयार करने के उद्देश्य, सिद्धांत, आवश्यक सामग्री, गणना और रिपोर्ट की व्याख्या करें। | 15 | CO1, CO2, CO3, CO4, CO5 | K1, K2, K3, K4 | PO1, PO2, PO3, PO9, PO10 |
| | b. Minor- Explain the Aim, reaction, material required, procedure, calculation and report for the preparation of Benzoic acid from Benzyl chloride by oxidation reaction. लघु- ऑक्सीकरण अभिक्रिया द्वारा बेन्जाइल क्लोराइड से बेन्जोइक एसिड तैयार करने के उद्देश्य, अभिक्रिया, आवश्यक सामग्री, प्रक्रिया, गणना और रिपोर्ट की व्याख्या करें। | 10 | CO1, CO2, CO3, CO4, CO5 | K1, K2, K3, K4 | PO1, PO2, PO3, PO9, PO10 |
| Section C | | | | | |
| [05 Marks] | | | | | |
| Q. No. | Questions | Marks | COs | KL | PO |
| III | Viva voce | 05 | | | |

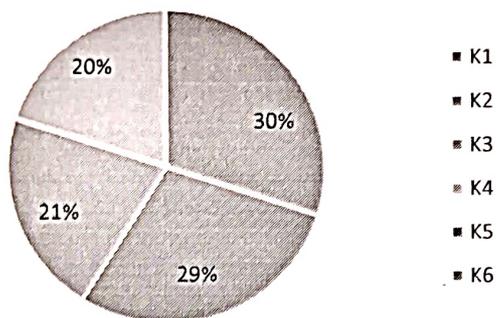
CO- Course Outcomes,

KL- Knowledge Level,

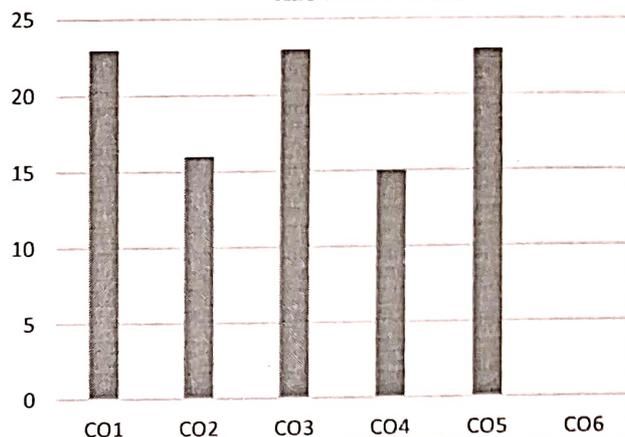
PO - Program Outcome

| | | |
|-----------------|-----|--|
| Course Outcomes | CO1 | Analyze the structure, name and the type of isomerism of the organic compound. |
| | CO2 | Understand the reaction, name the reaction and orientation of reactions. |
| | CO3 | Understand the reaction, name the reaction and orientation of reactions. |
| | CO4 | Apply the knowledge to identification of organic compound. |
| | CO5 | Analyze organic compounds. |

Bloom's level wise marks distribution



Couse outcome wise marks distribution



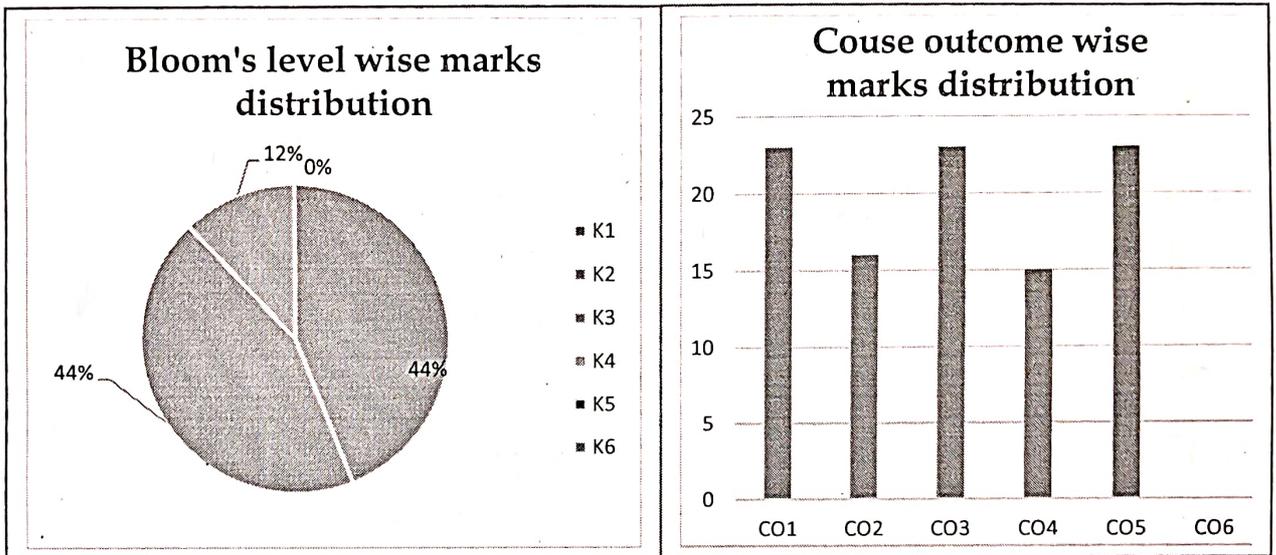
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|----------------------------|---|---|------------------------------------|--------------------------------------|--------------------------|
| SCHOOL OF PHARMACY | |  | | 2 nd INTERNAL EXAMINATION | |
| Program Name | BACHELOR OF PHARMACY | Program Code | B. PHARM | | |
| Course Name | Pharmaceutical Organic Chemistry II (Practical) | Semester | 3 rd Semester (Group-C) | | |
| Course Code | PHM23028 | Year | October 2025 | | |
| Time: 4 Hours | All the Questions are Compulsory | Maximum Marks | 40 | | |
| Knowledge Level (KL) | K1 : Remembering | K3 : Applying | K5 : Evaluating | | |
| | K2 : Understanding | K4 : Analysing | K6 : Creating | | |
| Section A | | | | | |
| [1 x 10 = 10 Marks] | | | | | |
| Q. No. | Questions | Marks | COs | KL | PO |
| I | <p>Synopsis- i) Write a synopsis on principle, use and properties of 1-phenyl azo-2 naphthol. 1-फेनिल एजो-2 नैफ्थॉल के सिद्धांत, उपयोग और गुणों पर एक सारांश लिखें।</p> | 10 | CO1, CO5 | K1, K2, | PO1, PO2, PO3, PO10 |
| Section B | | | | | |
| [15 + 10=25 Marks] | | | | | |
| Q. No. | Questions | Marks | COs | KL | PO |
| II | <p>a. Major- Explain the Aim, Principal, reaction, material required, procedure, calculation and report for the preparation of dibenzyl acetone from benzaldehyde by casei-Schmidt reaction. प्रमुख- केसी-शिमिट अभिक्रिया द्वारा बेजाल्डिहाइड से डाइबेंजाइल एसीटोन तैयार करने के उद्देश्य, सिद्धांत, अभिक्रिया, आवश्यक सामग्री, प्रक्रिया, गणना और रिपोर्ट की व्याख्या करें।</p> | 15 | CO1, CO2, CO3 CO4 | K1, K2, K3, K4 | PO1, PO2, PO3, PO9, PO10 |
| | <p>b. Minor- Explain the Aim, reaction, material required, procedure, calculation and report for the preparation of Benzoic acid from ethyl benzoate by hydrolysis reaction. लघु- हाइड्रोलिसिस प्रतिक्रिया द्वारा एथिल बेंजोएट से बेंजोइक एसिड की तैयारी के लिए उद्देश्य, प्रतिक्रिया, आवश्यक सामग्री, प्रक्रिया, गणना और रिपोर्ट की व्याख्या करें।</p> | 10 | CO1, CO2, CO4, CO5 | K1, K2, K3, | PO1, PO2, PO3, PO9, PO10 |
| Section C | | | | | |
| [05 Marks] | | | | | |
| Q. No. | Questions | Marks | COs | KL | PO |
| III | Viva voce | 05 | | | |

