QN	T.Y.B.Sc.(Mathematics) Subject: MTH-505: Integral Transforms Question Bank	ANS
1)	The Fourier cosine transform of the function f(x) is (A) $F_c(\lambda) = \int_0^\infty f(u)\cos\lambda u\, du$ (B) $F_c(\lambda) = \int_0^\infty f(u)\cos u\, du$ (C) $F_c(\lambda) = \int_0^\infty f(\lambda u)\cos u\, du$ (D) None	A
2)	The Fourier sine transform of the function f(x) is (A) $F_s(\lambda) = \int_0^\infty f(u)\sin u\, du$ (B) $F_s(\lambda) = \int_0^\infty f(u)\sin\lambda u\, du$ (C) $F_s(\lambda) = \int_0^\infty f(\lambda u)\sin u\, du$ (D) None	B
3)	The inverse Fourier cosine transform is (A) $f(x) = \frac{1}{\pi}\int_0^\infty F_c(\lambda)\cos\lambda x\, dx$ (B) $f(x) = \frac{2}{\pi}\int_0^\infty F_c(\lambda)\cos\lambda x\, dx$ (C) $f(x) = \frac{2}{\pi}\int_0^\infty F_c(\lambda)\sin\lambda x\, dx$ (D) $f(x) = \int_0^\infty F_c(\lambda)\cos\lambda x\, dx$	B
4)	The inverse Fourier sine transform is (A) $f(x) = \frac{1}{\pi}\int_0^\infty F_s(\lambda)\sin\lambda x\, d\lambda$ (B) $f(x) = \frac{2}{\pi}\int_0^\infty F_s(\lambda)\cos\lambda x\, d\lambda$ (C) $f(x) = \frac{2}{\pi}\int_0^\infty F_s(\lambda)\sin\lambda x\, d\lambda$ (D) $f(x) = \int_0^\infty F_s(\lambda)\sin\lambda x\, d\lambda$	C
5)	For the Fourier sine integral representation $\frac{2}{\pi}\int_0^\infty \frac{1-\cos\pi\lambda}{\lambda}\sin\lambda x\, d\lambda = \begin{cases} 1, & 0 < x < \pi \\ 0, & x > \pi \end{cases}$, $F_s(\lambda)$ is (A) $\frac{1+\cos\pi\lambda}{\lambda}$ (B) $\frac{1-\sin\pi\lambda}{\lambda}$ (C) $\frac{\cos\pi\lambda}{\lambda}$ (D) $\frac{1-\cos\pi\lambda}{\lambda}$	D
6)	For the Fourier sine integral representation $\frac{2}{\pi}\int_0^\infty \frac{\sin\pi\lambda}{1-\lambda^2}\sin\lambda x\, d\lambda = \begin{cases} \sin x, & \lvert x\rvert \le \pi \\ 0, & \lvert x\rvert > \pi \end{cases}$, $F_s(\lambda)$ is (A) $\frac{\sin\pi\lambda}{1-\lambda^2}$ (B) $\frac{\sin\pi\lambda}{1+\lambda^2}$ (C) $\frac{\cos\pi\lambda}{1-\lambda^2}$ (D) $\frac{1}{1-\lambda^2}$	A
7)	The Fourier transform of the function f(x) is (A) $\int_0^\infty f(u)e^{-i\lambda u}du = F(\lambda)$ (B) $\int_{-\infty}^\infty f(u)e^{-i\lambda u}du = F(\lambda)$ (B) $\int_1^\infty f(u)e^{-i\lambda u}du = F(\lambda)$ (D) None	B
8)	The Fourier transform of the function f(x) is $F(\lambda)$ the inversion formula is (A) $\frac{1}{2\pi}\int_{-\infty}^\infty F(\lambda)e^{i\lambda x}d\lambda$ (B) $\frac{1}{\pi}\int_{-\infty}^\infty F(\lambda)e^{-i\lambda x}d\lambda$ (B) $\frac{1}{2\pi}\int_0^\infty F(\lambda)e^{-i\lambda x}d\lambda$ (D) None	A

9)	In the Fourier integral representation $\frac{1}{2\pi}\int_{-\infty}^{\infty}(\frac{1-i\lambda}{1+\lambda^2})\, e^{i\lambda x} d\lambda = \begin{cases} 0, & x < 0 \\ e^{-x}, & x \geq 0 \end{cases}$, $F(\lambda)$ *is* (A) $\frac{1+\lambda^2}{1-i\lambda}$ (B) $\frac{sin\lambda}{1+\lambda^2}$ (C) $\frac{cos\lambda}{1+\lambda^2}$ (D) $\frac{1-i\lambda}{1+\lambda^2}$	**D**
