QN	T.Y.B.Sc.(Mathematics)	ANS
	Subject: MTH-505: Integral Transforms	
	Question Bank	
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 $\frac{2}{\pi}\int_0^\infty \frac{\sin\pi\lambda}{1-\lambda^2}\sin\lambda x\,d\lambda = \begin{cases} \sin x, & |x| \le \pi \\ 0, & |x| > \pi \end{cases}$, $F_s(\lambda)$ 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(λ) 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

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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) $\frac{1-i}{1+\lambda^2}$	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) $\frac{\sin}{1+\lambda^2}$ (C) $\pi\frac{1-i\lambda}{1+\lambda^2}$ (D) $\frac{\cos}{1+\lambda^2}$	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 $\dfrac{e^{-ax}}{x}$ is (A) $\tan^{-1}(s)$ (B) $\tan^{-1}\left(\dfrac{a}{s}\right)$ (C) $\tan^{-1}\left(\dfrac{s}{a}\right)$ (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) $\dfrac{1-\lambda}{1+\lambda^2}$ (B) $\dfrac{1-i\lambda}{1+\lambda^2}$ (C) $\dfrac{1-i\lambda}{1-\lambda^2}$ (D) $\dfrac{1}{1+\lambda^2}$	B
39)	Find the Fourier cosine transform $\dfrac{1}{1+x^2}$ is (A) $\dfrac{\pi}{2}e^{-s}$ (B) $\dfrac{\pi}{2}e^{s}$ (C) $\dfrac{\pi}{2}$ (D) None	A
40)	The Fourier cosine transform $f(x) = e^{-x^2}$ is (A) $\dfrac{\sqrt{\pi}}{2}e^{\frac{s^2}{4}}$ (B) $\dfrac{\sqrt{\pi}}{2}e^{-\frac{s^2}{4}}$ (C) $e^{-\frac{s^2}{4}}$ (D) None	B
41)	The Fourier transform $F(\lambda)$ of $f(x) = e^{-|x|}$ is given by (A) $\dfrac{1-\lambda}{1+\lambda^2}$ (B) $\dfrac{1}{1+\lambda^2}$ (C) $\dfrac{1}{1-\lambda^2}$ (D) $\dfrac{2}{1+\lambda^2}$	D
42)	The Fourier transform $F(\lambda)$ of $f(x) = \begin{cases} x & , & x > 0 \\ 0 & , & x < 0 \end{cases}$ is (A) 0 (B) $\dfrac{1}{\lambda^2}$ (C) λ^2 (D) $-\dfrac{1}{\lambda^2}$	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) $\dfrac{4\cos\lambda}{\lambda^2}$ (B) $\dfrac{4\sin\lambda}{\lambda}$ (C) $\dfrac{2\sin}{\lambda}$ (D) $\dfrac{\sin\lambda}{\lambda}$	B
44)	The Fourier sine transform of the function x is (A) 0 (B) $\dfrac{s^2}{3}$ (c) $\dfrac{s}{2}$ (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) $\quad F_s\{xf(x)\} = \dfrac{d}{ds}F_c(s)$ (ii) $\quad F_c\{xf(x)\} = \dfrac{d}{ds}F_s(s)$ (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.	D

48) If F(s) is Fourier transform of f(x) then which of the following true.　**D**

(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) $F\{xf(x)\} = -i\frac{d}{ds}F(s)$

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49) 1. If $f(x) = \begin{cases} 1 & |x| < 1 \\ 0 & |x| > 1 \end{cases}$ then Fourier transform of f(x) is　**C**

(A) $\frac{2\cos s}{s}$ (B) $\frac{\sin s}{s}$ (C) $\frac{2\sin s}{s}$ (D) $\frac{\cos s}{s}$

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50) If $f(x) = \begin{cases} 1 & |x| < 1 \\ 0 & |x| > 1 \end{cases}$ then Fourier integral of f(x) is　**A**

(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

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51) Z-transform of a sequence $\{f(k)\}$ is given by　**A**