CO- Course Outcomes,

KL- Knowledge Level,

PO – Program Outcome

| | | |
|-----------------|-----|--|
| Course Outcomes | CO1 | Understand the mechanism of drug action and its relevance in the treatment of different diseases |
| | CO2 | Demonstrate isolation of different organs/tissues from the laboratory animals by simulated experiments |
| | CO3 | Demonstrate the various receptor actions using isolated tissue preparation. |
| | CO4 | Appreciate correlation of pharmacology with related medical sciences |
| | CO5 | Discuss the basic concept and technique of in-vitro pharmacology. |



| | | | | | |
|----------------------------|--|----------------|------------------------------------|--------------------------------------|--------------------------|
| SCHOOL OF PHARMACY |  | | | 2 nd INTERNAL EXAMINATION | |
| Program Name | BACHELOR OF PHARMACY | Program Code | B. PHARM | | |
| Course Name | Pharmaceutical Organic Chemistry II (Practical) | Semester | 3 rd Semester (Group-D) | | |
| Course Code | PHM23028 | Year | October 2025 | | |
| Time: 4 Hours | All the Questions are Compulsory | Maximum Marks | 40 | | |
| Knowledge Level (KL) | K1 : Remembering | K3 : Applying | K5 : Evaluating | | |
| | K2 : Understanding | K4 : Analysing | K6 : Creating | | |
| Section A | | | | | |
| [1 x 10 = 10 Marks] | | | | | |
| Q. No. | Questions | Marks | COs | KL | PO |
| I | Synopsis- i) Write a synopsis on principle, use and properties of dibenzyl acetone. 1-फेनिल एजो-2 नैफ्थॉल के सिद्धांत, उपयोग और गुणों पर एक सारांश लिखें। | 10 | CO1, CO3, CO5 | K1, K2, | PO1, PO2, PO3, PO10 |
| Section B | | | | | |
| [15 + 10=25 Marks] | | | | | |
| Q. No. | Questions | Marks | COs | KL | PO |
| II | a. Major- Explain the Aim, Principal, reaction, material required, procedure, calculation and report for the preparation of Benzoic acid from Benzyl chloride by oxidation reaction. प्रमुख- केसी-शिम्ट अभिक्रिया द्वारा बेंजाल्डिहाइड से डाइबेंजाइल एसीटोन तैयार करने के उद्देश्य, सिद्धांत, अभिक्रिया, आवश्यक सामग्री, प्रक्रिया, गणना और रिपोर्ट की व्याख्या करें। | 15 | CO1, CO2, CO3, CO4 | K1, K2, K3, | PO1, PO2, PO3, PO9, PO10 |
| | b. Minor- Explain the Aim, reaction, material required, procedure, calculation and report for the preparation of 1-phenyl azo-2-naphthol from aniline by diazotization and coupling reaction लघु-हाइड्रोलिसिस प्रतिक्रिया द्वारा एथिल बेंजोएट से बेंजोइक एसिड की तैयारी के लिए उद्देश्य, प्रतिक्रिया, आवश्यक सामग्री, प्रक्रिया, गणना और रिपोर्ट की व्याख्या करें। | 10 | CO1, CO2, CO4, CO5 | K1, K2, K3, | PO1, PO2, PO3, PO9, PO10 |
| Section C | | | | | |
| [05 Marks] | | | | | |
| Q. No. | Questions | Marks | COs | KL | PO |
| III | Viva voce | 05 | | | |

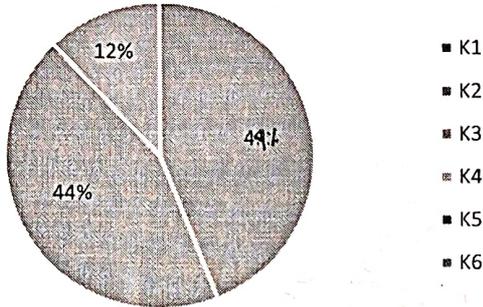
CO- Course Outcomes,

KL- Knowledge Level,

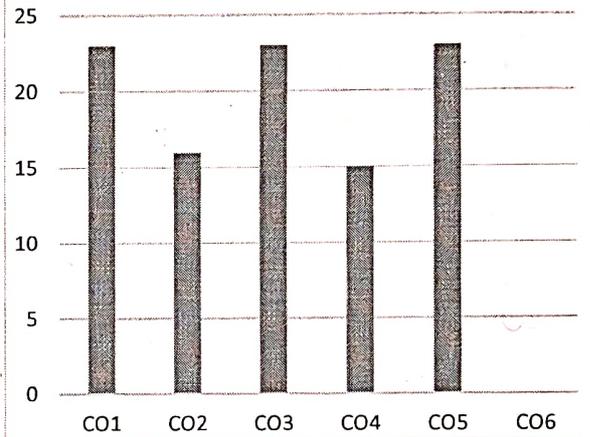
PO - Program Outcome

| | | |
|-----------------|-----|--|
| Course Outcomes | CO1 | Understand the mechanism of drug action and its relevance in the treatment of different diseases |
| | CO2 | Demonstrate isolation of different organs/tissues from the laboratory animals by simulated experiments |
| | CO3 | Demonstrate the various receptor actions using isolated tissue preparation. |
| | CO4 | Appreciate correlation of pharmacology with related medical sciences |
| | CO5 | Discuss the basic concept and technique of in-vitro pharmacology. |

Bloom's level wise marks distribution



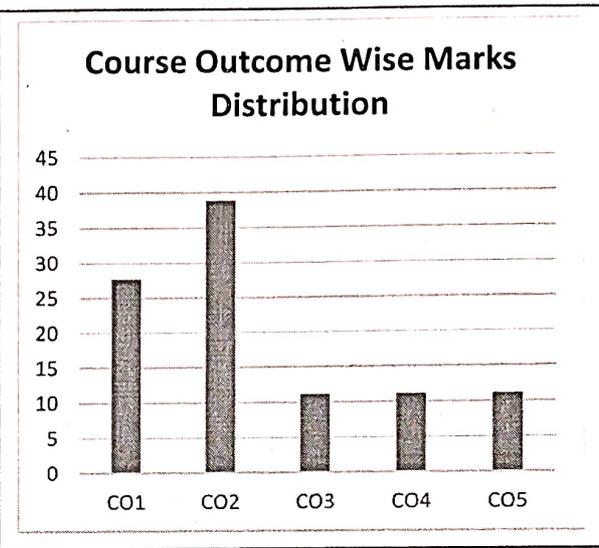
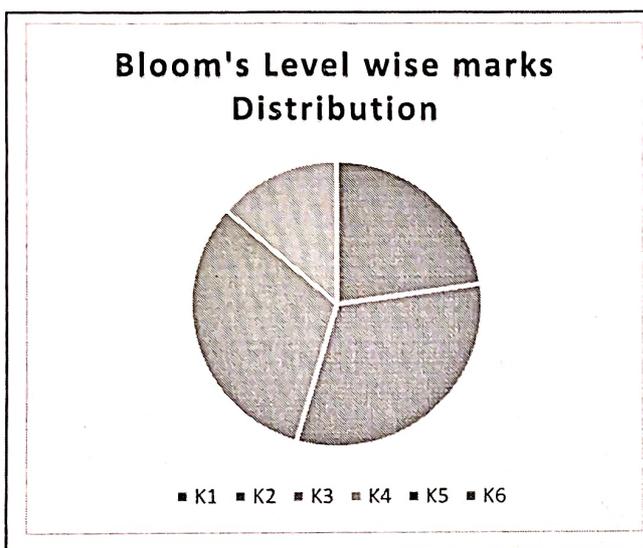
Couse outcome wise marks distribution



| SCHOOL OF PHARMACY | |  ARKA JAIN University Jharkhand  | | 2 ND INTERNAL EXAMINATION | |
|-----------------------------|--|--|------------------------|--------------------------------------|---------------|
| Program Name | BACHELOR OF PHARMACY | Program Code | B. PHARM | | |
| Course Name | Pharmaceutical Microbiology (Practical) | Semester | 3rd Semester (Group-A) | | |
| Course Code | PHM23030 | Year | October 2025 | | |
| Time: 4 Hours | All the Questions are Compulsory | Maximum Marks | 40 | | |
| Knowledge Level (KL) | K1: Remembering | K3: Applying | K5: Evaluating | | |
| | K2: Understanding | K4: Analysing | K6: Creating | | |
| Section A | | | | | |
| [1 x 10 = 10 Marks] | | | | | |
| Q. No. | Questions | Marks | COs | KL | PO |
| I | Synopsis Write a synopsis on the applications of cell culture techniques in the pharmaceutical industry and biomedical research. सारांश फार्मास्युटिकल उद्योग और जैव-चिकित्सा अनुसंधान में कोशिका संवर्धन तकनीकों के अनुप्रयोगों पर एक सारांश लिखें। | 10 | CO1, CO2, CO5 | K2, K3 | PO1, PO2, PO9 |
| Section B | | | | | |
| [15 + 10 = 25 Marks] | | | | | |
| Q. No. | Questions | Marks | COs | KL | PO |
| II | a. Major Perform the experiment to identify bacteria by Gram's staining and report it. क. प्रमुख ग्राम अभिरंजन द्वारा जीवाणुओं की पहचान करने के लिए प्रयोग करें और उसकी रिपोर्ट दें। | 15 | CO1, CO2 | K1, K2, K3, K4 | PO1, PO2, PO8 |
| | b. Minor Explain in detail the methods used for sterility testing of pharmaceutical products as per IP. ख. लघु आईपी के अनुसार दवा उत्पादों के बाँझपन परीक्षण के लिए उपयोग की जाने वाली विधियों की विस्तार से व्याख्या करें। | 10 | CO2, CO3, CO4 | K1, K2, K3 | PO1, PO2, PO9 |
| Section C | | | | | |
| [05 Marks] | | | | | |
| Q. No. | Questions | Marks | COs | KL | PO |
| III | Viva voce मौखिक | 05 | | | |

