

| DEPARTMENT OF MATHEMATICS | | | | CLASS: II B.Sc. Mathematics | | | | |
|---------------------------|------------------------|-------------|--|-----------------------------|--------------------|-----|-----|-------|
| Sem | Course Type | Course Code | Course Title | Credits | Contact Hours/week | CIA | Ext | Total |
| IV | Skilled based elective | 20U4MSBE2 | Mathematics for competitive examinations –II | 2 | 2 | 25 | 75 | 100 |

| Nature of Course | | | |
|---------------------|--|--|---------------------------|
| Knowledge and skill | | | Employability oriented |
| Skill oriented | | | Entrepreneurship oriented |

COURSE OBJECTIVE

1. To enable the students to have fundamental formulae and fast solving technique of quantitative aptitude for the purpose of preparing for competitive examination.
2. To pioneer the strong foundation of Mathematics for competitive examination.
3. To develop the skill of arithmetical ability for quantitative aptitude.
4. To enhance creative thinking and presence of mind to answer the questions of any competitive examination.

| Unit | Description | Hours | K-level | CLO |
|------|--|-------|----------|------|
| I | Chain Rule: Direct proportion – Indirect proportion – Solved examples – Logarithms: Logarithm – Properties of Logarithms – Common Logarithms – Characteristic – Mantissa – Solved examples. | 7 | Up to K2 | CLO1 |
| II | Calendar: Odd days – Leap year – Ordinary year – Counting of odd days – Day of the week related to odd days – solved examples – Clocks: Important facts – Too fast and too slow – Solved examples. | 7 | Up to K4 | CLO2 |
| III | Permutations and Combinations: Factorial notation – Permutations – Combinations – Solved examples – Probability: Experiment – Random experiment – Sample space – Event – Probability of occurrence of an event – Results on probability – Solved examples. | 5 | Up to K3 | CLO3 |
| IV | Partnership: Partnership – Ratio of division of gains – Working and Sleeping partners – Solved examples – Stock and Shares: Stock-capital – Shares or Stock – Dividend – Face value – Market value – Brokerage – Solved examples. | 5 | Up to K4 | CLO4 |
| V | True Discount: Important concepts – Important formulae – Solved examples – Banker's Discount: Important concepts – Important formulae – Solved examples. | 6 | Up to K3 | CLO5 |

Text Book:

1. Dr. R. S. Aggarwal, Quantitative Aptitude for competitive examinations (Fully Solved), 2011 Revised Edition, S. Chand & Company Ltd.

Book for Reference:

1. Abhijit Guha, Quantitative Aptitude for Competitive Examinations, 2020 Seventh Edition, McGraw Hill Publisher.
2. Dinesh Khattar, Quantitative Aptitude for Competitive Examinations, 2019 Fourth Edition, Pearson India Publisher.

Web Resources:

1. <https://www.youtube.com/playlist?list=PLXjJ5c4vskp6yidDJs-NttEQwng8tu6Lo>
2. <https://www.careerbless.com/aptitude/qa/home.php>
3. <https://www.indiabix.com/aptitude/questions-and-answers/>

Rationale for Nature of the course:

Understanding and reasoning using concepts framed in words; Critical oral reasoning; Reading Comprehension; Application of oral reasoning in aptitude tests. Aptitude is considered to be an essential attribute of an human being which can guess success in a course of career.

Activities having direct bearing on Skill development/Employability/ Entrepreneurship:

This course imparts problem solving skills to the students by the following activities such as Exercise, Assignment and Quiz.

Pedagogy:

Chalk and Talk, Seminar, Quiz, Group Discussion and PPT

COURSE LEARNING OUTCOMES

| | | |
|-------------|--|----------|
| CLO1 | In solving questions by chain rule, we compare every item with the term to be found out. Exploring the characteristics of the Logarithm and its applications. | Up to K2 |
| CLO2 | We are supposed to find the day of the week on a given date. For this, we use the concept of odd days. And we give an idea of how to find the ordinary year and leap year. | Up to K4 |
| CLO3 | Giving an essential knowledge of factorial notation, permutation, and combination. Exploring the experiment, sample, and event in probability theory and absorbing its applications. | Up to K3 |
| CLO4 | Understanding the concept of partnership, stock, and shares of the business or industry. With this concept, business-oriented problems are analyzed. | Up to K4 |
| CLO5 | Exploring real discounts and bankers discounts and applying this concept to various real-life problems. | Up to K3 |

K1 - Remembering and recalling facts with specific answers

K2 - Basic understanding of facts and stating main ideas with general answers

K3 - Application oriented - Solving Problems

K4 - Examining, analyzing, presentation and make inferences with evidences.

