THE AMERICAN COLLEGE, MADURAI

Backlog Arrear Examination, March 2021

Since 1881

Course Code: PHY 2475   **Duration : 3 hrs**
Course Title: Mathematical Physics   **MaxMarks : 75**

Answer any FIVE Questions   **5*15=75**

1. Explain the method of separation of variables using diffusion equation.

2. Prove that $J_{-m}(x) = (-1)^m J_m(x)$.

3. Derive the expression which relates Beta and Gamma function.

4. Define the Hermitian matrix and find the Hermitian of the given

   matrix: $\begin{bmatrix} 2+3i & 4-5i & -7i \\ 3 & 4i & 0 \\ -6+2i & -2-4i & 5 \end{bmatrix}$.

5. Find the eigen values and normalized eigen vector of a given matrix: $\begin{bmatrix} 1 & 0 & 0 \\ 0 & 0 & 1 \\ 0 & 1 & 0 \end{bmatrix}$.

6. State and prove Parseval's theorem.

7. Define Dirac Delta function and explain other forms of Delta function.

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