Roll No. ....

Y – 3187

M.A./M.Sc. (Fourth Semester) EXAMINATION, May/June-2021

MATHEMATICS

Paper – 412

SPECIAL FUNCTIONS

Time : Three Hours

Maximum Marks : 85   *Minimum Pass Marks : 29*

Note—Attempt *all* questions.

Unit-I

1. (a) Evaluate   17

$$\overline{|1}' \text{ and } \frac{\overline{|1/2}'}{\overline{|1/2}}$$

(b) State symmetrical property of Beta function and prove it.   17

Unit-II

2. State and Prove Integral formula for Hypergeometric function.   17

Unit-III

3. State and prove Dixon's theorem.   17

Unit-IV

4. State and Prove Rodrigue's formula for $P_n(x)$ and using this formula obtain the value of $P_4(x)$ at $n = 1$ 17

Unit-V

5. Prove that for Hermite polynomial   17

$$H_n''(x) - 2x H_n'(x) + 2n H_n(x) = 0$$

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