(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) $\sum_{k=0}^{\infty} f(k)z^{k}$

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52) Z-transform of causal sequence $\{f(k)\}, k \geq 0$ is given by　**B**

(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) $\sum_{k=0}^{\infty} f(-k)z^{k}$

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53) For $f(k) = \{4, 2, 0, \underset{\uparrow}{-2}, -4, -6\}$, $Z\{f(k)\} = $ _____　**D**

(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) $4z^{3} + 2z^{2} - 2 - 4z^{-1} - 6z^{-2}$

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54) For $f(k) = \{2, 3, 0, -1\}$, $Z\{f(k)\} = $ _____　**C**

(A) $2 + 3z - z^{3}$ (B) $2z^{-2} + 3z^{-1} - z$

(C) $2 + 3z^{-1} - z^{-3}$ (D) None

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55) The Z-transform of a sequence $f(k) = \{1, 1, -1, \underset{\uparrow}{-1}\}$ is $F(z)$, then value of $F\left(\frac{1}{2}\right)$ is　**B**

(A) 9 (B) −1.125 (C) 1.875 (D) 15

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56) If $Z\{f(k)\} = F(z)$ then $Z\{a^{k}f(k)\} = $ _____　**B**

(A) $F\left(\frac{a}{z}\right)$ (B) $F\left(\frac{z}{a}\right)$

(C) $F(az)$ (D) None

57)	If $Z\{f(k)\} = F(z)$ then $Z\{kf(k)\} = $ _____	A

(A) $-z\frac{d}{dz}F(z)$ (B) $z\frac{d}{dz}F(z)$

(C) $\frac{d}{dz}F(z)$ (D) None

58)	If $Z\{f(k)\} = F(z)$, then $Z\{k^n f(k)\}$, is equal to	A

(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) $\left(z\frac{d}{dz}\right)^{n-1} F(z)$

59)	If $U(k) = \begin{cases} 0, & k < 0 \\ 1, & k \geq 0 \end{cases}$, then Z-Transform of $U(k)$ is given by	C

(A) $-\frac{z}{z-1}$, $|z| > 1$ (B) $\frac{1}{z-1}$, $|z| > 1$

(C) $\frac{z}{z-1}$, $|z| > 1$ (D) $\frac{2}{z-1}$, $|z| > 1$

60)	If $\delta(k) = \begin{cases} 1, & if\ k = 0 \\ 0, & if\ k \neq 0 \end{cases}$ then $Z\{\delta(k)\} = $ _____	D

(A) $\frac{1}{z}$ (B) $\frac{1}{z-1}$ (C) z (D) 1

61)	$Z\{a^k\}$ for $k \geq 0$ is equal to _____	A

(A) $\frac{z}{z-a}$ (B) $\frac{a}{z-a}$ (C) $\frac{1}{z-a}$ (D) $\frac{z}{a-z}$

62)	The Z-transform of function a^{nT} is	A

(A) $\frac{z}{z-a^T}$ (B) $\frac{z}{z+a^T}$ (C) $\frac{z}{z-a^{-T}}$ (D) $\frac{z}{z+a^{-T}}$

63)	If $f(k) = a^k, k < 0$, then Z-Transform of $\{a^k\}$ is given by	A

(A) $\frac{z}{a-z}$, $|z| < |a|$ (B) $\frac{z}{z-a}$, $|z| < |a|$

(C) $\frac{1}{a-z}$, $|z| > |a|$ (D) $\frac{z}{a-z}$, $|z| > |a|$

64)	Z-Transform of $\{f(k)\} = \frac{a^k}{k!}$, $k \geq 0$ is given by	D

(A) $e^{z/a}$ (B) e^{az} (C) ze^a (D) $e^{a/z}$

65)	$Z\{\sin(\alpha k)\} = $ _____	C

(A) $\frac{z\cos\alpha}{z^2 - 2z\cos\alpha + 1}$ (B) $\frac{z\cos\alpha}{z^2 - 2z\sin\alpha + 1}$