10)	If the Fourier integral representation $f(x)$ is $\frac{2}{\pi}\int_0^{\infty}\frac{\sin\lambda\cos\lambda x}{\lambda} d\lambda = \begin{cases} 1, & \|x\| < 1 \\ 0, & \|x\| > 1 \end{cases}$ then value of integral $\int_0^{\infty}\frac{\sin\lambda}{\lambda} d\lambda$ is (A) $\frac{\pi}{4}$ (B) $\frac{\pi}{2}$ (C) 0 (D) 1	**B**
11)	In the Fourier integral representation of $\frac{1}{2\pi}\int_{-\infty}^{\infty}\pi(\frac{e^{-i\lambda\pi}+1}{1-\lambda^2})\, e^{i\lambda x} d\lambda =$ $\begin{cases} 0, & 0 < x \\ e^{-x} & , x < 0 \end{cases}$, $F(\lambda)$ is (A) $\frac{1+\lambda^2}{1-i\lambda}$ (B) $\frac{\sin\lambda}{1+\lambda^2}$ (C) $\pi\frac{1-i\lambda}{1+\lambda^2}$ (D) $\frac{\cos\lambda}{1+\lambda^2}$	**C**
12)	If $F\{f(x)\} = F(\lambda)$ then $F\{f(x-a)\}$ (A) $e^{i\lambda a}F(\lambda)$ (B) $e^{i\lambda t}F(\lambda)$ (C) $e^{-i\lambda a}F(\lambda)$ (D) None	**C**
13)	If $F\{f(x)\} = F(\lambda)$ then $F\{f(ax)\}$ (A) $\frac{1}{a}F\left(\frac{\lambda}{a}\right)$ (B) $\frac{\lambda}{a}F\left(\frac{\lambda}{a}\right)$ (C) $\frac{1}{a}F(\lambda)$ (D) None	**A**
14)	If $F\{f(x)\} = F(s)$ then $F\{g(x)\} = G(s)$ then by Parseval's identity $\frac{1}{2\pi}\int_{-\infty}^{\infty}F(s)G(s)ds =$ (A) $\int_0^{\infty}f(x)g(x)dx$ (B) $\frac{1}{2\pi}\int_{-\infty}^{\infty}f(x)g(x)dx$ (C) $\int_{-\infty}^{\infty}f(x)g(x)dx$ (D) None	**C**
15)	The Parseval's identities for Fourier cosine transform (A) $\frac{2}{\pi}\int_0^{\infty}F_c(s)G_c(s)ds = \int_0^{\infty}f(x)g(x)dx$ (B) $\int_0^{\infty}F_c(s)G_c(s)ds = \int_0^{\infty}f(x)g(x)dx$ (C) $\frac{2}{\pi}\int_{-\infty}^{\infty}F_c(s)G_c(s)ds = \int_{-\infty}^{\infty}f(x)g(x)dx$ (D) None	**A**
16)	The Parseval's identities for Fourier sine transform (A) $\frac{2}{\pi}\int_{-\infty}^{\infty}[F_s(s)]^2ds = \int_0^{\infty}[f(x)]^2dx$ (B) $\frac{2}{\pi}\int_0^{\infty}[F_s(s)]^2ds = \int_0^{\infty}[f(x)]^2dx$ (C) $\int_0^{\infty}[F_s(s)]^2ds = \int_0^{\infty}[f(x)]^2dx$ (D) None	**A**

17)	If $F_s(\lambda)$ and $F_c(\lambda)$ are respectively Fourier sine and cosine transform of $f(x)$ then $F_c[f(x)sinax] =$ ________ (A) $\frac{1}{2}[F_s(\lambda+a)+F_s(\lambda-a)]$ (B) $\frac{1}{2}[F_s(\lambda+a)-F_s(\lambda-a)]$ (C) $\frac{1}{2}[F_c(\lambda+a)+F_c(\lambda-a)]$ (D) $\frac{1}{2}[F_c(\lambda+a)-F_c(\lambda-a)]$	**B**
18)	If $F_s(\lambda)$ and $F_c(\lambda)$ are respectively Fourier sine and cosine transform of $f(x)$ then $F_s[f(x)cosax] =$ ________ (A) $\frac{1}{2}[F_s(\lambda+a)+F_s(\lambda-a)]$ (B) $\frac{1}{2}[F_s(\lambda+a)-F_s(\lambda-a)]$ (A) $\frac{1}{2}[F_c(\lambda+a)+F_c(\lambda-a)]$ (B) $\frac{1}{2}[F_c(\lambda+a)-F_c(\lambda-a)]$	**A**
