

Solved Short Questions

Write the short answers of the following :

- Q.1: Define Fourier Series.
- Q.2: What is Fourier Series?
- Q.3: If a function is odd integrable on $[-\bar{\lambda}, \bar{\lambda}]$ then which co-efficient exist.
- Q.4: If a function is even integrable on $[-\bar{\lambda}, \bar{\lambda}]$ then which co-efficient exist.
- Q.5: What are Fourier Co-efficient?
- Q.6: If x^2 is integrable in $[-\bar{\lambda}, \bar{\lambda}]$, then which of the Fourier Co-efficient will non-Zero.
- Q.7: If x is integrable in $[-\bar{\lambda}, \bar{\lambda}]$, then which of the Fourier co-efficient will be Zero.
- Q.8: Write down formula for extended rule of integration.

Answers

- Q1: A Fourier Series decomposes a periodic function into sum of a set of simple oscillating functions, called Sines & Cosines
- Q2: The infinite sum $\frac{a_0}{2} + \sum_{n=1}^{\infty} (a_n \cos nx + b_n \sin nx)$ is called Fourier Series.
- Q3: Only b_n exists and $a_0, a_n = 0$
- Q4: a_0, a_n exists and $b_n = 0$
- Q5: Constant a_0, a_n and b_n present in the Fourier Series are called Fourier co-efficient.
- Q6. a_0, a_n are non-zero
- Q7. a_0, a_n are zero
- Q8. $\int f g dx = f g_1 - f' g_2 + f'' g_3 \dots + (-1)^n f^{n-1} g_n + (-1)^n \int f^n g_n dx$