O- Course Outcomes, KL – Knowledge Level, PO – Program Outcome

| | | |
|-----------------|-----|--|
| Course Outcomes | CO1 | Understand methods of identification, cultivation and preservation of various microorganisms |
| | CO2 | Understand the importance and implementation. of sterilization in pharmaceutical processing and industry |
| | CO3 | Apply sterility testing of pharmaceutical products. |
| | CO4 | Apply microbiological standardization of pharmaceuticals. |
| | CO5 | Understand the cell culture technology and its applications in pharmaceutical industries. |

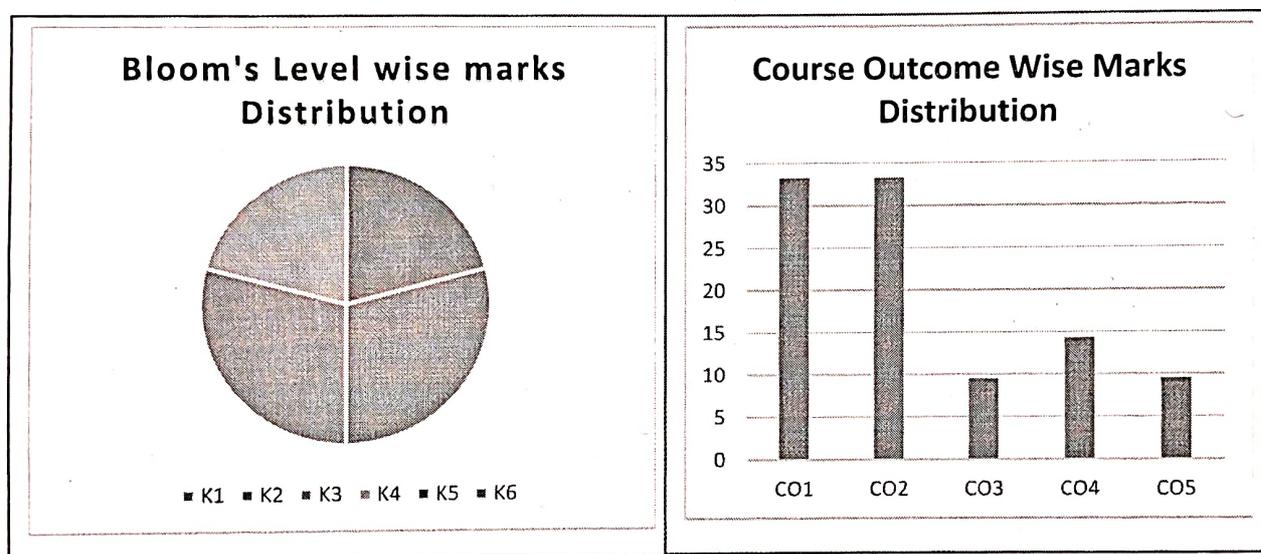


| SCHOOL OF PHARMACY | |  ARKA JAIN University Jharkhand  | | 2 ND INTERNAL EXAMINATION | |
|----------------------|--|--|------------------------|--------------------------------------|---------------|
| Program Name | BACHELOR OF PHARMACY | Program Code | B. PHARM | | |
| Course Name | Pharmaceutical Microbiology (Practical) | Semester | 3rd Semester (Group-B) | | |
| Course Code | PHM23030 | Year | October 2025 | | |
| Time: 4 Hours | All the Questions are Compulsory | Maximum Marks | 40 | | |
| Knowledge Level (KL) | K1: Remembering | K3: Applying | K5: Evaluating | | |
| | K2: Understanding | K4: Analysing | K6: Creating | | |
| Section A | | | | | |
| [1 x 10 = 10 Marks] | | | | | |
| Q. No. | Questions | Marks | COs | KL | PO |
| I | Synopsis Write a synopsis on various microbiological and chemical methods used for the standardization of antibiotics. सारांश एंटीबायोटिक्स के मानकीकरण के लिए प्रयुक्त विभिन्न सूक्ष्मजीवविज्ञानी और रासायनिक विधियों पर एक सारांश लिखें। | 10 | CO1, CO2, CO3 | K2, K3 | PO1, PO2, PO9 |
| Section B | | | | | |
| [15 + 10 = 25 Marks] | | | | | |
| Q. No. | Questions | Marks | COs | KL | PO |
| II | a. Major Perform the experiment to identify bacteria by acid-fast staining and report it. क. प्रमुख अम्ल-तीव्र अभिरंजन द्वारा जीवाणुओं की पहचान करने के लिए प्रयोग करें और उसकी रिपोर्ट दें। | 15 | CO1, CO2, CO4 | K1, K2, K3, K4 | PO1, PO2, PO9 |
| | b. Minor Explain the principle, procedure, and significance of isolating a pure culture of microorganisms using the streak plate technique with a neat labeled diagram. ख. लघु स्ट्रीक प्लेट तकनीक का उपयोग करके सूक्ष्मजीवों के शुद्ध संवर्धन को पृथक करने के सिद्धांत, प्रक्रिया और महत्व को एक स्पष्ट नामांकित आरेख के साथ समझाइए। | 10 | CO1, CO2, CO5 | K1, K2, K3, K4 | PO1, PO2, PO8 |
| Section C | | | | | |
| [05 Marks] | | | | | |
| Q. No. | Questions | Marks | COs | KL | PO |

| | | | | | |
|------------|--------------------|-----------|--|--|--|
| III | Viva voce मौखिक | 05 | | | |
|------------|--------------------|-----------|--|--|--|

CO- Course Outcomes, KL – Knowledge Level, PO – Program Outcome

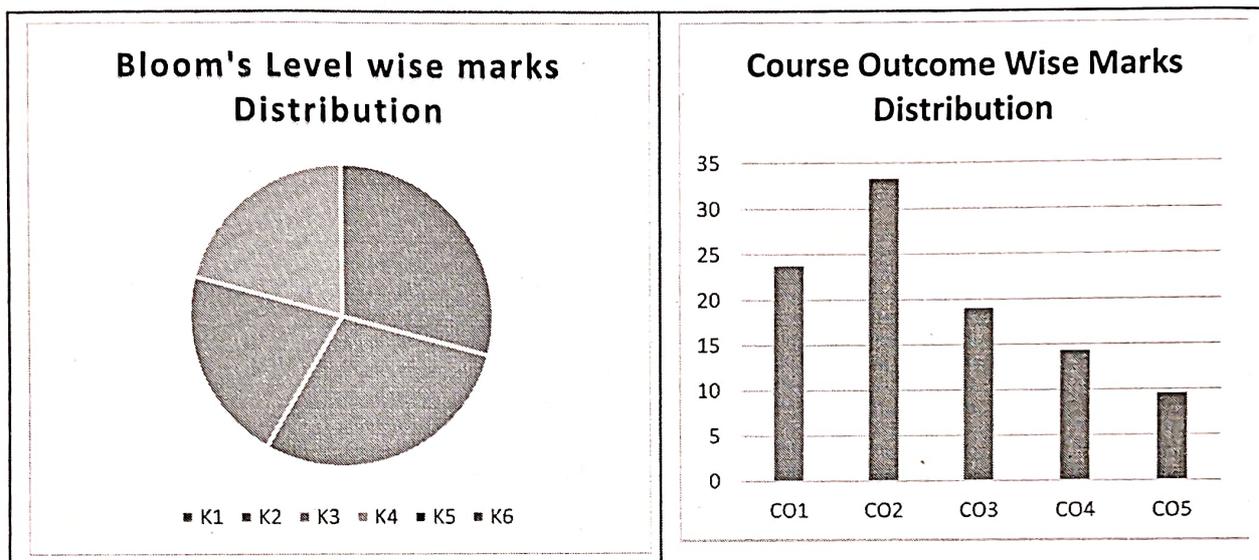
| | | |
|--------------------|-----|---|
| Course Outcomes | CO1 | Understand methods of identification, cultivation and preservation of various microorganisms |
| | CO2 | Understand the importance and implementation of sterilization in pharmaceutical processing and industry |
| | CO3 | Apply sterility testing of pharmaceutical products. |
| | CO4 | Apply out microbiological standardization of Pharmaceuticals. |
| | CO5 | Understand the cell culture technology and its applications in pharmaceutical industries. |