19)	Fourier sine transform of e^{-x} is (A) $\frac{s}{s^2-1}$ (B) $\frac{1}{s^2+1}$ (C) $\frac{s}{s^2+1}$ (D) None	**C**
20)	The Fourier cosine transform $F_c(\lambda) of\ f(x) = e^{-x}, x > 0$ is given by (A) $\frac{2}{1+\lambda^2}$ (B) $\frac{1}{1-\lambda^2}$ (C) $\frac{\lambda}{1+\lambda^2}$ (D) $\frac{1}{1+\lambda^2}$	**D**
21)	Find the Fourier sine transform $e^{-\|x\|}$ is (A) $\frac{s}{s^2+1}$ (B) $\frac{s}{s^2-1}$ (C) $\frac{1}{s^2+1}$ (D) None	**A**
22)	If $f(x) = e^{-3x}, x > 0$, then Fourier cosine transform $F_c(\lambda)$ of $f(x)$ is given by (A) $-\frac{3}{9+\lambda^2}$ (B) $\frac{3}{9+\lambda^2}$ (C) $\frac{3\lambda}{9+\lambda^2}$ (D) $\frac{1}{9+\lambda^2}$	**B**
23)	If $f(x) = e^{-5x}, x > 0, k > 0$ then Fourier sine transform $F_s(\lambda)$ of $f(x)$ is given by (A) $\frac{\lambda}{25+\lambda^2}$ (B) $\frac{\lambda}{25-\lambda^2}$ (C) $\frac{-\lambda}{25+\lambda^2}$ (D) $\frac{2\lambda}{25+\lambda^2}$	**A**
24)	Fourier cosine transform of e^{-ax} is (A) $\frac{s}{s^2+a^2}$ (B) $\frac{s}{s^2-a^2}$ (C) $\frac{a}{s^2+a^2}$ (D) None	**C**
25)	The Fourier cosine transform $f(x) = e^{-x^2}$ is (A) $\frac{\sqrt{\pi}}{2}e^{\frac{s^2}{4}}$ (B) $\frac{\sqrt{\pi}}{2}e^{-\frac{s^2}{4}}$ (C) $e^{-\frac{s^2}{4}}$ (D) None	**B**
26)	Fourier sine transform of $\frac{1}{1+x^2}$ is (A) $\frac{\pi}{2}e^{-s}$ (B) $\frac{\pi}{2}e^{s}$ (C) $\frac{\pi}{2}$ (D) None	**A**
27)	The Fourier transform $F(\lambda)$ of $f(x) = \begin{cases} 1, & x > 0 \\ 0, & x < 0 \end{cases}$ is (A) $i\lambda$ (B) $\frac{1}{i\lambda}$ (C) $\frac{1}{\lambda}$ (D) λ	**B**

28)	Fourier cosine transform $f(x) = 2e^{-5x} + 5e^{-2x}$ is (A) $\frac{10}{s^2+25} + \frac{10}{s^2+4}$ (B) $\frac{10}{s^2-25} - \frac{10}{s^2-4}$ (C) $\frac{10}{s^2+25} - \frac{10}{s^2+4}$ (D) None	**A**
29)	The Fourier sine transform of $\frac{e^{-ax}}{x}$ is (A) $\tan^{-1}(s)$ (B) $\tan^{-1}\left(\frac{a}{s}\right)$ (C) $\tan^{-1}\left(\frac{s}{a}\right)$ (D) None	**C**
30)	The value of integral $I = \int_0^\infty \frac{t^2}{(t^2+1)^2} dt$ by Parseval's identity (A) $\frac{\pi}{2}$ (B) $\frac{\pi}{3}$ (C) $\frac{\pi}{4}$ (D) None	**C**
31)	The value of integral $I = \int_0^\infty \frac{1}{(t^2+1)^2} dt$ by Parseval's identity (a) $\frac{\pi}{2}$ (b) $\frac{\pi}{3}$ (c) $\frac{\pi}{4}$ (d) None	**C**
32)	For the Fourier sine transform $f(x) = e^{-mx}, m > 0, x > 0$ is $F_s(\lambda) = \frac{\lambda}{\lambda^2+m^2}$ then its inverse Fourier sine transform is (A) $\frac{1}{\pi}\int_0^\infty \frac{\lambda}{\lambda^2+m^2} \sin \lambda x \, d\lambda$ (B) $\frac{2}{\pi}\int_0^\infty \frac{\lambda}{\lambda^2+m^2} \sin \lambda x \, dx$ (C) $\int_0^\infty \frac{\lambda}{\lambda^2+m^2} \sin \lambda x \, d\lambda$ (D) $\frac{2}{\pi}\int_0^\infty \frac{\lambda}{\lambda^2+m^2} \sin \lambda x \, d\lambda$	**D**
