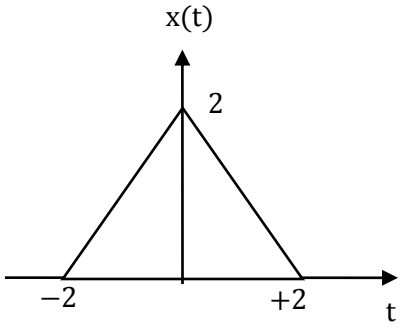
Q.11 - Q.20 Carry Two Mark each.

11. A signal x(t) is a triangular wave as shown below.



Then Fourier transform $e^{+j2t}x(t)$ is

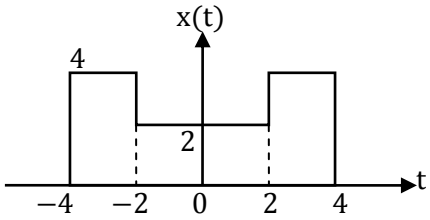
(A) $2\,sa^2[\omega+2]$

(B) $4\,sa^2[\omega-2]$

(C) $4\,sa^2[\omega+2]$

(D) $\frac{4\,sa^2[\omega-2]}{(\omega-2)}$

12. The Fourier transform of signal x(t) is



(A) $32\,sa[4\omega]+16\,sa[2\omega]$

(B) $16\,sa[4\omega]-12\,sa[2\omega]$

(C) $32\,sa[4\omega]-8\,sa[2\omega]$

(D) $32\,sa[2\omega]-8\,sa[4\omega]$

13. The signal $x_1(t)=e^{-2t}u(t)$ and $x_2(t)=e^{-3t}u(t)$. If $y(t)=x_1(t)*x_2(t)$ the $|y(\omega)|$ at $\omega=2$rad/sec is

(A) $\frac{1}{\sqrt{108}}$

(B) $\frac{1}{\sqrt{109}}$

(C) $\frac{1}{\sqrt{104}}$

(D) $\frac{1}{\sqrt{101}}$

14. The Fourier transform of f(t) is F(ω). If $f(\omega)=\frac{5}{\omega}e^{+2j\omega}\sin[5\omega]$. Then its increase Fourier transform f(t) is _____

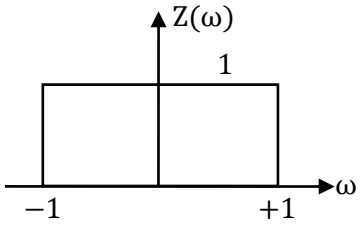
15. The complex exponential power form of Fourier series of x(t) is

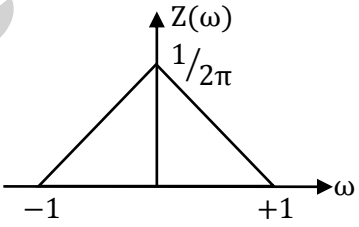
$$x(t)=\sum_{k=-\infty}^{\infty}c_k e^{j\frac{2\pi}{T_0}kt}$$

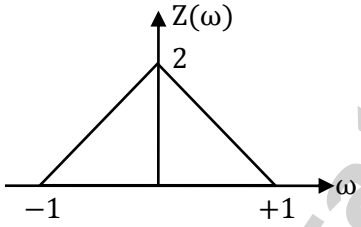
If $x(t)=\sum_{n=-\infty}^{\infty}2\delta[t-4n]$, then the value of C_k is_____?

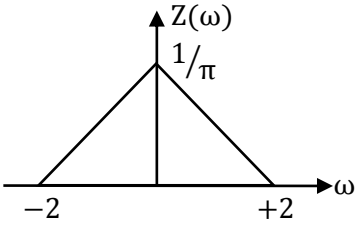
16. A continuous time signal $x(t) = 2\cos\left(2\pi t - \frac{\pi}{6}\right) + 4\sin[6\pi t - \frac{\pi}{3}]$
The fundament frequency (ω_0) of the signal $(x(t))$ is
(A) 2π (C) π
(B) $\pi/4$ (D) $\pi/2$

17. Let x(t) be the periodic signal with time period T. Let $y(t) = x[t + t_0]$
The Fourier series coefficients of x(t) and y(t) are denoted by $a_n$and b_n.. If T =4 and $t_0 = 2$, then b_n is equal to _____is
(A) $a_n(-1)^{n+1}$ (C) $a_n(+1)^{2n+1}$
(B) $a_n(-1)^n$ (D) $a_n(-1+n)^n$

18. If a signal $x(t) = \frac{1}{\pi}\frac{\sin(t)}{t}$, The $z(t) = x(t).x(t)$, the Fourier transform of z(t) is _____
(A)


(C)


(B)


(D)


19. If the continuous time signal x(t) is Real and odd. Then the fourier transform signal x(t)
(A) Real and odd (C) Imaginary and odd
(B) Real and Even (D) Imaginary and even

20. A continuous time signal $x(t) = \frac{\sin(8\pi t)}{8\pi t}$ the value of $\int_{-\infty}^{\infty}|x^2(t)|\,dt$ is_____