**DAYANANDA SAGAR COLLEGE OF ENGINEERING**
*(An Autonomous Institute Affiliated to VTU, Belagavi)*
Shavige Malleshwara Hills, Kumaraswamy Layout, Bengaluru-560078
**DEPARTMENT OF MATHEMATICS**

## COURSE : OPTIMIZATION AND TRANSFORMS

## COURSE CODE: 21MAT31C

## MODULE – 4: FOURIER SERIES

## Multiple Choice Questions

| Q.No. | Questions |
|---|---|
| **1.** | A real valued function f(x) is periodic of period $T = 4$, then _____<br>a) $f(x-4) = -f(x)$ b) $f(x+4) = f(x)$ c) $f(x+4) = 2f(x)$ d) $f(x-4) = f(2x)$ |
| **2** | If $f(x)$ is discontinuous at x then the Fourier series converges to _____ where $f(x^+)$, $f(x^-)$ are respectively right hand and left hand limits of $f(x)$<br>a) $\frac{f(x^+)+f(x^-)}{2}$ b ) $\frac{f(x^+)-f(x^-)}{2}$ c) $\frac{f(x^+)+f(x^-)}{-2}$ d) $\frac{f(x^+)-f(x^-)}{-2}$ |
| **3.** | A function $f(x) = \lvert\sin x\rvert$ is _____ function in the interval $(-\pi, \pi)$.<br>a) $odd$ b) $even$ c) $neither\ even\ nor\ odd$ d) $None\ of\ these$ |
| **4.** | A function $f(x) = \cos x$ is _____ function in the interval $(-l, l)$.<br>a) $odd$ b) $even$ c) $neither\ even\ nor\ odd$ d) $None\ of\ these$ |
| **5.** | The graph of half range sine series symmetrical about _____<br>a)x-axis b) y-axis c) origin d) None of these |
| **6.** | In the Fourier series $\frac{a_0}{2}$ is called _____term<br>a) Positive term b) negative term c) Remainder term d) Constant term |
| **7.** | In Fourier Series $a_0$ , $a_n$ , $b_n$ are called _____<br>a) Fourier constants b) Fourier coefficients c) Half range values d) None of these |
| **8.** | In Fourier series expansion, if f(x) is odd then _____<br>a) $a_0 = 0$ , $a_n = 0$ b) $a_0 \neq 0$ , $a_n = 0$ c) $a_0 = 0$ , $a_n \neq 0$ d) $a_0 \neq 0$ , $a_n \neq 0$ |
| **9.** | _____is the process of finding the constant term and first few cosine and sine term numerically<br>a) Numerical analysis b) Harmonic Analysis c) Theoretical analysis d) None of these |
| **10.** | For the interval $(0,2l)$, the value of $\theta$ is given by _____to change the arbitrary value to radian in harmonic analysis.<br>a) $\frac{\pi x}{l}$ b) $\frac{\pi l}{x}$ c) $\frac{l\,x}{\pi}$ d) $None\ of\ these$ |