33)	If $f(t)$ is even function then its Fourier transform $F(s)$ is __________ (A) real and odd (B) real and even (C) Imaginary and even (D) Imaginary and odd	**B**
34)	If $f(t)$ is odd function then its Fourier transform $F(s)$ is __________ (A) real and odd (B) real and even (C) Imaginary and even (D) Imaginary and odd	**D**
35)	Finite Fourier cosine transform of $f(x)$ is given by $F_c[f(n)] =$ ______ (A) $\int_0^L f(x) cos \frac{n\pi x}{L} dx$ (B) $\int_{-L}^L f(x) cos \frac{n\pi x}{L} dx$ (C) $\frac{1}{\pi}\int_0^L f(x) cos \frac{n\pi x}{L} dx$ (D) None	**A**
36)	Fourier cosine integral is defined as $f(x) =$ ___________ (A) $\frac{1}{\pi}\int_0^\infty \int_0^\infty f(u) cos\lambda u \, cos\lambda x \, du d\lambda$ (B) $\frac{2}{\pi}\int_{-\infty}^\infty \int_{-\infty}^\infty f(u) cos\lambda u \, cos\lambda x \, du d\lambda$ (C) $\frac{1}{\pi}\int_{-\infty}^\infty \int_{-\infty}^\infty f(u) cos\lambda u \, cos\lambda x \, du d\lambda$ (D) $\frac{2}{\pi}\int_0^\infty \int_0^\infty f(u) cos\lambda u \, cos\lambda x \, du d\lambda$	**D**

37)	The Fourier sine transform of $\frac{e^{-ax}}{x}$ is (A) $\tan^{-1}(s)$ (B) $\tan^{-1}\left(\frac{a}{s}\right)$ (C) $\tan^{-1}\left(\frac{s}{a}\right)$ (D) None	**C**
38)	The Fourier transform $F(\lambda)$ of $f(x) = \begin{cases} e^{-x}, & x > 0 \\ 0, & x < 0 \end{cases}$ is (A) $\frac{1-\lambda}{1+\lambda^2}$ (B) $\frac{1-i\lambda}{1+\lambda^2}$ (C) $\frac{1-i\lambda}{1-\lambda^2}$ (D) $\frac{1}{1+\lambda^2}$	**B**
39)	Find the Fourier cosine transform $\frac{1}{1+x^2}$ is (A) $\frac{\pi}{2}e^{-s}$ (B) $\frac{\pi}{2}e^{s}$ (C) $\frac{\pi}{2}$ (D) None	**A**
40)	The Fourier cosine transform $f(x) = e^{-x^2}$ is (A) $\frac{\sqrt{\pi}}{2}e^{\frac{s^2}{4}}$ (B) $\frac{\sqrt{\pi}}{2}e^{-\frac{s^2}{4}}$ (C) $e^{-\frac{s^2}{4}}$ (D) None	**B**
41)	The Fourier transform $F(\lambda)$ of $f(x) = e^{-\|x\|}$ is given by (A) $\frac{1-\lambda}{1+\lambda^2}$ (B) $\frac{1}{1+\lambda^2}$ (C) $\frac{1}{1-\lambda^2}$ (D) $\frac{2}{1+\lambda^2}$	**D**
42)	The Fourier transform $F(\lambda)$ of $f(x) = \begin{cases} x & , x > 0 \\ 0 & , x < 0 \end{cases}$ is (A) 0 (B) $\frac{1}{\lambda^2}$ (C) λ^2 (D) $-\frac{1}{\lambda^2}$	**D**
43)	If $f(x) = \begin{cases} 2 & , \|x\| < 1 \\ 0 & , \|x\| > 1 \end{cases}$ then Fourier transform $F(\lambda)$ of $f(x)$ is given by (A) $\frac{4\cos\lambda}{\lambda^2}$ (B) $\frac{4sin\lambda}{\lambda}$ (C) $\frac{2\sin 2\lambda}{\lambda}$ (D) $\frac{sin\lambda}{\lambda}$	**B**
44)	The Fourier sine transform of the function x is (A) 0 (B) $\frac{s^2}{3}$ (c) $\frac{s}{2}$ (D) None	**A**