(C) $\frac{z\sin\alpha}{z^2 - 2z\cos\alpha + 1}$ (D) None

66)	$Z\{\cos(\alpha k)\} = $ _____ (A) $\dfrac{z^2-zcos}{z^2-2zcos\alpha+1}$ (B) $\dfrac{zcos\alpha}{z^2-2zsin\alpha+1}$ (C) $\dfrac{z^2-zs}{z^2-2zcos\alpha+1}$ (D) None	A
67)	$\{\sinh(\alpha k)\} = $ _____ (A) $\dfrac{zcosh\alpha}{z^2-2zcos\alpha+1}$ (B) $\dfrac{zcosh}{z^2-2zsin\alpha+1}$ (C) $\dfrac{zsinh\alpha}{z^2-2zcosh\alpha+1}$ (D) None	C
68)	$Z\{\cosh(\alpha k)\} = $ _____ (A) $\dfrac{z^2-zcosh\alpha}{z^2-2zcos\alpha+1}$ (B) $\dfrac{zcosh}{z^2-2zsinh\alpha+1}$ (C) $\dfrac{z^2-zsinh\alpha}{z^2-2zcosh\alpha+1}$ (D) None	A
69)	$Z\{k\} = $ _____ (A) $\dfrac{z}{z-1}$ (B) $\dfrac{z}{(z-1)^2}$ (C) $\dfrac{1}{z-1}$ (D) $\dfrac{1}{(z-1)^2}$	B
70)	If $f(k) = \sin\dfrac{\pi}{2}k$, then $Z\{f(k)\} = $ _____ (A) $\dfrac{z}{z^2-1}, |z| < 1$ (B) $\dfrac{z^2}{z^2+1}, |z| > 1$ (C) $\dfrac{z}{z^2+1}, |z| > 1$ (D) $\dfrac{z}{z^2-1}, |z| > 1$	C
71)	If $Z\{f(k)\} = F(z)$ then $Z\{e^{-ak}f(k)\} = $ _____ (A) $F(e^{az})$ (B) $F\left(\dfrac{z}{e}\right)$ (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 $f(k) = 4^k + 5^k$, $k \geq 0$ 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) $a^k U(k-1)$ (D) $-a^k U(-k)$
		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) = $ _____	C
	(A) $\frac{1}{2\pi} \oint F(z)z^k dz$ (B) $\oint F(z)z^{k-1} dz$	
	(C) $\frac{1}{2\pi i} \oint F(z)z^{k-1} dz$ (D) None	
92)	Binomial expansion of $\frac{1}{1-y}$, $|y| < 1$ is _____	C
	(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	
93)	If $Z\{f(k)\} = F(Z)$ and $Z\{g(k)\} = G(z)$ then convolution $\{f(k) * g(k)\} = $ _____	A
	(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) $\sum_{m=0}^{\infty} f(k-m)g(m)$	
94)	If $Z\{f(k)\} = F(z)$ then $Z\{f(k+n)\} = $ _____	B
	(A) $z^{-n}F(z)$ (B) $z^n F(z)$ (C) $zF(z)$ (D) None	
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
	(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	
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	D
	(A) $2 > |z| > 3$ (B) $|z| \geq 3$ (C) $|z| < 2$ (D) $2 < |z| < 3$	
97)	The function $F(z) = \frac{z}{(z-1)(z-2)^2}$ has a simple pole at point _____	B
	(A) $z = 0$ (B) $z = 1$ (C) $z = 2$ (D) $z = \infty$	
98)	The function $F(z) = \frac{z}{z^2+1}$ has a poles _____	C
	(A) $z = 1, -1$ (B) $z = i, i$ (C) $z = i, -i$ (D) None	
99)	Given the Z-transform $F(z) = \frac{z(8z-7)}{4z^2-7z+3}$ the limit $F(\infty)$ is	B
	(A) 1 (B) 2 (C) ∞ D) 0	

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	D
	(A) -1.5 \qquad (B) 2 \qquad (C) 1.5 \qquad (D) 0	

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