Roll No. | | | | | | | | | | | | | Total No. of Pages : 01

Total No. of Questions : 08

BMCI (2014 & Onwards) (Sem.–1)

MATHEMATICS – I

Subject Code : BMCI-101

M.Code : 72198

Time : 2 Hrs. Max. Marks : 30

INSTRUCTIONS TO CANDIDATES :

1. Attempt any FIVE question(s), each question carries 6 marks.

Q1 Show that every square matrix can be expressed as sum of symmetric and skew-symmetric matrices.

Q2 What is the fifth term in the expansion of $(2x - 3)^9$.

Q3 Prove by the method of mathematical induction that $n(n + 1)(2n + 1)$ is divisible by 6.

Q4 State and prove De Morgan's law.

Q5 An airplane flies along the four sides of a square at speeds of 100, 200, 300 and 400 km/hr. What is the average speed of the plane in its flight around the square?

Q6 How many positive integers less than or equal to 60 are not divisible by 3, 4 or 5?

Q7 Evaluate by using the properties of determinant : $\begin{vmatrix} x^3 & y^3 & z^3 \\ x & y & z \\ x^2 & y^2 & z^2 \end{vmatrix}$.

Q8 Calculate mean and mode of the following :

Weight (gm)	0-10	10-20	20-30	30-40	40-50	50-60
No. of articles	14	17	22	26	23	18

Note: Any student found attempting answer sheet from any other person(s), using incriminating material or involved in any wrong activity reported by evaluator shall be treated under UMC provisions.

Student found sharing the question paper(s)/answer sheet on digital media or with any other person or any organization/institution shall also be treated under UMC.

Any student found making any change/addition/modification in contents of scanned copy of answer sheet and original answer sheet, shall be covered under UMC provisions.