45)	The kernel of Fourier transform is (A) $e^{\lambda t}$ (B) $e^{-\lambda t}$ (C) $e^{-i\lambda t}$ (D) None	**C**
46)	Which of the following statement correct (i) Fourier transform is linear (ii) Fourier transform is not linear (A) Only (ii) (B) only (i) (C) Both (D) None	**B**
47)	Which of the following statement correct (i) $F_s\{xf(x)\} = \frac{d}{ds}F_c(s)$ (ii) $F_c\{xf(x)\} = \frac{d}{ds}F_s(s)$ (A) Only (ii) (B) only (i) (C) Both (D) None	**A**

48)	If F(s) is Fourier transform of f(x) then which of the following true. (A) $F\{xf(x)\} = -\frac{d}{ds}F(s)$ (B) $F\{xf(x)\} = i\frac{d}{ds}F(s)$ (C) $F\{xf(x)\} = \frac{d}{ds}F(s)$ (D) $F\{xf(x)\} = -i\frac{d}{ds}F(s)$	**D**
49)	1. If $f(x) = \begin{cases} 1 & \lvert x\rvert < 1 \\ 0 & \lvert x\rvert > 1 \end{cases}$ then Fourier transform of f(x) is (A) $\frac{2\cos s}{s}$ (B) $\frac{\sin s}{s}$ (C) $\frac{2\sin s}{s}$ (D) $\frac{\cos s}{s}$	**C**
50)	If $f(x) = \begin{cases} 1 & \lvert x\rvert < 1 \\ 0 & \lvert x\rvert > 1 \end{cases}$ then Fourier integral of f(x) is (A) $\frac{2}{\pi}\int_0^\infty \frac{\sin\lambda\cos\lambda x}{\lambda}d\lambda$ (B) $-\frac{2}{\pi}\int_0^\infty \frac{\sin\lambda\cos\lambda x}{\lambda}d\lambda$ (C) $\int_0^\infty \frac{\sin\lambda\cos\lambda x}{\lambda}d\lambda$ (D) None	**A**
51)	Z-transform of a sequence $\{f(k)\}$ is given by (A) $\sum_{k=-\infty}^{\infty} f(k)z^{-k}$ (B) $\sum_{k=0}^{\infty} f(k)z^{-k}$ (C) $\sum_{k=-\infty}^{\infty} f(k)z^{k}$ (D) $\sum_{k=0}^{\infty} f(k)z^{k}$	**A**
52)	Z-transform of causal sequence $\{f(k)\}, k \geq 0$ is given by (A) $\sum_{k=0}^{\infty} f(k)z^{k}$ (B) $\sum_{k=0}^{\infty} f(k)z^{-k}$ (C) $\sum_{k=0}^{\infty} f(-k)z^{-k}$ (D) $\sum_{k=0}^{\infty} f(-k)z^{k}$	**B**
53)	For $f(k) = \{4, 2, 0, \underset{\uparrow}{\underbrace{-2}}, -4, -6\}$, $Z\{f(k)\} =$ ______________ (A) $4 + 2z^{-1} - 2z^{-2} - 4z^{-3} - 6z^{-4}$ (B) $4 + 2z^{-1} - 2z^{-2} - 4z^{-3} - 6z^{-4}$ (C) $4z^{-3} + 2z^{-2} - 2 - 4z - 6z^2$ (D) $4z^3 + 2z^2 - 2 - 4z^{-1} - 6z^{-2}$	**D**
54)	For $f(k) = \{2, 3, 0, -1\}$, $Z\{f(k)\} =$ ______________ (A) $2 + 3z - z^3$ (B) $2z^{-2} + 3z^{-1} - z$ (C) $2 + 3z^{-1} - z^{-3}$ (D) None	**C**
55)	The Z-transform of a sequence $f(k) = \{1,1,-1, \underset{\uparrow}{\underbrace{-1}}\}$ is $F(z)$, then value of $F\left(\frac{1}{2}\right)$ is (A) 9 (B) −1.125 (C) 1.875 (D) 15	**B**
56)	If $Z\{f(k)\} = F(z)$ then $Z\{a^k f(k)\} =$ ________________ (A) $F\left(\frac{a}{z}\right)$ (B) $F\left(\frac{z}{a}\right)$ (C) $F(az)$ (D) None	**B**

57)	If $Z\{f(k)\} = F(z)$ then $Z\{kf(k)\} =$ ________________ (A) $-z\frac{d}{dz}F(z)$ (B) $z\frac{d}{dz}F(z)$ (C) $\frac{d}{dz}F(z)$ (D) None	**A**