| SCHOOL OF PHARMACY | |  ARKA JAIN University <small>Jharkhand</small> | |  | | 2 ND INTERNAL EXAMINATION | |
|----------------------|--|---|------------------------|---|---------------|--------------------------------------|--|
| Program Name | BACHELOR OF PHARMACY | Program Code | B. PHARM | | | | |
| Course Name | Pharmaceutical Microbiology (Practical) | Semester | 3rd Semester (Group-C) | | | | |
| Course Code | PHM23030 | Year | October 2025 | | | | |
| Time: 4 Hours | All the Questions are Compulsory | Maximum Marks | 40 | | | | |
| Knowledge Level (KL) | K1: Remembering | K3: Applying | K5: Evaluating | | | | |
| | K2: Understanding | K4: Analysing | K6: Creating | | | | |
| Section A | | | | | | | |
| [1 x 10 = 10 Marks] | | | | | | | |
| Q. No. | Questions | Marks | COs | KL | PO | | |
| I | Synopsis Write a synopsis on the role of antimicrobial agents in the preservation of pharmaceutical products. सारांश औषधीय उत्पादों के संरक्षण में रोगाणुरोधी एजेंटों की भूमिका पर एक सारांश लिखें। | 10 | CO1, CO2, CO3 | K1, K2 | PO1, PO2 | | |
| Section B | | | | | | | |
| [15 + 10 = 25 Marks] | | | | | | | |
| Q. No. | Questions | Marks | COs | KL | PO | | |
| II | a. Major Perform the experiment to identify bacteria by Gram's staining and report it. क. प्रमुख ग्राम्स अभिरंजन द्वारा बैक्टीरिया की पहचान करने के लिए प्रयोग करें और इसकी रिपोर्ट दें। | 15 | CO1, CO2, CO4 | K1, K2, K3, K4 | PO1, PO2, PO7 | | |
| | b. Minor Explain in detail the methods used for sterility testing of pharmaceutical products as per IP. लघु आईपी के अनुसार दवा उत्पादों के बाँझपन परीक्षण के लिए उपयोग की जाने वाली विधियों को विस्तार से समझाइए। | 10 | CO2, CO3, CO5 | K1, K2, K3, K4 | PO1, PO2, PO8 | | |
| Section C | | | | | | | |
| [05 Marks] | | | | | | | |
| Q. No. | Questions | Marks | COs | KL | PO | | |
| III | Viva voce मौखिक | 05 | | | | | |

CO- Course Outcomes, KL – Knowledge Level, PO – Program Outcome

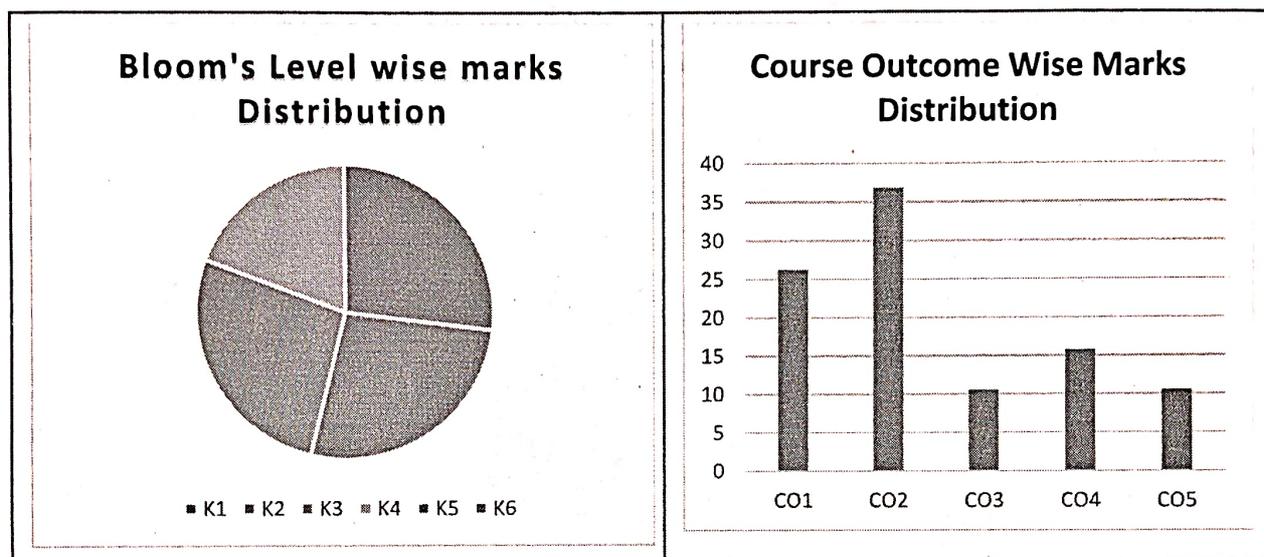
| | | |
|-----------------|-----|---|
| Course Outcomes | CO1 | Understand methods of identification, cultivation and preservation of various microorganisms |
| | CO2 | Understand the importance and implementation of sterilization in pharmaceutical processing and industry |
| | CO3 | Apply sterility testing of pharmaceutical products. |
| | CO4 | Apply microbiological standardization of pharmaceuticals. |
| | CO5 | Understand the cell culture technology and its applications in pharmaceutical industries. |



| SCHOOL OF PHARMACY |  ARKA JAIN University Jharkhand  | | 2 nd INTERNAL EXAMINATION | | |
|----------------------|--|---------------|--------------------------------------|----------------|---------------|
| Program Name | BACHELOR OF PHARMACY | Program Code | B. PHARM | | |
| Course Name | Pharmaceutical Microbiology (Practical) | Semester | 3rd Semester (Group-D) | | |
| Course Code | PHM23030 | Year | October 2025 | | |
| Time: 4 Hours | All the Questions are Compulsory | Maximum Marks | 40 | | |
| Knowledge Level (KL) | K1: Remembering | K3: Applying | K5: Evaluating | | |
| | K2: Understanding | K4: Analysing | K6: Creating | | |
| Section A | | | | | |
| [1 x 10 = 10 Marks] | | | | | |
| Q. No. | Questions | Marks | COs | KL | PO |
| I | Synopsis Write a synopsis on the principle and procedure for sterility testing of ophthalmic products according to the Indian Pharmacopoeia (IP). सारांश भारतीय फार्माकोपिया (आईपी) के अनुसार नेत्र उत्पादों के बाँझपन परीक्षण के सिद्धांत और प्रक्रिया पर एक सारांश लिखें। | 10 | CO2, CO3 | K1, K2, K3 | PO1, PO2, PO9 |
| Section B | | | | | |
| [15 + 10 = 25 Marks] | | | | | |
| Q. No. | Questions | Marks | COs | KL | PO |
| II | a. Major Perform the experiment to identify bacteria by acid-fast staining and report it. क. प्रमुख अम्ल-तीव्र अभिरंजन द्वारा जीवाणुओं की पहचान करने के लिए प्रयोग करें और उसकी रिपोर्ट दें। | 15 | CO1, CO2, CO4 | K1, K2, K3, K4 | PO1, PO2, PO9 |
| | b. Minor Explain the principle, procedure, and significance of isolating a pure culture of microorganisms using the streak plate technique with a neat labeled diagram. ख. लघु स्ट्रीक प्लेट तकनीक का उपयोग करके सूक्ष्मजीवों के शुद्ध संवर्धन को पृथक करने के सिद्धांत, प्रक्रिया और महत्व को एक स्पष्ट नामांकित आरेख के साथ समझाइए। | 10 | CO1, CO2, CO5 | K1, K2, K3, K4 | PO1, PO2, PO8 |
| Section C | | | | | |
| [05 Marks] | | | | | |
| Q. No. | Questions | Marks | COs | KL | PO |
| III | Viva voce मौखिक | 05 | | | |

CO- Course Outcomes, KL – Knowledge Level, PO – Program Outcome

| | | |
|-----------------|-----|---|
| Course Outcomes | CO1 | Understand methods of identification, cultivation and preservation of various microorganisms |
| | CO2 | Understand the importance and implementation of sterilization in pharmaceutical processing and industry |
| | CO3 | Apply sterility testing of pharmaceutical products. |
| | CO4 | Apply out microbiological standardization of Pharmaceuticals. |
| | CO5 | Understand the cell culture technology and its applications in pharmaceutical industries |

