

## MAV Sem.-1 Examination

MAV-103

## Business Mathematics of Service Industries

Time : 2-30 Hours]

February-2025

[Max. Marks : 70

**Instructions:**

- 1) Figures to the right indicate Full Marks.
- 2) Do not write anything on the question paper.
- 3) Do not use scientific calculator.

| Q.1                | Solve the Questions:<br>1) How many terms are there in an AP 9,18,27, 36....4950<br>2) $45+50+55+60+\dots+1000$<br>3) $(3a + 2)^5$   | 5<br>5<br>4 |      |      |      |      |      |      |                    |   |   |    |    |    |   |    |
|--------------------|--|-------------|------|------|------|------|------|------|--------------------|---|---|----|----|----|---|----|
| Q.2                | Find the value of x and y by using Interpolation.<br><table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Year</th> <th>2005</th> <th>2006</th> <th>2007</th> <th>2008</th> <th>2009</th> <th>2010</th> </tr> </thead> <tbody> <tr> <td>Production in tons</td> <td>5</td> <td>x</td> <td>10</td> <td>15</td> <td>26</td> <td>y</td> </tr> </tbody> </table> <p style="text-align: center;"><b>OR</b></p> <p>Solve the Questions: 1) If <math>a_1 = -27</math> &amp; <math>d = 5</math> of an arithmetic sequence then <math>s_8 =</math> _____</p> <p>2) -3,2,7,12, _____, 25<sup>th</sup> Term, then <math>a_{25} =</math> _____</p> | Year        | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | Production in tons | 5 | x | 10 | 15 | 26 | y | 14 |
| Year               | 2005   | 2006        | 2007 | 2008 | 2009 | 2010 |      |      |                    |   |   |    |    |    |   |    |
| Production in tons | 5  | x           | 10   | 15   | 26   | y    |      |      |                    |   |   |    |    |    |   |    |
| Q.3                | Solve the Questions: 1) If $56 \times n! = 8!$ then find the value of n.<br>2) $nC_2 = 45$ then find the value of N.<br><b>OR</b><br>Solve the Questions: 1) If $nP_3 = 720$ then find the value of n.<br>2) 7,10,13,15, _____ 21 <sup>th</sup> term, then $s_{21} =$ _____  | 14          |      |      |      |      |      |      |                    |   |   |    |    |    |   |    |

(P.T.O)

|     |  |             |
|-----|--|-------------|
| Q.4 | <p>Solve the Questions:</p> <ol style="list-style-type: none"><li>1) How many 3digit numbers are divisible by 7.</li><li>2) Solve the following sum by using binomial expansion <math>(99)^4</math></li><li>3) Samir started work in 1995, at an annual salary of Rs. 5000 and received an increment of Rs. 200 each year. In which year did his income reach Rs. 7000</li></ol> <p style="text-align: center;"><b>OR</b></p> <p>Solve the Questions:</p> <ol style="list-style-type: none"><li>1) <math>2000+1995+1990+1985+1980+\dots+50</math></li><li>2) In how many ways can 4 red, 3 yellow and 2 green discs be arranged in a row if the discs of the same colour are indistinguishable?</li><li>3) <math>(2x - 5)^5</math></li></ol> | 5<br>5<br>4 |
| Q.5 | <p>Solve the Questions:</p> <ol style="list-style-type: none"><li>1) If <math>10 \times n! = 7200</math> the find value of n.</li><li>2) If <math>(n + 1)! = 120</math> then find the value of n.</li><li>3) How many multiples of 4 lie between 10 &amp; 250.</li></ol>   | 5<br>5<br>4 |