58)	If $Z\{f(k)\} = F(z)$, then $Z\{k^n f(k)\}$, is equal to (A) $\left(-z\frac{d}{dz}\right)^n F(z)$ (B) $\left(z\frac{d}{dz}\right)^n F(z)$ (C) $(-z)^n\frac{d}{dz} F(z)$ (D) $\left(z\frac{d}{dz}\right)^{n-1} F(z)$	**A**
59)	If $U(k) = \begin{cases}0, k < 0\\1, k \geq 0\end{cases}$, then Z-Transform of $U(k)$ is given by (A) $-\frac{z}{z-1}$, $\|z\| > 1$ (B) $\frac{1}{z-1}$, $\|z\| > 1$ (C) $\frac{z}{z-1}$, $\|z\| > 1$ (D) $\frac{2}{z-1}$, $\|z\| > 1$	**C**
60)	If $\delta(k) = \begin{cases}1, & if\ k = 0\\0, & if\ k \neq 0\end{cases}$ then $Z\{\delta(k)\} =$ ___________ (A) $\frac{1}{z}$ (B) $\frac{1}{z-1}$ (C) z (D) 1	**D**
61)	$Z\{a^k\}$ for $k \geq 0$ is equal to ___________ (A) $\frac{z}{z-a}$ (B) $\frac{a}{z-a}$ (C) $\frac{1}{z-a}$ (D) $\frac{z}{a-z}$	**A**
62)	The Z-transform of function a^{nT} is (A) $\frac{z}{z-a^T}$ (B) $\frac{z}{z+a^T}$ (C) $\frac{z}{z-a^{-T}}$ (D) $\frac{z}{z+a^{-T}}$	**A**
63)	If $f(k) = a^k, k < 0$,then Z-Transform of $\{a^k\}$ is given by (A) $\frac{z}{a-z}$, $\|z\| < \|a\|$ (B) $\frac{z}{z-a}$, $\|z\| < \|a\|$ (C) $\frac{1}{a-z}$, $\|z\| > \|a\|$ (D) $\frac{z}{a-z}$, $\|z\| > \|a\|$	**A**
64)	Z-Transform of $\{f(k)\} = \frac{a^k}{k!}$, $k \geq 0$ is given by (A) $e^{z/a}$ (B) e^{az} (C) ze^a (D) $e^{a/z}$	**D**
65)	$Z\{\sin(\alpha k)\} =$ __________ (A) $\frac{zcos\alpha}{z^2-2zcos\alpha+1}$ (B) $\frac{zcos\alpha}{z^2-2zsin\alpha+1}$ (C) $\frac{zsin\alpha}{z^2-2zcos\alpha+1}$ (D) None	**C**

66)	$Z\{\cos(\alpha k)\} =$ ___________ (A) $\frac{z^2-zcos\alpha}{z^2-2zcos\alpha+1}$ (B) $\frac{zcos\alpha}{z^2-2zsin\alpha+1}$ (C) $\frac{z^2-zsin\alpha}{z^2-2zcos\alpha+1}$ (D) None	**A**
67)	$\{\sinh(\alpha k)\} =$ ___________ (A) $\frac{zcosh\alpha}{z^2-2zcos\alpha+1}$ (B) $\frac{zcosh\alpha}{z^2-2zsin\alpha+1}$ (C) $\frac{zsinh\alpha}{z^2-2zcosh\alpha+1}$ (D) None	**C**
68)	$Z\{\cosh(\alpha k)\} =$ ___________ (A) $\frac{z^2-zcosh\alpha}{z^2-2zcos\alpha+1}$ (B) $\frac{zcosh\alpha}{z^2-2zsinh\alpha+1}$ (C) $\frac{z^2-zsinh\alpha}{z^2-2zcosh\alpha+1}$ (D) None	**A**
69)	$Z\{k\} =$ ___________ (A) $\frac{z}{z-1}$ (B) $\frac{z}{(z-1)^2}$ (C) $\frac{1}{z-1}$ (D) $\frac{1}{(z-1)^2}$	**B**
70)	If $f(k) = sin\frac{\pi}{2}k$, then $Z\{f(k)\} =$ ___________ (A) $\frac{z}{z^2-1}, \|z\| < 1$ (B) $\frac{z^2}{z^2+1}, \|z\| > 1$ (C) $\frac{z}{z^2+1}, \|z\| > 1$ (D) $\frac{z}{z^2-1}, \|z\| > 1$	**C**
71)	If $Z\{f(k)\} = F(z)$ then $Z\{e^{-ak}f(k)\} =$ _________________ (A) $F(e^{az})$ (B) $F\left(\frac{z}{e}\right)$ (C) $F(e^{a}z)$ (D) None	**C**
72)	What is the set of all values of z for which $f(z)$ attains a finite value? (A) Feasible region (B) Region of convergence (C) Region of divergence (D) None of these	**B**