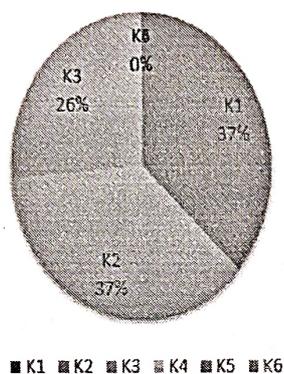


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|----------------------------|---|-----------------------------|---|-----------------|--|--|
| SCHOOL OF PHARMACY |  ARKA JAIN University <small>Jharkhand</small> | |  | | 2ND INTERNAL EXAMINATION | |
| | Program Name | BACHELOR OF PHARMACY | Program Code | B. PHARM | | |
| Course Name | Pharmaceutical Engineering(Practical) | Semester | 3rd Semester (Group-A) | | | |
| Course Code | PHM23031 | Year | October 2025 | | | |
| Time: 4 Hours | All the Questions are Compulsory | Maximum Marks | 40 | | | |
| Knowledge Level (KL) | K1 : Remembering | K3 : Applying | K5 : Evaluating | | | |
| | K2 : Understanding | K4 : Analysing | K6 : Creating | | | |
| Section A | | | | | | |
| [1 x 10 = 10 Marks] | | | | | | |
| Q. No. | Questions | Marks | COs | KL | PO | |
| I | Synopsis Write a synopsis on sieve analysis method. | 10 | CO1 | K1,K2 | PO10 | |
| Section B | | | | | | |
| [15 + 10=25 Marks] | | | | | | |
| Q. No. | Questions | Marks | COs | KL | PO | |
| II | a. Major Perform an experiment to determine grinding efficiency by using ball mill. | 15 | CO2,CO3 | K1,K2,K3 | PO1 | |
| | b.Minor Perform an experiment to determine moisture content and loss on drying of given sample. | 10 | CO2,CO3 | K1,K2,K3 | PO2 | |
| Section C | | | | | | |
| [05 Marks] | | | | | | |
| Q. No. | Questions | Marks | COs | KL | PO | |
| III | Viva voce | 05 | | | | |

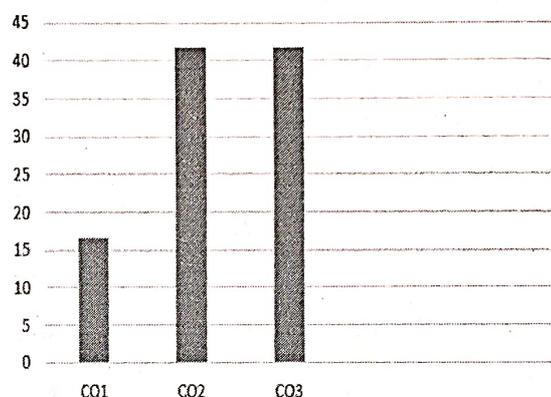
CO- Course Outcomes, KL- Knowledge Level, PO – Program Outcome

| | | |
|-----------------|-----|---|
| Course Outcomes | CO1 | To know about various unit operations used in Pharmaceutical industries. |
| | CO2 | To understand about the material handling techniques. |
| | CO3 | To perform various processes involved in pharmaceutical manufacturing process. |
| | CO4 | To carry out various test to prevent environmental pollution. |
| | CO5 | To appreciate and comprehend significance of plant lay out design for optimum use of resources. |
| | CO6 | To appreciate the various preventive methods used for corrosion control in Pharmaceutical industries. |

Bloom's Level Wise Marks Distribution



Course Outcome Wise Marks Distribution

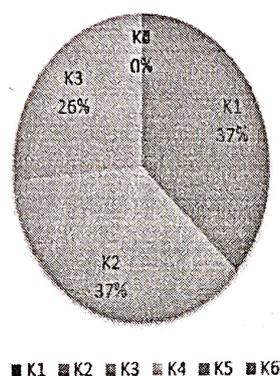


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|----------------------------|--|---|--|---|---------|--------------------------------------|------|
| SCHOOL OF PHARMACY | |  ARKA JAIN University <small>Jharkhand</small> | |  | | 2 ND INTERNAL EXAMINATION | |
| Program Name | | BACHELOR OF PHARMACY | | Program Code | | B. PHARM | |
| Course Name | | Pharmaceutical Engineering(Practical) | | Semester | | 3 rd Semester (Group-B) | |
| Course Code | | PHM23031 | | Year | | October 2025 | |
| Time: 4 Hours | | All the Questions are Compulsory | | Maximum Marks | | 40 | |
| Knowledge Level (KL) | | K1 : Remembering | | K3 : Applying | | K5 : Evaluating | |
| | | K2 : Understanding | | K4 : Analysing | | K6 : Creating | |
| Section A | | | | | | | |
| [1 x 10 = 10 Marks] | | | | | | | |
| Q. No. | Questions | | | Marks | COs | KL | PO |
| I | Synopsis Write a synopsis on Ball mill for size reduction. | | | 10 | CO1 | K1,K2 | PO10 |
| Section B | | | | | | | |
| [15 + 10=25 Marks] | | | | | | | |
| Q. No. | Questions | | | Marks | COs | KL | PO |
| II | a. Major Perform an experiment to determine particle size distribution using sieve analysis method. | | | 15 | CO2,CO3 | K1,K2,K3 | PO1 |
| | b.Minor Perform an experiment to determine moisture content and loss on drying of given sample. | | | 10 | CO2,CO3 | K1,K2,K3 | PO2 |
| Section C | | | | | | | |
| [05 Marks] | | | | | | | |
| Q. No. | Questions | | | Marks | COs | KL | PO |
| III | Viva voce | | | 05 | | | |

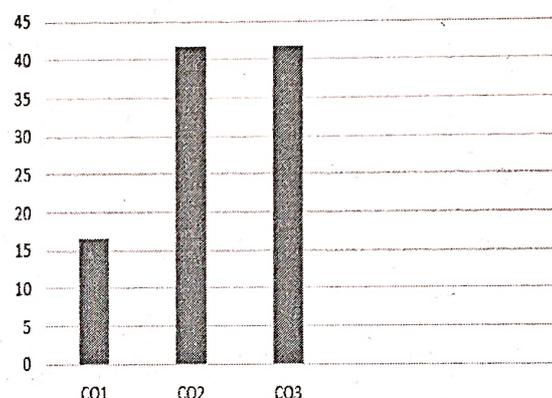
CO- Course Outcomes, KL- Knowledge Level, PO – Program Outcome

| | | |
|-----------------|-----|---|
| Course Outcomes | CO1 | To know about various unit operations used in Pharmaceutical industries. |
| | CO2 | To understand about the material handling techniques. |
| | CO3 | To perform various processes involved in pharmaceutical manufacturing process. |
| | CO4 | To carry out various test to prevent environmental pollution. |
| | CO5 | To appreciate and comprehend significance of plant lay out design for optimum use of resources. |
| | CO6 | To appreciate the various preventive methods used for corrosion control in Pharmaceutical industries. |