Mapping of Course Learning Outcomes (CLOs) with Program Outcomes (POs) and Program Specified Outcomes(PSOs)

| CLO/PO-PSO | PO | | | | | PSO | | | | | | |
|-------------|-----|-----|-----|-----|-----|------|------|------|------|------|------|------|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 |
| CLO1 | 2 | - | - | - | 1 | 2 | - | 2 | - | 3 | - | 1 |
| CLO2 | 2 | - | - | - | 1 | 2 | - | 2 | - | 3 | - | 1 |
| CLO3 | 2 | - | - | - | 1 | 2 | - | 2 | - | 3 | - | 1 |
| CLO4 | 2 | - | - | - | 1 | 2 | - | 2 | - | 3 | - | 1 |
| CLO5 | 2 | - | - | - | 1 | 2 | - | 2 | - | 3 | - | 1 |

Mapping with Programme Outcome

| | PO1 | PO2 | PO3 | PO4 | PO5 |
|------|-----|-----|-----|-----|-----|
| CLO1 | 3 | | | | |
| CLO2 | 2 | | 2 | | |
| CLO3 | 2 | 1 | 3 | | |
| CLO4 | 2 | | | | |
| CLO5 | 1 | | 2 | | 1 |

3- Advance Application

2- Intermediate Level

1- Basic Level

BLUE PRINT (for External exams)

Mapping with Course Learning Outcomes(CLOs)

| Sl. No | CLOs | K. Level | Section A | | Section B | | Section C (Either/or Choice) | Section D (Open Choice) |
|---------------------------------|------|----------|------------------|----------|------------------|----------|------------------------------------|-------------------------------|
| | | | MCQs | | Short Answers | | | |
| | | | No. of questions | K. Level | No. of questions | K. level | | |
| 1 | CLO1 | Up to K2 | 2 | K1 & K2 | 1 | K1 | 2 (K1 &K1) | 1 (K2) |
| 2 | CLO2 | Up to K4 | 2 | K1 &K2 | 1 | K1 | 2 (K4& K4) | 1 (K3) |
| 3 | CLO3 | Up to K3 | 2 | K1 &K2 | 1 | K2 | 2 (K3 &K3) | 1 (K3) |
| 4 | CLO4 | Up to K4 | 2 | K1 &K2 | 1 | K2 | 2 (K2 &K2) | 1 (K4) |
| 5 | CLO5 | Up to K3 | 2 | K1 &K2 | 1 | K2 | 2 (K3 &K3) | 1 (K3) |
| No. of Questions to be asked | | | 10 | | 5 | | 10 | 5 |
| No. of Questions to be answered | | | 10 | | 5 | | 5 | 3 |
| Marks for each question | | | 1 | | 2 | | 5 | 10 |
| Total Marks for each Section | | | 10 | | 10 | | 25 | 30 |

K1 - Remembering and recalling facts with specific answers

K2 - Basic understanding of facts and stating main ideas with general answers

K3 - Application oriented - Solving Problems

K4 - Examining, analyzing, presentation and make inferences with evidences.

Distribution of Section-wise Marks with K levels

| K Levels | Section A (No choice) | Section B (No choice) | Section C (Either/or) | Section D (Open choice) | Total marks | % of marks without choice | Consolidated |
|-------------|--------------------------|--------------------------|--------------------------|----------------------------|-------------|---------------------------|--------------|
| K1 | 5 | 4 | 10 | - | 19 | 15.83 | 42% |
| K2 | 5 | 6 | 10 | 10 | 31 | 25.83 | |
| K3 | - | - | 20 | 30 | 50 | 41.67 | 42% |
| K4 | - | - | 10 | 10 | 20 | 16.67 | 16% |
| Total marks | 10 | 10 | 50 | 50 | 120 | 100.00 | 100% |

Blue Print – CIA – I

Mapping with Course Learning Outcomes(CLOs)

K1 - Remembering and recalling facts with specific answers

| Sl. No | CLOs | K. Level | Section A | | Section B | | Section C (Either/or Choice) | Section D (Open Choice) |
|---------------------------------|------|----------|------------------|----------|------------------|----------|------------------------------------|-------------------------------|
| | | | MCQs | | Short Answers | | | |
| | | | No. of questions | K. Level | No. of questions | K. level | | |
| 1 | CLO1 | Up to K2 | 2 | K1 & K2 | 2 | K1 | 2 (K1 &K2) | 1 (K2) |
| 2 | CLO2 | Up to K4 | 2 | K1 &K2 | 1 | K2 | 2 (K3 &K3) | 2 (K4) |
| No. of Questions to be asked | | | 4 | | 3 | | 4 | 3 |
| No. of Questions to be answered | | | 4 | | 3 | | 2 | 2 |
| Marks for each question | | | 1 | | 2 | | 5 | 10 |
| Total Marks for each Section | | | 4 | | 6 | | 10 | 20 |

K2 - Basic understanding of facts and stating main ideas with general answers

K3 - Application oriented - Solving Problems

K4 - Examining, analyzing, presentation and make inferences with evidences.

