

Course/Branch: BE/ CIVIL,EEE,MECH	Year / Semester : II/III	Format No.	NAC/TLP- 07a.13
Subject Code : MA8353	Subject Name : TRANSFORMS AND PARTIAL DIFFERENTIAL EQUATIONS	Rev. No.	02
Unit No : 02	Unit Name: Fourier Series	Date	30-09-2020

OBJECTIVE TYPE QUESTION BANK

S.No.	Objective Questions [MCQ / True or False / Fill up with Choices)	BTL
1	If $f(x) = \sin x$ in $(-\pi, \pi)$ then find the value of a_0 (a).0 (b). $\frac{4\pi}{n^2}$ (c). $\frac{2\pi}{n^2}$ (d).1	L2
2	Define root mean square value of a function-----	L2
3	Find the a_n value of $f(x) = x$ in the interval $(-\pi, \pi)$ is (a).0 (b).2 (c). π (d). 2π	L2
4	If $f(x) = 3x - 4x^3$, defined in the interval $(-2,2)$ then find the value of a_1 in the Fourier series expansion (a). $\frac{64}{3}$ (b). 18 (c). -12 (d).10	L2
5	State whether $y = \tan x$ can be expressed as a Fourier series. If so how? If not why? (a).infinite discontinuity (b). infinite continuity (c). finite discontinuity (d). finite discontinuity	L2
6	Find the constant term in the expansion of $f(x) = \cos^2 x$, as a Fourier series in the interval $(-\pi, \pi)$. (a). $a_n = 0$ (b). $b_n = 0$ (c). $b_1 = 0$ (d). $b_2 = 0$	L2
7	Obtain the sum at $x=1$ of the Fourier series of $f(x) = \begin{cases} x, & 0 < x < 1 \\ 2, & 1 < x < 2 \end{cases}$ (a).3/2 (b).3 (c).-1 (d).0	L2
8	Find the sum of the Fourier series of $f(x) = x + x^2$ in $(-\pi, \pi)$ at $x=\pi$. (a). π^2 (b). π (c). 2π (d). 0	L2
9	Obtain the first term of the Fourier series for the function of $f(x) = x^2$ in $-\pi < x < \pi$	L2

Course/Branch: BE/ CIVIL,EEE,MECH	Year / Semester : II/III	Format No.	NAC/TLP- 07a.13
Subject Code : MA8353	Subject Name : TRANSFORMS AND PARTIAL DIFFERENTIAL EQUATIONS	Rev. No.	02
Unit No : 02	Unit Name: Fourier Series	Date	30-09-2020

OBJECTIVE TYPE QUESTION BANK

	(a). $a_n = -4$ (b). $a_n = 3$ (c). $a_n = 2$ (d). $a_n = 1$	
10	Give the expression for the Fourier series coefficient b_n for the function $f(x)$ defined in $(-2,2)$ (a).0 (b). $b_n = \frac{1}{2} \int_{-2}^2 f(x) \sin \frac{n\pi x}{2}$ (c). $b_n = \frac{1}{2} \int_0^2 f(x) \sin \frac{n\pi x}{2}$ (d). $b_n = \int_0^2 f(x) \sin \frac{n\pi x}{2}$	L2
11	Define Harmonic Analysis (a). periodic function (b).harmonic function (c). tabular function (d).Analytic function	L2
12	Find the Root Mean square value of the function $f(x) = x$ in $(0,L)$. (a). $\sqrt{\frac{L^2}{2}}$ (b). L (c). $\frac{L^2}{2}$ (d).2L	L2
13	Find the half range cosine series of $f(x)= x$ in $0 < x < 1$.	L2
14	Find the half range sine series of $f(x) = x$ in $(0, \pi)$ (a). $\sum \frac{2}{n} (-1)^{n+1} \sin nx$ (b). $\sum \frac{2}{n} \sin nx$ (c). $\sum \frac{4}{n} (-1)^{n+1} \cos nx$	L2
15	Obtain the sum at $x=1$ of the Fourier series of constant term $f(x) = \begin{cases} x, 0 < x < 3 \\ 6-x, 3 < x < 6 \end{cases}$ (a).3 (b). 4 (c).-2 (d).0	L2
16	Obtain a fourier series of a_1 in $f(x) = \cos X $ $-\pi < x < \pi$ (a).0 (b).2 (c).-1 (d).3	L2
17	Obtain a fourier series of b_n in $f(x) = (\pi - x)^2$ in $-\pi < x < \pi$ (a). $\frac{4\pi(-1)^n}{n}$ (b). $\frac{4\pi}{n}$ (c). $\frac{4\pi(-1)^n}{n^2}$ (d). $\frac{4\pi}{n^2}$	L2
18	Obtain the odd function value (a). $\text{Sin}x$ (b). $\tan^3 x$ (c). $\text{cos}x$ (d). $ X $	L2

Course/Branch: BE/ CIVIL,EEE,MECH	Year / Semester : II/III	Format No.	NAC/TLP- 07a.13
Subject Code : MA8353	Subject Name : TRANSFORMS AND PARTIAL DIFFERENTIAL EQUATIONS	Rev. No.	02
Unit No : 02	Unit Name: Fourier Series	Date	30-09-2020

OBJECTIVE TYPE QUESTION BANK

19	<p>Find the Fourier series of a_2 to represent the function given in the following data:</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>x</td> <td>0</td> <td>$\frac{\pi}{3}$</td> <td>$\frac{2\pi}{3}$</td> <td>π</td> <td>$\frac{4\pi}{3}$</td> <td>$\frac{5\pi}{3}$</td> <td>2π</td> </tr> <tr> <td>f(x)</td> <td>0.8</td> <td>0.6</td> <td>0.4</td> <td>0.7</td> <td>0.9</td> <td>1.1</td> <td>0.8</td> </tr> </table> <p>(a).1 (b).0 (c). 1.47 (d).2</p>	x	0	$\frac{\pi}{3}$	$\frac{2\pi}{3}$	π	$\frac{4\pi}{3}$	$\frac{5\pi}{3}$	2π	f(x)	0.8	0.6	0.4	0.7	0.9	1.1	0.8	L2
x	0	$\frac{\pi}{3}$	$\frac{2\pi}{3}$	π	$\frac{4\pi}{3}$	$\frac{5\pi}{3}$	2π											
f(x)	0.8	0.6	0.4	0.7	0.9	1.1	0.8											
20	<p>Find the Fourier series of b_1 to represent the function given in the following data:</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>x</td> <td>0</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> </tr> <tr> <td>f(x)</td> <td>9</td> <td>18</td> <td>24</td> <td>2</td> <td>26</td> <td>20</td> </tr> </table> <p>(a). 4.67 (b).2.22 (c).3.25 (d).5</p>	x	0	1	2	3	4	5	f(x)	9	18	24	2	26	20	L2		
x	0	1	2	3	4	5												
f(x)	9	18	24	2	26	20												

