Sample Question Paper

Program: SE Computer Engineering

Curriculum Scheme: Rev-2012(CBGS)

Examination: Second year semester III

Course Code: CSC301 **Course Name:** Applied Mathematics-III

Time: 1 Hour Max. Marks: 50

Q1.	L[$t^{\frac{5}{2}}$] is
Option A:	$\frac{3}{4s^{\frac{3}{2}}}$
Option B:	$\frac{3\sqrt{\pi}}{4s^{\frac{5}{2}}}$
Option C:	$\frac{5\sqrt{\pi}}{4s^{\frac{5}{2}}}$
Option D:	$\frac{15\sqrt{\pi}}{8s^{\frac{7}{2}}}$
Q2.	L [f(t)] = $\frac{1}{s\sqrt{s+1}}$ then L [$e^{-2t}f(t)$] is
Option A:	$\frac{1}{(s+2)\sqrt{s+3}}$
Option B:	$\frac{1}{(s+2)\sqrt{s+2}}$
Option C:	$\frac{1}{(s-2)\sqrt{s-1}}$
Option D:	$\frac{1}{(s-1)\sqrt{s}}$
Q3.	L [t sint] is
Option A:	$\frac{2}{(s^2+1^2)^2}$
Option B:	$\frac{2s}{(s^2+1^2)^2}$
Option C:	$\frac{-2}{(s^2+1^2)^2}$
Option D:	$\frac{2s^2}{(s^2+1^2)^2}$

Q4.	L[$\int_0^t cosh4x\ dx$] is
Option A:	$\frac{1}{(s^2+16)}$
Option B:	$\frac{1}{(s^2-16)}$
Option C:	$\frac{1}{s}\ \frac{1}{(s^2+16)}$
Option D:	$\frac{1}{s}\ \frac{1}{(s^2-16)}$
Q5.	L [$\frac{\cos t}{t}$]
Option A:	exists
Option B:	is zero
Option C:	doesn't exist
Option D:	is 1
Q6.	Find $L^{-1}\left[\frac{s-3}{(s-3)^2+9}\right]$
Option A:	$e^{3t}cos3t$
Option B:	$e^{-3t}sin3t$
Option C:	$e^{3t}sin3t$
Option D:	$e^{-3t}cos3t$
Q7.	Find $L^{-1}\left[\frac{s+2}{(s+2)^2-16}\right]$
Option A:	$e^{2t}cosh4t$
Option B:	$e^{-2t}sinh4t$
Option C:	$e^{-2t}cosh4t$
Option D:	$e^{2t}sinh4t$
Q8.	Find $L^{-1}\left[\frac{2}{(s-1)^2+4}\right]$
Option A:	$e^{t}sin2t$
Option B:	$e^{t}cos2t$
Option C:	$e^{-t}sin2t$
Option D:	$e^{-t}cos2t$
Q9.	Find $L^{-1}\left[\frac{1}{(s+4)^{3/2}}\right]$

Option A:	$2e^{4t}\sqrt{\frac{\pi}{t}}$
Option B:	$e^{-4t}\sqrt{\frac{\pi}{t}}$
Option C:	$e^{4t}\sqrt{\frac{t}{\pi}}$
Option D:	$2e^{-4t}\sqrt{\frac{t}{\pi}}$
Q10.	Find $L^{-1}\left[\frac{1}{3s-4}\right]$
Option A:	$\frac{4}{3}e^{\frac{4}{3}t}$
Option B:	$\frac{1}{3}e^{\frac{4}{3}t}$
Option C:	$\frac{1}{3}e^{-\frac{4}{3}t}$
Option D:	$\frac{4}{3}e^{-\frac{4}{3}t}$
Q11.	$Z(a^n)$ is
Option A:	$\frac{z}{z-a}$
Option B:	$\log\left(\frac{z}{z-a}\right)$
Option C:	$\frac{a}{a-z}$
Option D:	$\frac{n}{z-a}$
Q12.	The function $f(z)=e^z$ is
Option A:	Analytic
Option B:	Harmonic
Option C:	Not Analytic
Option D:	Not Harmonic
Q13.	The imaginary part of $f(z)=cosz$ is
Option A:	$-sinx\ coshy$
Option B:	$coshx\ cosy$
Option C:	$-sinx\ sinhy$
Option D:	$sinx\ sinhy$

Q14.	The analytic function corresponding to real part $e^{-x} siny$ is
Option A:	$f(z) = e^{z} + c$
Option B:	$f(z) = e^{-z} + c$
Option C:	$f(z) = ie^{z} + c$
Option D:	$f(z) = ie^{-z} + c$
Q15.	The analytic function corresponding to imaginary part $3x^2y - y^3$is
Option A:	$f(z) = z^2 + c$
Option B:	$f(z) = z^3 + c$
Option C:	$f(z) = -z^2 + c$
Option D:	$f(z) = -z^3 + c$
Q16.	At a point x=c of continuity of f(x) the sum of the Fourier series $\frac{a_0}{2} + \sum_{n=1}^{\infty} a_n \cos nx + \sum_{n=1}^{\infty} b_n sinnx$ is
Option A:	f(x)
Option B:	f(c)
Option C:	f(0)
Option D:	$\frac{f(0^-)+f(0^+)}{2}$
Q17.	Which of these is not Dirichlet’s conditions for a function f(x) to be expanded in a Fourier series in the interval (0,2L)
Option A:	f(x) may have discontinuities, finite in number
Option B:	f(x) may have maxima and minima, finite in number
Option C:	f(x) is single valued
Option D:	f(x) is always an even function
Q18.	If f(x) is an odd function, then the Fourier series for f(x) is a
Option A:	Cosine series
Option B:	Sine series
Option C:	Contains both sine series and cosine series
Option D:	neither sine series nor cosine series
Q19.	$The\ fourier\ series\ for\ f(x) = \lvert sinx \rvert$ in $[-\pi, \pi]$
Option A:	Will have sine terms
Option B:	Will have cosine terms
Option C:	Is zero

Option D:	Doesn't exist
Q20.	If f(x) = x^2 in $[-\pi, \pi]$ then what is the value of the first term in the series $\frac{a_0}{2} + \sum_{n=1}^{\infty} a_n \cos nx + \sum_{n=1}^{\infty} b_n sinnx$
Option A:	$\frac{\pi^2}{3}$
Option B:	$\frac{\pi^2}{6}$
Option C:	$\frac{\pi^2}{2}$
Option D:	$\frac{\pi}{3}$
Q21.	If $\overline{F} = x^2 i + xy\, j + y^2 k$ then $div\overline{F}$ is
Option A:	x
Option B:	2x
Option C:	3x
Option D:	4x
Q22.	Find grad(ϕ) if $\phi = 2x^2 + y^2$
Option A:	x i – y j – z k
Option B:	4x i +2 y j
Option C:	x i + y j + z k
Option D:	x i – z k
Q23.	If $div\overline{F} = 0$ then $\overline{F}$ is
Option A:	Solenoidal
Option B:	Irrotational
Option C:	Convergent
Option D:	Constant
Q24.	If $\overline{F} = i - xy\, j + y^2 k$ then $curl\overline{F}$ is
Option A:	(2y - x) i + y j – 2y k
Option B:	x i + y j + z k
Option C:	z i – y k
Option D:	i + 3 j + 2 k

Q25.	A vector $\overline{F}$ is Irrotational if $curl\overline{F}$ is
Option A:	1
Option B:	0
Option C:	2
Option D:	4