73)	The region of convergence of the Z-transform of a unit step function is _______ (A) $\|z\| > 1$ (B) (Real part of Z) > 0 (C) $\|z\| < 1$ (D) (Real part of Z) < 0	**A**

74)	The region of convergence of the Z-transform of finite duration anti-causal Sequence is (A) $z = 0$ (B) $z = \infty$ (C) Entire z-plane except $z = 0$ (D) Entire z-plane except $z = \infty$	**D**
75)	The region of convergence of Z-transform of $f_1(k) + f_2(k)$ is $a < \|z\| < b$ then ROC of $f_1(k) - f_2(k)$ is (A) $a < \|z\| < 1/b$ (B) $1/a < \|z\| < 1/b$ (C) $a < \|z\| < b$ (D) $1/a < \|z\| < b$	**C**
76)	The region of convergence of Z-transform $(k) = \left(\frac{1}{3}\right)^k u(k) - \left(\frac{1}{2}\right)^k u(-k-1)$ is (A) $\frac{1}{3} < \|z\| < 1/2$ (B) $\|z\| < 2$ (C) $\|z\| < 3$ (D) $2 < \|z\| < 3$	**A**
77)	The region of convergence of Z-transform $f(k) = 4^k + 5^k$, k≥ 0 is (A) $5 < \|z\|$ (B) $\frac{1}{3} < \|z\| < \frac{1}{2}$ (C) $\frac{1}{2} < \|z\| < 3$ (D) $\frac{1}{3} < \|z\| < 3$	**A**
78)	For causal sequence any sequence whose terms corresponding to _______ are all zero. (A) $k \geq 0$ (B) $k \leq 0$ (C) $k > 0$ (D) $k < 0$	**D**
79)	If $\{x(k)\} = \left\{\frac{1}{1^k}\right\} * \left\{\frac{1}{2^k}\right\}$ $then\ Z\{x(k)\}$ is given by (A) $\left(\frac{z}{z-1}\right)\left(\frac{2z}{2z-1}\right),\ \|z\| > \|a\|$ (B) $\left(\frac{z}{z-1}\right) + \left(\frac{2z}{2z-1}\right),\ \|z\| > \|a\|$ (C) $\left(\frac{z}{z-1}\right) - \left(\frac{2z}{2z-1}\right),\ \|z\| > \|a\|$ (D) $\left(\frac{z}{z-2}\right)\left(\frac{2z}{2z-1}\right),\ \|z\| > \|a\|$	**A**
80)	If $Z\{f(k)\} = F(z)$ then $Z\{f(k-1)\} =$ _______________ (A) $zF(z)$ (B) $z^{-1}F(z),\ f(-1) = 0$ (C) $zF(z) - zf(0)$ (D) None	**B**
81)	The region of convergence of the Z-transform of function $3^k, k < 0$ is _________ (A) $\|z\| > 3$ (B) $\|z\| \geq 3$ (C) $\|z\| < 3$ (D) $\|z\| \leq 3$	**C**

82)	If $\|z\| < \|a\|$,inverse of Z-transform of $\frac{1}{z-a}$ is given by (A) $a^{k-1}, k \geq 0$ (B)$-a^{k-1}, k \leq 0$ (C) $a^{k-1}, k \geq 1$ (D) $-a^k, k \geq 0$	**B**
83)	For $\|z\| > 5$ $Z^{-1}\left[\frac{z}{z-5}\right] =$ ___________ (A) 5^k (B) -5^k (C) 5^{-k} (D) None	**A**
84)	If $\|z\| < \|a\|$,inverse of Z-transform of $\frac{z}{z-a}$ is given by (A) $a^k, k \geq 0$ (B) $a^k, k < 0$ (C) $a^{k-1}, k \geq 0$ (D) $-a^k, k < 0$	**D**
85)	For $\|z\| > 1$ $Z^{-1}\left[\frac{z^2}{z^2+1}\right] =$ ___________ (A) $sink\frac{\pi}{2}$ (B) $cosk\frac{\pi}{2}$ (C) $sink\pi$ (D) $cosk\pi$	**B**
86)	For finding inverse Z-transform by inverse integral method of $F(z) = \frac{1}{(z-2)(z-3)}$ The residue of $z^{k-1}F(z)$ at the pole $z = 2$ is ______________ (A) -2^{k-1} (B) -1 (C) -2^k (D) 2^{k-1}	**A**