Bloom's Level Wise Marks Distribution



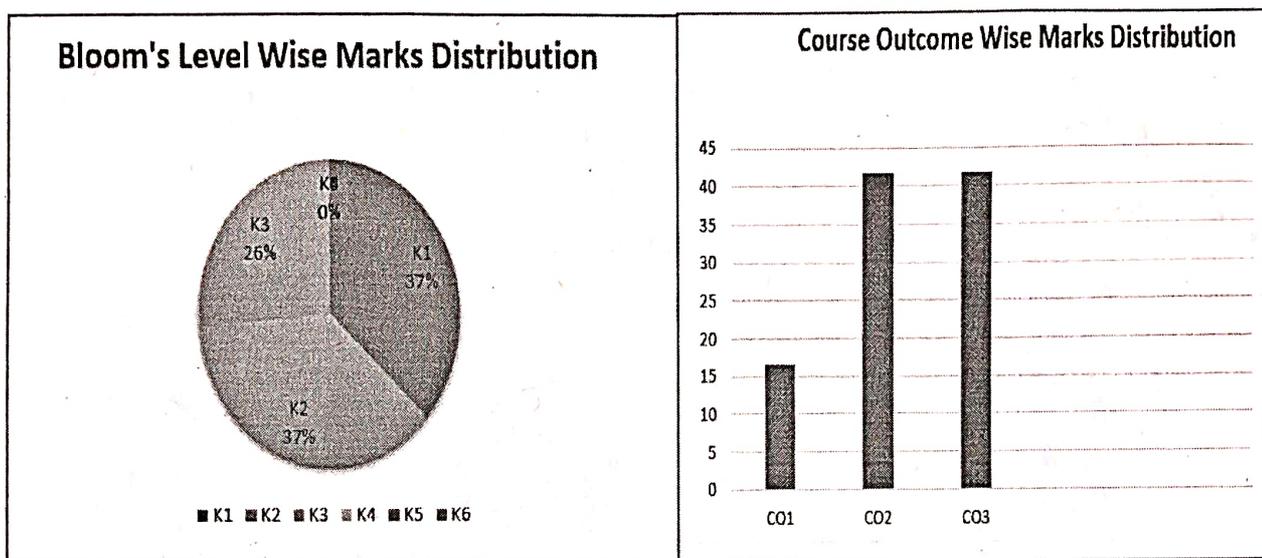
Course Outcome Wise Marks Distribution

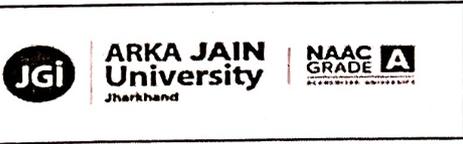


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|----------------------------|---|-----------------------------|---|-----------------|--|
| SCHOOL OF PHARMACY |  ARKA JAIN University <small>Jharkhand</small> | |  | | 2ND INTERNAL EXAMINATION |
| | Program Name | BACHELOR OF PHARMACY | Program Code | B. PHARM | |
| Course Name | Pharmaceutical Engineering(Practical) | Semester | 3rd Semester (Group-C) | | |
| Course Code | PHM23031 | Year | October 2025 | | |
| Time: 4 Hours | All the Questions are Compulsory | Maximum Marks | 40 | | |
| Knowledge Level (KL) | K1 : Remembering | K3 : Applying | K5 : Evaluating | | |
| | K2 : Understanding | K4 : Analysing | K6 : Creating | | |
| Section A | | | | | |
| [1 x 10 = 10 Marks] | | | | | |
| Q. No. | Questions | Marks | COs | KL | PO |
| I | Synopsis Write a synopsis on sieve analysis method. | 10 | CO1 | K1,K2 | PO10 |
| Section B | | | | | |
| [15 + 10=25 Marks] | | | | | |
| Q. No. | Questions | Marks | COs | KL | PO |
| II | a. Major Perform an experiment to determine grinding efficiency by using ball mill. | 15 | CO2,CO3 | K1,K2,K3 | PO1 |
| | b.Minor Perform an experiment effect of viscosity on rate of filtration. | 10 | CO2,CO3 | K1,K2,K3 | PO2 |
| Section C | | | | | |
| [05 Marks] | | | | | |
| Q. No. | Questions | Marks | COs | KL | PO |
| III | Viva voce | 05 | | | |

CO- Course Outcomes, KL- Knowledge Level, PO – Program Outcome

| | | |
|-----------------|-----|---|
| Course Outcomes | CO1 | To know about various unit operations used in Pharmaceutical industries. |
| | CO2 | To understand about the material handling techniques. |
| | CO3 | To perform various processes involved in pharmaceutical manufacturing process. |
| | CO4 | To carry out various test to prevent environmental pollution. |
| | CO5 | To appreciate and comprehend significance of plant lay out design for optimum use of resources. |
| | CO6 | To appreciate the various preventive methods used for corrosion control in Pharmaceutical industries. |

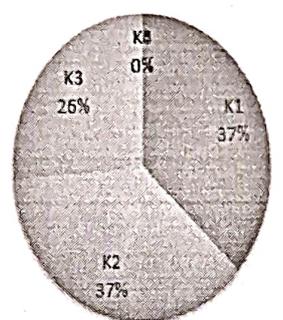


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|----------------------------|---|----------------------|--------------------------------------|----------|------|
| SCHOOL OF PHARMACY |  | | 2 ND INTERNAL EXAMINATION | | |
| | Program Name | BACHELOR OF PHARMACY | Program Code | B. PHARM | |
| Course Name | Pharmaceutical Engineering(Practical) | Semester | 3 rd Semester (Group-D) | | |
| Course Code | PHM23031 | Year | October 2025 | | |
| Time: 4 Hours | All the Questions are Compulsory | Maximum Marks | 40 | | |
| Knowledge Level (KL) | K1 : Remembering | K3 : Applying | K5 : Evaluating | | |
| | K2 : Understanding | K4 : Analysing | K6 : Creating | | |
| Section A | | | | | |
| [1 x 10 = 10 Marks] | | | | | |
| Q. No. | Questions | Marks | COs | KL | PO |
| I | Synopsis Write a synopsis on factors affecting mixing. | 10 | CO1 | K1,K2 | PO10 |
| Section B | | | | | |
| [15 + 10=25 Marks] | | | | | |
| Q. No. | Questions | Marks | COs | KL | PO |
| II | a. Major Perform an experiment to determine particle size distribution by sieve analysis method. | 15 | CO2,CO3 | K1,K2,K3 | PO1 |
| | b.Minor Perform an experiment on effect of viscosity on rate of filtration. | 10 | CO2,CO3 | K1,K2,K3 | PO2 |
| Section C | | | | | |
| [05 Marks] | | | | | |
| Q. No. | Questions | Marks | COs | KL | PO |
| III | Viva voce | 05 | | | |

CO- Course Outcomes, KL- Knowledge Level, PO – Program Outcome

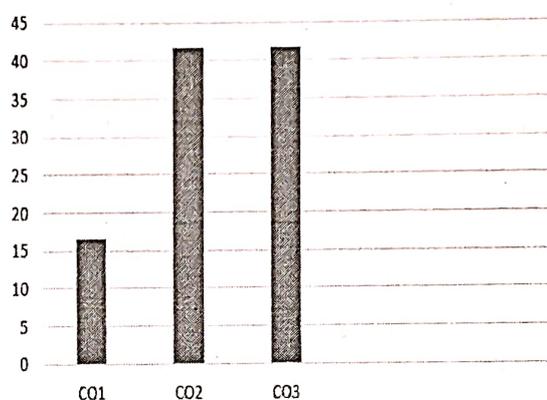
| | | |
|-----------------|-----|---|
| Course Outcomes | CO1 | To know about various unit operations used in Pharmaceutical industries. |
| | CO2 | To understand about the material handling techniques. |
| | CO3 | To perform various processes involved in pharmaceutical manufacturing process. |
| | CO4 | To carry out various test to prevent environmental pollution. |
| | CO5 | To appreciate and comprehend significance of plant lay out design for optimum use of resources. |
| | CO6 | To appreciate the various preventive methods used for corrosion control in Pharmaceutical industries. |

Bloom's Level Wise Marks Distribution



■ K1 ■ K2 ■ K3 ■ K4 ■ K5 ■ K6

Course Outcome Wise Marks Distribution

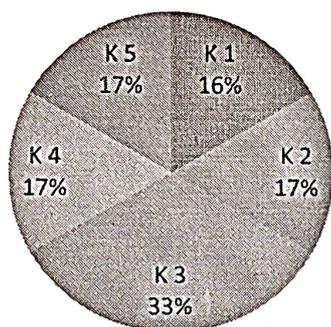


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|----------------------|---|----------------------|------------------------------------|--------------------------------------|-----------|
| SCHOOL OF PHARMACY |   | | | 2 nd INTERNAL EXAMINATION | |
| | Program Name | BACHELOR OF PHARMACY | Program Code | B. PHARM | |
| Course Name | Physical Pharmaceutics I (Practical) | Semester | 3 rd Semester (Group-A) | | |
| Course Code | PHM23029 | Year | October 2025 | | |
| Time: 4 Hours | All the Questions are Compulsory | Maximum Marks | 40 | | |
| Knowledge Level (KL) | K1 : Remembering | K3 : Applying | K5 : Evaluating | | |
| | K2 : Understanding | K4 : Analysing | K6 : Creating | | |
| Section A | | | | | |
| [1 x 10 = 10 Marks] | | | | | |
| Q. No. | Questions | Marks | COs | KL | PO |
| I | Synopsis Write a short note on eutectic mixture. यूटेक्टिक मिश्रण पर एक संक्षिप्त टिप्पणी लिखें। | 10 | CO2 | K1, K2 | PO1 |
| Section B | | | | | |
| [15 + 10=25 Marks] | | | | | |
| Q. No. | Questions | Marks | COs | KL | PO |
| II | a. Major Determine the critical micellar concentration of the given surfactant sample. दिए गए सर्फैक्टेंट नमूने की महत्वपूर्ण माइसेलर सांद्रता निर्धारित करें। | 15 | CO1, CO2 | K3, K5 | PO2, PO10 |
| | b. Minor Determine the surface tension of given sample by the drop weight method बूंद भार विधि द्वारा दिए गए नमूने का पृष्ठ तनाव निर्धारित करें | 10 | CO1, CO2 | K3, K4 | PO2, PO10 |
| Section C | | | | | |
| [05 Marks] | | | | | |
| Q. No. | Questions | Marks | COs | KL | PO |
| III | Viva voce मौखिक | 05 | | | |

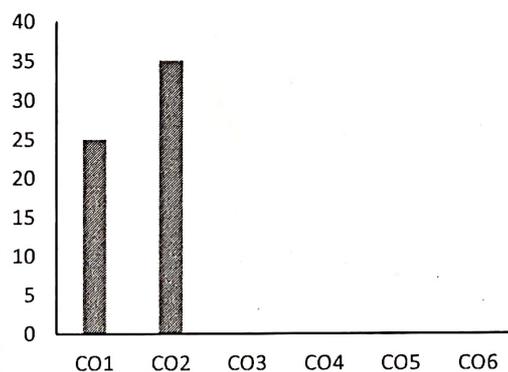
CO- Course Outcomes, KL- Knowledge Level, PO – Program Outcome

| | | |
|-----------------|-----|--|
| Course Outcomes | CO1 | Handle of different pharmaceutical instruments used in determining various physical properties such as surface tension and interfacial tension, etc. |
| | CO2 | Skill of calculating physical parameters such as effect of surfactant and critical micellar concentration. |
| | CO3 | Calculate of critical solution temperature of phenol water system. |
| | CO4 | Demonstrate of the solubility of drug and its calculation |

