AC – 20/04/2024
Item No. – 6.6 Sem. II (1b)

As Per NEP 2020

University of Mumbai

Syllabus for Basket of OE (Scheme I)	
Board of Studies in Mathematics	
UG First Year Programme	
Semester	**II**
Title of Paper	**Credits**
1. Logic and Data Interpretation – II	**2**
2.	**2**
3.	**2**
From the Academic Year	**2024-25**

Name of the Course: Logic and Data Interpretation – II (OE – II)

Sr. No.	Heading	Particulars
1	**Description the course:** **Including but Not limited to:**	This course deals with the Logical Thinking and Data Interpretation, that forms an essential component of Most of the Competitive and Entrance Examinations, such as Banking, Management Entrance, UPSC/MPSC, SET/NET, GMAT/GRE to quote a few. The nature of the problems and the difficulty level of the questions is quite high and a person appearing for such exams is expected to have a thorough understanding of the concepts, to have ability to think logically, and to be able to interpret the data, presented in different manner.
2	**Vertical :**	Open Elective
3	**Type :**	Theory
4	**Credits :**	2 credits (1 credit = 15 Hours for Theory or 30 Hours of Practical work in a semester)
5	**Hours Allotted :**	30 Hours
6	**Marks Allotted:**	50 Marks
7	**Course Objectives (CO):** This course revises the basic mathematical concepts learned during school career. However, the problems asked in this course would be mostly advanced and indirect, and would demand broader and critical thinking. The course aims to enhance the reasoning power and logical thinking of the learners and nurture their intellect so as to make them competent across all competitive exams. CO1. To reinforce the basic math concepts and ideas within the learners CO2. To improve the cognitive power of the learners and make them think over and apply concepts/formulae to solve math problems of indirect nature, thereby developing their problem-solving capacity. CO3. To develop rational thinking of the learners CO4. To make learners competent across all competitive and entrance examinations	
8	**Course Outcomes (OC):** After completion of the course, the learners will be able to OC1: think logically about the problems related to clocks OC2: understand the nature of the calendars, find out the day related to any date in past/future OC3: develop logical thinking and realize the hidden pattern amongst the sequence of figures/diagrams	

	OC4: understand the representation of data in various forms OC5: understand the idea behind displaying data in a web-like diagram and comparing between two sets of data OC6: develop logical thinking to extract information from various graphs, charts, and tables representing data.
9	**Modules:-** **Module 1: Logic and Data Interpretation** 1. Clocks • The proportion of the speeds of different hands of a clock • The angles between the several positions of the hands • Coincidental and collinear but oppositely directed hour-hand and minute hand 2. Calendars • Review of the standard Gregorian calendar, with emphasis on Leap Year (1900 wasn't a leap year but 2000 was!) • Number of weeks in a year • Forward movement of the days with respect to dates (E.g. 1 Jan 2023 was Sunday, but 1 Jan 2024 is Monday) 3. Figures and Images • Sequence of diagrams, identifying the various patterns by which the figures/diagrams undergo changes and then predicting the next (or in between) figure/diagram. • Understanding images of various shapes/figures in mirror and water. Finding out the actual shape from its images in water/mirror. [The problems to be asked should be of varied levels of difficulty. A few ones based on directly applying a given formula may be asked at the beginning; however, the latter ones should demand critical analysis of the given information and a thoughtful selection of the method/formula to solve the same.]
	Module 2: Data Interpretation 1. Types of data: Qualitative and Quantitative 2. Tabulation: Reading and understanding data presented in a tabular form. 3. Interpreting data represented by Bar Graph, Pie Chart, Line graph, Scatter Diagram, Histogram etc. 4. Caselet Data Interpretation – Questions/Problems based on a long paragraph of information. 5. Web-based data interpretation – Display of data in a web-like diagram, Two sets of data and their comparison, Analysing the data 6. Missing Data Interpretation - Filling the missing values in the table from the additional information given or by applying logical thinking.
10	**Text Books** 1. Data Interpretation for CAT, Nishit k Sinha 2. Data Interpretation & Analysis, Aashish Arora

<table>
<tr><td></td><td colspan="2">3. Logical and Analytical Reasoning: Useful for All Competitive Exams, A. K. Gupta</td></tr>
<tr><td>11</td><td colspan="2">Reference Books

1. Arithmetic : Subjective And Objective For Competitive Examinations, R. S. Agarwal
2. A Complete Book on Data Interpretation & Analysis and A Complete Book for Seating Arrangement and Puzzles, Adda247 Publications
3. Reasoning for Competitive Examinations, Nishit K Sinha</td></tr>
<tr><td></td><td colspan="2"><u>Scheme of the Examination</u></td></tr>
<tr><td></td><td colspan="2">The performance of the learners shall be evaluated into two parts.
• Internal Continuous Assessment of 20 marks for each paper.
• Semester End Examination of 30 marks for each paper.
• Separate head of passing is required for internal and semester end examination.</td></tr>
<tr><td>12</td><td>Internal Continuous Assessment: 40%</td><td>Semester End Examination: 60%</td></tr>
<tr><td>13</td><td>Continuous Evaluation through:
Quizzes, Class Tests, presentations, projects, role play, creative writing, assignments etc.
(at least 3)
<table><tr><th>Sr. No.</th><th>Particulars</th><th>Marks</th></tr><tr><td>1</td><td>A class test of 10 marks is to be conducted during each semester in an Offline mode.</td><td>10</td></tr><tr><td>2</td><td>Project on any one topic related to the syllabus or a quiz (offline/online) on one of the modules.</td><td>05</td></tr><tr><td>3</td><td>Seminar/ group presentation on any one topic related to the syllabus.</td><td>05</td></tr></table>
Paper pattern of the Test (Offline Mode with One hour duration):
Q1: Definitions/Fill in the blanks/ True or False with</td><td></td></tr>
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	Justification. (04 Marks: 4 x 1). Q2: Attempt any 2 from 3 descriptive questions. (06 marks: 2 × 3)	

14 **Format of Question Paper:**

The semester-end examination will be of 30 marks of one hour duration covering the entiresyllabus of the semester.

Note: Attempt any TWO questions out of THREE.			
Q.No.1	Module 1 and 2	Attempt any **THREE** out of **FOUR**. (Each question of 5 marks) (a) Question based on OC1/OC2 (b) Question based on OC3 (c) Question based on OC4 (d) Question based on OC5/OC6	15 Marks
Q.No.2	Module 1 and 2	Attempt any **THREE** out of **FOUR**. (Each question of 5 marks) (a) Question based on OC1/OC2 (b) Question based on OC3 (c) Question based on OC4 (d) Question based on OC5/OC6	15 Marks
Q.No.3	Module 1 and 2	Attempt any **THREE** out of **FOUR**. (Each question of 5 marks) (a) Question based on OC1/OC2 (b) Question based on OC3 (c) Question based on OC4 (d) Question based on OC5/OC6	15 Marks

Sign of the BOS Chairman
Dr. Bhausaheb S Desale
The Chairman, Board of Studies in Mathematics

Sign of the Offg. Associate Dean
Dr. Madhav R. Rajwade
Faculty of Science & Technology

Sign of the Offg. Dean
Prof. Shivram S. Garje
Faculty of Science & Technology