Distribution of Section-wise Marks with K levels*

| K Levels | Section A (No choice) | Section B (No choice) | Section C (Either/ or) | Section D (Open choice) | Total marks | % of marks without choice | Consolidated |
|----------------|--------------------------|--------------------------|------------------------------|-------------------------------|----------------|------------------------------------|--------------|
| K1 | 2 | 4 | 5 | - | 11 | 18.33 | 50% |
| K2 | 2 | 2 | 5 | 10 | 19 | 31.66 | |
| K3 | - | - | 10 | - | 10 | 16.66 | 17% |
| K4 | - | - | - | 20 | 20 | 33.33 | 33% |
| Total marks | 4 | 6 | 20 | 30 | 60 | 100.00 | 100% |

Blue Print – CIA – II
Mapping with Course Learning Outcomes(CLOs)

| Sl. No | CLOs | K. Level | Section A | | Section B | | Section C (Either/or Choice) | Section D (Open Choice) |
|---------------------------------|------|----------|------------------|----------|------------------|----------|------------------------------------|-------------------------------|
| | | | MCQs | | Short Answers | | | |
| | | | No. of questions | K. Level | No. of questions | K. level | | |
| 1 | CLO3 | Up to K3 | 2 | K1 & K2 | 2 | K1 | 2 (K1 &K2) | 1 (K2) |
| 2 | CLO4 | Up to K4 | 2 | K1 &K2 | 1 | K2 | 2 (K3 &K3) | 2 (K4) |
| No. of Questions to be asked | | | 4 | | 4 | | 3 | |
| No. of Questions to be answered | | | 4 | | 4 | | 3 | |
| Marks for each question | | | 1 | | 1 | | 2 | |
| Total Marks for each Section | | | 4 | | 4 | | 6 | |

Distribution of Section-wise Marks with K levels*

| K Levels | Section A (No choice) | Section B (No choice) | Section C (Either/ or) | Section D (Open choice) | Total marks | % of marks without choice | Consolidated |
|----------------|--------------------------|--------------------------|------------------------------|-------------------------------|----------------|------------------------------------|--------------|
| K1 | 2 | - | - | - | 2 | 3.333 | 3.333% |
| K2 | 2 | 6 | 15 | - | 23 | 38.333 | 38.333% |
| K3 | - | - | 5 | 30 | 35 | 58.333 | 58.333% |
| Total marks | 4 | 6 | 20 | 30 | 60 | 100.00 | 100% |

LESSON PLAN

| UNIT | Description | Hours | Pedagogy |
|--------------------|---|-------|-----------|
| I | Chin rule, Direct proportion, Example problems. | 1 | ICT tools |
| | Indirect proportion, Example problems. | 2 | Lecture |
| | Logarithm, Properties of Logarithms, Example problems. | 1 | Lecture |
| | Common Logarithms, Characteristic, Mantissa, Example problems. | 3 | Lecture |
| II | Calendar, odd days, Example problems. | 1 | Lecture |
| | Leap year, Ordinary year, Example problems. | 2 | Lecture |
| | Clocks, The fast and Two slow, Example problems. | 1 | Lecture |
| III | Factorial Notation, Example problems. | 1 | Lecture |
| | Permutation and Combination, Example problems. | 1 | Lecture |
| | Probability, Experiment, Random experiment, example problems. | 1 | Lecture |
| | Sample Space, Event, Probability occurrence of an event, Example problems. | 1 | ICT tools |
| IV | Partnership, Ratio of Division of gains, Working and Sleeping partners, Example problems. | 1 | Lecture |
| | Sock-capital, Shares or Stock, Dividend, Example problems. | 2 | Lecture |
| | Face Value, Market Value, Brokerage, Example problems. | 1 | Lecture |
| V | True discount, Example problems. | 2 | Lecture |
| | Banker's discount and some related examples. | 2 | Lecture |
| | Bander's gain, Example problems. | 2 | |
| Total hours | 30 | | |

Course Designer

1. Dr. S. USHA
2. Prof. N.SRIVIVEKA SARATHA.