Bloom's Level wise Marks Distribution



Course outcome wise marks distribution

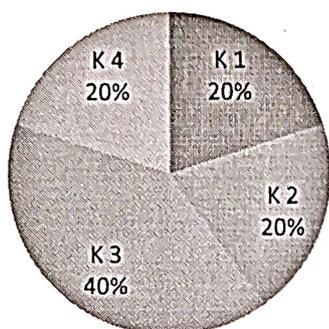


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|----------------------------|---|----------------------|--------------------------------------|----------|-----------|
| SCHOOL OF PHARMACY |    | | 2 nd INTERNAL EXAMINATION | | |
| | Program Name | BACHELOR OF PHARMACY | Program Code | B. PHARM | |
| Course Name | Physical Pharmaceutics I (Practical) | Semester | 3 rd Semester (Group-B) | | |
| Course Code | PHM23029 | Year | October 2025 | | |
| Time: 4 Hours | All the Questions are Compulsory | Maximum Marks | 40 | | |
| Knowledge Level (KL) | K1: Remembering | K3 : Applying | K5: Evaluating | | |
| | K2: Understanding | K4: Analysing | K6: Creating | | |
| Section A | | | | | |
| [1 x 10 = 10 Marks] | | | | | |
| Q. No. | Questions | Marks | COs | KL | PO |
| I | Synopsis: Explain the changes in state of matter with the help of a schematic diagram. पदार्थ की अवस्था में होने वाले परिवर्तनों को योजनाबद्ध आरेख की सहायता से समझाइए। | 10 | CO1, CO4 | K1, K2 | PO1 |
| Section B | | | | | |
| [15 + 10=25 Marks] | | | | | |
| Q. No. | Questions | Marks | COs | KL | PO |
| II | a. Major Comparative study of surface tension between the drop weight and drop count methods for a given sample. किसी दिए गए नमूने के लिए बूंद भार और बूंद गणना विधियों के बीच सतह तनाव का तुलनात्मक अध्ययन। | 15 | CO1, CO2 | K3 | PO2, PO10 |
| | b. Minor Determine the pKa value by the Henderson-Hasselbalch equation. हेंडरसन-हैसलबाल्च समीकरण द्वारा pKa मान का निर्धारण। | 10 | CO4 | K3, K4 | PO2, PO10 |
| Section C | | | | | |
| [05 Marks] | | | | | |
| Q. No. | Questions | Marks | COs | KL | PO |
| III | Viva voce मौखिक | 05 | | | |

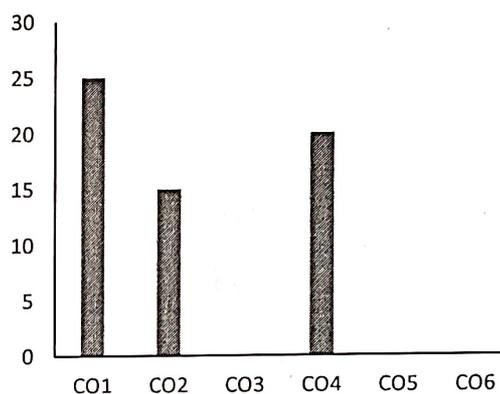
CO- Course Outcomes, KL- Knowledge Level, PO – Program Outcome

| | | |
|-----------------|-----|--|
| Course Outcomes | CO1 | Handle of different pharmaceutical instruments used in determining various physical properties such as surface tension and interfacial tension, etc. |
| | CO2 | Skill of calculating physical parameters such as effect of surfactant and critical micellar concentration. |
| | CO3 | Calculate the critical solution temperature of phenol water system. |
| | CO4 | Demonstrate of the solubility of drug and its calculation |

Bloom's Level wise Marks Distribution



Course outcome wise marks distribution

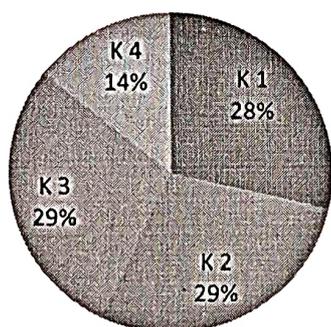


| SCHOOL OF PHARMACY |  ARKA JAIN University Jharkhand  | | 2 nd INTERNAL EXAMINATION | | |
|-----------------------------|--|---------------|--------------------------------------|--------|-----------|
| Program Name | BACHELOR OF PHARMACY | Program Code | B. PHARM | | |
| Course Name | Physical Pharmaceutics I (Practical) | Semester | 3 rd Semester (Group-C) | | |
| Course Code | PHM23029 | Year | August 2025 | | |
| Time: 4 Hours | All the Questions are Compulsory | Maximum Marks | 40 | | |
| Knowledge Level (KL) | K1: Remembering | K3: Applying | K5: Evaluating | | |
| | K2: Understanding | K4: Analysing | K6: Creating | | |
| Section A | | | | | |
| [1 x 10 = 10 Marks] | | | | | |
| Q. No. | Questions | Marks | COs | KL | PO |
| I | Synopsis Classify surfactants with suitable examples and pharmaceutical applications. उपयुक्त उदाहरणों और औषधीय अनुप्रयोगों के साथ सर्फैक्टेंट को वर्गीकृत करें। | 10 | CO1, CO4 | K1, K2 | PO2 |
| Section B | | | | | |
| [15 + 10 = 25 Marks] | | | | | |
| Q. No. | Questions | Marks | COs | KL | PO |
| II | a. Major Determination of the surface tension of given liquid by drop count method. की सूँझा द्वारा ददए गए द्रवों के पृष्ठ तनाव का ननर्रण | 15 | CO1.CO2 | K3, K5 | PO2, PO10 |
| | b. Minor Determination of surface tension of given liquid by the drop weight method भार ववधर् द्वारा ददए गए द्रवों के पृष्ठ तनाव का ननर्रण | 10 | CO1.CO2 | K3, K4 | PO2, PO10 |
| Section C | | | | | |
| [05 Marks] | | | | | |
| Q. No. | Questions | Marks | COs | KL | PO |
| III | Viva voce मौखिक | 05 | | | |

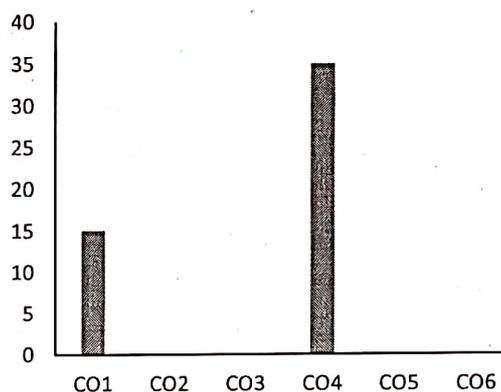
CO- Course Outcomes, KL- Knowledge Level, PO – Program Outcome

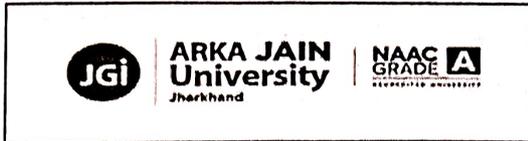
| | | |
|-----------------|-----|--|
| Course Outcomes | CO1 | Handle of different pharmaceutical instruments used in determining various physical properties such as surface tension and interfacial tension, etc. |
| | CO2 | Skill of calculating physical parameters such as effect of surfactant and critical micellar concentration. |
| | CO3 | Calculate of critical solution temperature of phenol water system. |
| | CO4 | Demostrate of the solubility of drug and its calculation |

Bloom's Level wise Marks Distribution



Course outcome wise marks distribution

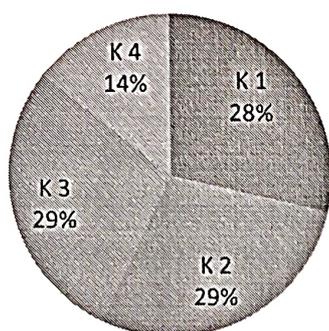


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|-------------------------|--|-------------------------|------------------------------------|---|-----------|
| SCHOOL OF PHARMACY |  | | | 2 nd INTERNAL EXAMINATION | |
| | Program Name | BACHELOR OF PHARMACY | Program Code | B. PHARM | |
| Course Name | Physical Pharmaceutics I (Practical) | Semester | 3 rd Semester (Group-D) | | |
| Course Code | PHM23029 | Year | October 2025 | | |
| Time: 4 Hours | All the Questions are Compulsory | Maximum Marks | 40 | | |
| Knowledge Level (KL) | K1: Remembering | K3: Applying | K5: Evaluating | | |
| | K2: Understanding | K4: Analysing | K6: Creating | | |
| Section A | | | | | |
| [1 x 10 = 10 Marks] | | | | | |
| Q. No. | Questions | Marks | COs | KL | PO |
| I | Synopsis Explain the concept of latent heat with the help of a suitable graph. उपयुक्त ग्राफ की सहायता से गुप्त ऊष्मा की अवधारणा को समझाइए। | 10 | CO2 | K1, K2 | PO2 |
| Section B | | | | | |
| [15 + 10 = 25 Marks] | | | | | |
| Q. No. | Questions | Marks | COs | KL | PO |
| II | a. Major Determination of pKa value by the Henderson- Hasselbalch equation. हेंडरसन-हैसलबाल्च समीकरण द्वारा pKa मान का निर्धारण। | 15 | CO4 | K3, K4 | PO2, PO10 |
| | b. Minor Determine the surface tension of given liquids by the drop weight method. बूंद भार विधि द्वारा दिए गए द्रवों का पृष्ठ तनाव ज्ञात कीजिए। | 10 | CO2 | K3 | PO2, PO10 |
| Section C | | | | | |
| [05 Marks] | | | | | |
| Q. No. | Questions | Marks | COs | KL | PO |
| III | Viva voce मौखिक | 05 | | | |

