

SEC-3

Session: 2023-24	
Part A – Introduction	
Subject	Mathematics
Semester	III
Name of the Course	Quantitative Aptitude
Course Code	B23-SEC-326
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	SEC
Level of the course	200-299
Pre-requisite for the course (if any)	NA
Course Learning Outcomes(CLOs):	After completing this course, the learner will be able to: 1. Comprehend the formulation of equations for specific mathematical problems and use mathematical skills to solve those. 2. Acquire the procedural knowledge to analyze and solve problems related to work & time , work and wages and apply those in real life situations. 3. To get deeper knowledge and understanding of concepts of Simple interest, Compound Interest, Partnership, Work and time and use this procedural knowledge to perform assigned tasks of solving such problems. 4. Familiarize and get acquainted with various measures of central tendency and using cognitive skills to choose better of these for the available data and draw the inferences/results. 5. Attain a range of cognitive and technical skills to analyze and comprehend various numerical concepts, e.g., Formulation of equations, S.I. & C.I., Work & time, Work & Wages, Set theory etc. and apply these learned skills and techniques to solve daily life mathematical problems
CLO 5 is related to the practical component.	

	accurately, logically and well in time.		
Credits	Theory	Practical	Total
	2	1	3
Contact Hours	2	2	4
Internal Assessment Marks	15	5	20
End Term Examination Marks	35	20	55
Examination Time	3 Hours	3 Hours	
Max. Marks: 75			
Part B- Contents of the Course			
<u>Instructions for Paper- Setter</u> Note: The examiner will set 9 questions asking two questions from each unit and one compulsory question by taking course learning outcomes (CLOs) into consideration. The compulsory question (Question No. 1) will contain 7 parts covering entire syllabus. The examinee will be required to attempt 5 questions, selecting one question from each unit and the compulsory question.			
Unit	Topics	Contact Hours	
I	Linear Equations, Quadratic equations, System of algebraic equations in two variables and their applications in simple problems: Problems on ages, Clocks.	8	
II	Time and distance: Problems based on trains, Boats and Streams, Pipes and Cistern. Work and time: Problems on work and time, Work and wages.	8	
III	Simple interest, Compound Interest, Partnership. Basic idea of set theory to solve practical problems. Trigonometric ratios and identities, Height and distance.	8	
IV	Basic idea of Permutations and Combinations. Events and sample space, Probability. Data interpretation: Raw and grouped data, Bar Graph, Pie Chart, Mean, Median and Mode.	8	

Practical		
	The examiner will set 4 questions at the time of practical examination by taking course learning outcomes (CLOs) into consideration. The examinee will be required to solve 2 questions. The evaluation will be done on the basis of practical record, viva-voce, written examination. Problem Solving- Questions related to the following problems will be solved and their record will be maintained in the Practical Notebook: 1. To solve problems related to clocks. 2. To write the date of birth of your family members and determine the day of their birth. 3. Compare the simple interest and compound interest for a given amount deposited for fixed time at a fixed rate. 4. Problems related to upstream and downstream of boat. 5. Write down the sample space for tossing three coins one by one and determine the probabilities of occurrence of all possibilities of heads. 6. Problems related to partnership. 7. Draw Venn Diagram for the following (i) Union of sets (ii) Intersection of sets (iii) Difference of sets (iv) Symmetric difference (iv) Complement of a set. 8. Draw a bar-graph for the percentage of expenditure occurred on miscellaneous heads (atleast 5 items) for your family income and write your observation in respect of bar-	30

	graph. 9. Draw a pie-chart by taking data of problem (8). 10. Taking the annual export data for three companies for last six years, draw a line- graph. 11. Write atleast two different practical problems related to set theory and solve them with the help of venn-diagram/formula. 12. Problem solving related to pipes and cisterns. 13. Problem solving related to determination of time taken by two trains of given lengths, to cross each other, when their speeds are given. 14. Problem solving related to permutation and combination. 15. Problems involving formulation and solution of quadratic equations in one variable. 16. Formulation and solution of realistic problems to solve system of linear equations. 17. Draw the following: (i) linear equation $x = a$ (ii)) linear equation $y = a$ (iii) linear equation $a x + b y = c$. 18. Draw a graph for system of equations $a x + b y = c$; $d x + e y = f$ (a, b, c, d are real numbers) taking suitable values for a, b, c, d, e, f and depict the (i) Unique Solution (ii) No Solution (iii) Infinitely many solution. Also state the condition for general system $a x + b y = c$; $d x + e y = f$ to have all three possibilities for solution (Unique Solution, No Solution & Infinitely many solution).	
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Suggested Evaluation Methods	
Internal Assessment: ➤ Theory 15 • Class Participation: 4 • Seminar/presentation/assignment/quiz/class test etc.: 4 • Mid-Term Exam: 7 ➤ Practicum 5 • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc. 5	End Term Examination: ➤ Theory 35 Written Examination ➤ Practicum 20 Lab record, viva-voce, write up.
Part C-Learning Resources	

Recommended Books: 1. R. S. Aggarwal (2022). <i>Quantitative Aptitude</i> . S Chand & Company Limited, New Delhi. 2. A. Guha (2020). <i>Quantitative Aptitude</i> (7 th Edition). Mc Graw Hill Publications. 3. V. Dyke, J. Rogers and H. Adams (2011). <i>Fundamentals of Mathematics</i> , Cengage Learning. 4. A.S. Tussy, R. D. Gustafson and D. Koenig (2010). <i>Basic Mathematics for College Students</i> . Brooks Cole. 5. C. C. Pinter (2014). <i>A Book of Set Theory</i> . Dover Publications. 6. G. Klambauer (1986). <i>Aspects of calculus</i> . Springer-Verlag.
