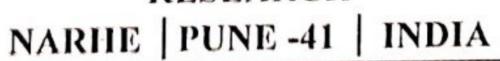


## ZEAL COLLEGE OF ENGINEERING AND RESEARCH





Record No.: ZCOER-ACAD/R/16M

Revision: 00

Date:01/04/2021

## **Question Bank**

Department: Common for all

Semester: I

Academic Year: 2024- 2025

Class: F.Y.B.Tech.

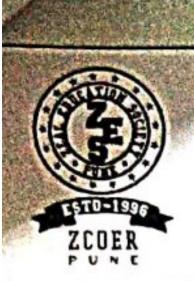
Div: All

Date:

Course: Engineering Mathematics I & Linear Algebra And Differential Calculus

## Unit VI -Fourier series

Q. No.				Quo	stion			Marks	СО	Blooms
Q.1	Find Fourier series to represent the function $f(x) = x$ For $-\pi < x < \pi$ and $f(x) = f(x + 2\pi)$						5	CO6	2	
Q.2	Find half range cosine series for $f(x) = x^2, 0 < x < 2$							5	CO6	2
Q.3	Obtain constant term and coefficients of the first sine and cosine terms in the Fourier expansion of y as given in the following table. Given $f(x) = f(x + 2\pi)$ .							CO6	3	
	x y	1.0	$\frac{\pi}{3}$	$\frac{2\pi}{3}$	5/5/3	$\frac{4\pi}{3}$	$\frac{5\pi}{3}$	5		
Q. 4	Find Fourier series for the function $f(x) = x^2 - 2$ , $-2 \le x \le 2$ , and $f(x) = f(x + 4)$ .							5	CO6	2
Q.5	Find half-range sine series for $f(x) = \pi x - x^2 \text{ where } 0 < x < \pi$					4	CO6	2		
Q.6	Find first three terms in cosine series to represent y as given in the following table.    x 0 1 2 3 4 5   y 4 8 15 7 6 2					3	CO6	3		
Q.7	Find Fourier series for $f(x) = \left(\frac{\pi - x}{2}\right)^2, \ 0 < x < 2\pi \text{ and } f(x) = f(x + 2\pi)$						5	CO6	2	
Q.8	Find half-range sine series for $f(x) = 2x - 1, 0 < x < 1$ .						5	CO6	2	
Q.9	Obtain the constant term and the coefficients of the first sine and cosine term in the Fourier series of f(x) as given in the following table.								CO6	3
	x 0 1 2 3 4 5									
Ser in	У	9	18	24	28	26	20			



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Q.10	Find half-range cosine series for $f(x) = x^2, 0 < x < \pi$	$x^2$ , $0 < x < \pi$ 5		2	
Q.11	Find Fourier series for $f(x) = x^3$ ;	5	CO6	2	
	where $-\pi < x < \pi$ and $f(x + 2\pi) = f(x)$				

Course faculty