87)	For finding inverse Z-transform by inverse integral method of $F(z) = \frac{10}{(z-1)(z-2)}$ The residue of $z^{k-1}F(z)$ at the pole $z = 1$ is ______________ (A) 10 (B) 10^k (C) 10^{k-1} (D) -10	**D**
88)	For $\|z\| < 2$, $Z^{-1}\left[\frac{1}{(z-3)(z-2)}\right] =$ ________ (A) $2^{k-1} + 3^{k-1}, k \leq 0$ (B) $2^{k-1} - 3^{k-1}, k \leq 0$ (C) $-2^{k-1} + 3^{k-1}, k \leq 0$ (D) $-2^{k-1} - 3^{k-1}, k \leq 0$	**B**
89)	For $\|z\| > \|a\|, k > 0$ $Z^{-1}\left[\frac{1}{z-a}\right] =$ ___________ (A) $a^{k-1}U(k-1)$ (B) $-a^{k-1}U(-k)$ (C) $a^kU(k-1)$ (D) $-a^kU(-k)$	**A**
90)	Relationship between Z-transform with Fourier transform is $f(n) =$ ________ (A) $\int_{-\pi}^{\pi} F(e^{i\theta})e^{in\theta}d\theta$ (B) $\frac{1}{2\pi}\int_{-\pi}^{\pi} F(e^{i\theta})e^{in\theta}d\theta$ (C) $\frac{1}{2\pi}\int_{-\pi}^{\pi} F(e^{in\theta})d\theta$ (D) None	**B**

91)	By inverse integral Method $Z^{-1}[F(z)] = f(k) =$ _____________ (A) $\frac{1}{2\pi i}\oint F(z)z^{k}dz$ (B) $\oint F(z)z^{k-1}dz$ (C) $\frac{1}{2\pi i}\oint F(z)z^{k-1}dz$ (D) None	**C**
92)	Binomial expansion of $\frac{1}{1-y}$, $\|y\| < 1$ is _______________ (A) $1 - y + y^2 - y^3 + \cdots \ldots\ldots$ (B) $-y - y^2 - y^3 - \cdots \ldots\ldots$ (C) $1 + y + y^2 + y^3 + \cdots \ldots\ldots$ (D) None	**C**
93)	If $Z\{f(k)\} = F(Z)$ and $Z\{g(k)\} = G(z)$ then convolution $\{f(k) * g(k)\} =$ _______ (A) $\sum_{m=-\infty}^{\infty} f(m)g(k-m)$ (B) $\sum_{m=-\infty}^{\infty} f(m)g(m)$ (C) $\sum_{m=0}^{\infty} f(m)g(k-m)$ (D) $\sum_{m=0}^{\infty} f(k-m)g(m)$	**A**
94)	If $Z\{f(k)\} = F(z)$ then $Z\{f(k+n)\} =$ ______________ (A) $z^{-n}F(z)$ (B) $z^{n}F(z)$ (C) $zF(z)$ (D) None	**B**
95)	If $Z\{f(k)\} = F(z)$ and $Z\{g(k)\} = G(z)$ and a, b are constants, then $Z^{-1}[aF(z) + bG(z)] =$ ____________ (A) $aZ^{-1}[F(z)] + bZ^{-1}[G(z)\}$ (B) $Z^{-1}[F(az)] + Z^{-1}[G(bz)\}$ (C) $Z^{-1}\left[F\left(\frac{z}{a}\right)\right] + Z^{-1}[G\left(\frac{z}{b}\right)\}$ (D) None	**A**
96)	The region of convergence of the Z-transform of function $f(k)\begin{cases} 3^k, & k < 0 \\ 2^k. & k \geq 0 \end{cases}$ is (A) $2 > \|z\| > 3$ (B) $\|z\| \geq 3$ (C) $\|z\| < 2$ (D) $2 < \|z\| < 3$	**D**
97)	The function $F(z) = \frac{z}{(z-1)(z-2)^2}$ has a simple pole at point __________ (A) $z = 0$ (B) $z = 1$ (C) $z = 2$ (D) $z = \infty$	**B**
98)	The function $F(z) = \frac{z}{z^2+1}$ has a poles ____________ (A) $z = 1, -1$ (B) $z = i, i$ (C) $z = i, -i$ (D) None	**C**
99)	Given the Z-transform $F(z) = \frac{z(8z-7)}{4z^2-7z+3}$ the limit $F(\infty)$ is (A) 1 (B) 2 (C) ∞ D) 0	B

100)	The Z-transform of a causal sequence is given by $F(z) = \frac{2-1.5z^{-1}}{1-1.5z^{-1}+0.5z^{-2}}$, then the value of $F(0)$ is (A) -1.5 (B) 2 (C) 1.5 (D) 0	**D**

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