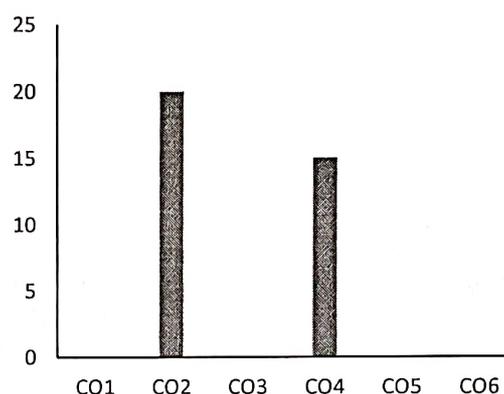
CO- Course Outcomes, KL- Knowledge Level, PO – Program Outcome

| | | |
|-----------------|-----|--|
| Course Outcomes | CO1 | Handle of different pharmaceutical instruments used in determining various physical properties such as surface tension and interfacial tension, etc. |
| | CO2 | Skill of calculating physical parameters such as effect of surfactant and critical micellar concentration. |
| | CO3 | Calculate of critical solution temperature of phenol water system. |
| | CO4 | Demostrate of the solubility of drug and its calculation |

Bloom's Level wise Marks Distribution



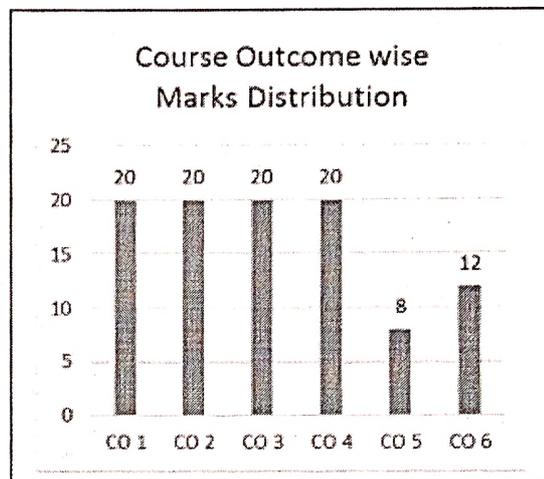
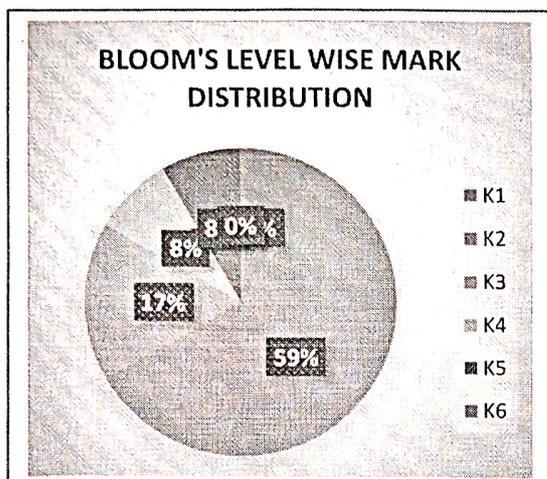
Course outcome wise marks distribution



| | | | | | | | |
|-----------------------------------|--|--|----------------------------|--|------------|--|--|
| | |  ARKA JAIN University Jharkhand | |  | | 1ST INTERNAL EXAMINATION | |
| Program Name | BACHELOR OF PHARMACY | Program Code | B.PHARM | | | | |
| Course Name | COMMUNICATION SKILLS | Semester | III | | | | |
| Course Code | PHM21005 | Year | 2025/ODD | | | | |
| Time: 1 Hours | Answer Any ONE of Section A Answer Any FOUR of Section B | | Maximum Marks | 30 | | | |
| Knowledge Level (KL) | K1 : Remembering | K3 : Applying | | K5 : Evaluating | | | |
| | K2 : Understanding | K4 : Analysing | | K6 : Creating | | | |
| Section A | | | | | | | |
| Answer any one out of two | | | [1 x 10 = 10 Marks] | | | | |
| Q. No. | Questions | Marks | COs | KL | PO | | |
| 1(i) | What is the significance of communication for health care professionals? | 10 | CO1 | K2 | PO1 | | |
| 1(ii) | Describe the basic elements of communication. | 10 | CO 5 | K2 | PO2 | | |
| Section B | | | | | | | |
| Answer any FOUR out of SIX | | | [4 x 5 = 20 Marks] | | | | |
| Q. No. | Questions | Marks | COs | KL | PO | | |
| 1 | Write about the kinds of communication. | 05 | CO 2 | K2 | PO3 | | |
| 2 | Describe the process of communication. | 05 | CO 1 | K4 | PO2 | | |
| 3 | How does body language play its role in communication? | 05 | CO 2 | K5 | PO1 | | |
| 4 | What is the difference between formal and informal communication? | 05 | CO 5 | K2 | PO1 | | |
| 5 | What are the major barriers to effective communication? | 05 | CO 1 | K2 | PO2 | | |
| 6 | How is English important for health care professionals? | 05 | CO 2 | K1 | PO3 | | |

CO- Course Outcomes, KL- Knowledge Level, PO – Program Outcome

| | | |
|-----------------|-----|---|
| Course Outcomes | CO1 | To understand the behavioural needs for a Pharmacist to function effectively in the areas of pharmaceutical operation |
| | CO2 | Communicate effectively (Verbal and Non Verbal) |
| | CO3 | Effectively manage the team as a team player |
| | CO4 | To develop interview skills |
| | CO5 | To develop Leadership qualities and essentials |



| | | | | | | | |
|----------------------|---|--|-----------------|---|-----------|--|--|
| | |  ARKA JAIN University Jharkhand | |  NAAC GRADE A ACCREDITED UNIVERSITY | | 1ST INTERNAL EXAMINATION | |
| Program Name | BACHELOR OF PHARMACY | Program Code | B.PHARM | | | | |
| Course Name | COMMUNICATION SKILLS | Semester | III (LE) | | | | |
| Course Code | PHM21005 | Year | 2025/ODD | | | | |
| Time: 4 Hours | ALL THE QUESTIONS ARE COMPULSORY | | Maximum Marks | 20 | | | |
| Knowledge Level (KL) | K1 : Remembering | K3 : Applying | | K5 : Evaluating | | | |
| | K2 : Understanding | K4 : Analysing | | K6 : Creating | | | |
| Section A | | | | | | | |
| SYNOPSIS | | | | | | [1 x 10 = 10 Marks] | |
| Q. No. | Questions | | Marks | COs | KL | PO | |
| 1(i) | Rewrite the passage in around 30 words. According to a recent study, people who eat a diet rich in fruits and vegetables have a lower risk of developing chronic diseases such as diabetes and heart disease. The study found that individuals who consumed at least five servings of fruits and vegetables per day had a 20% lower risk of developing these diseases than those who consumed fewer servings. This suggests that a diet high in fruits and vegetables may be an effective way to prevent chronic diseases. (80 words) | | 10 | CO2 | K3 | PO2 | |
| Section B | | | | | | | |
| EXPERIMENT | | | | | | [1 x 5 = 05 Marks] | |
| Q. No. | Questions | | Marks | COs | KL | PO | |
| 1 | Draw a flowchart of the process of Communication. | | 05 | CO3 | K4 | PO2 | |
| VIVA VOCE | | | | | | [5 Marks] | |

CO- Course Outcomes, KL- Knowledge Level, PO – Program Outcome

| | | |
|-----------------|-----|---|
| Course Outcomes | CO1 | To understand the behavioural needs for a Pharmacist to function effectively in the areas of pharmaceutical operation |
| | CO2 | Communicate effectively (Verbal and Non Verbal) |
| | CO3 | Effectively manage the team as a team player |
| | CO4 | To develop interview skills |
| | CO5 | To develop Leadership qualities and essentials |

