SHAH AND ANCHOR KUTCHHI ENGINEERING COLLEGE

Rev2016 (CBCS)

Examination: S.E.(COMPUTER) Semester IV

Course Name: Applied Maths IV

Time: 1 hour

All the Questions are compulsory and carry equal marks .

Q1.	If the eigen values of A are 1,2,3 then the matrix is
Option A:	derogatory
Option B:	Non derogatory
Option C:	Identity matrix
Option D:	Singular
Q2.	If the geometric multiplicity is same as the algebraic multiplicity of each eigen value of the then the matrix A then A is
Option A:	Non diagonalizable
Option B:	Diagonalizable
Option C:	Null matrix
Option D:	Hermitian matrix
Q3.	The value of the integral $\int_c \frac{cosz}{(z+\pi)^3}\, dz$ where c: $\lvert z\rvert = 2$ is
Option A:	1
Option B:	$2\pi i$
Option C:	-1
Option D:	0
Q4.	If f(z)= $\frac{2z+1}{(z+1)(z+2)^2}$ *then* he order of the pole Z= -1 and Z=-2 respectively
Option A:	1 and 2
Option B:	-1 and -2
Option C:	0 and 0
Option D:	2 and 1
Q5.	The optimum solution of the LPP Max Z = $x_1 + 4x_2$ subject to the constraints $2x_1 + x_2 \leq 3$, $3x_1 + 5x_2 \leq 9$ and $x_1, x_2 \geq 0$
Option A:	$(0\ ,{}^{9}/_{5})$
Option B:	(0,0)
Option C:	$(\frac{6}{7}, \frac{9}{7})$
Option D:	$(\frac{3}{2}, 0)$
Q6.	If f(z) = $z^3 + z^2 + \frac{z}{2!} + \frac{1}{3!} + \frac{1}{4!}\frac{1}{z} + \frac{1}{5!}\frac{1}{z^2} + \cdots$ *then residue at* $z = 0$ *is*
Option A:	$\frac{1}{4!}$
Option B:	2!
Option C:	4!

Option D:	5!
Q7.	If the objective function is of the minimization type then the coefficient of the artificial variable in the big M method is
Option A:	0
Option B:	1
Option C:	M
Option D:	-M
Q8.	The dual of the Primal Max Z=$7x_1 + 2x_2$ subject to $4x_1 + 5x_2 \leq 2$ $3x_1 - x_2 \leq 9$ $where\ x_1, x_2 \geq 0$ is
Option A:	Max W = $2w_1 + 9w_2$ subject to $4w_1 + 3w_2 \geq 7$ $5w_1 - w_2 \geq 2$ $where\ w_1, w_2 \geq 0$
Option B:	Min W = $2w_1 + 9w_2$ subject to $4w_1 + 3w_2 \geq 7$ $5w_1 - w_2 \geq 2$ $where\ w_1, w_2 \geq 0$
Option C:	Min W = $2w_1 + 9w_2$ subject to $4w_1 + 3w_2 \leq 7$ $5w_1 - w_2 \leq 2$ $where\ w_1, w_2 \geq 0$
Option D:	Min W = $2w_1 + 9w_2$ subject to $4w_1 + 3w_2 = 7$ $5w_1 - w_2 = 2$ $where\ w_1, w_2 \geq 0$
Q9.	If A = $\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$ then A^{-1} is
Option A:	$\begin{bmatrix} 2 & 2 \\ 3 & 8 \end{bmatrix}$
Option B:	$\begin{bmatrix} 1 & 2 \\ 0 & 4 \end{bmatrix}$
Option C:	$\begin{bmatrix} 2 & 2 \\ 3 & 4 \end{bmatrix}$
Option D:	$\begin{bmatrix} 2 & 4 \\ 6 & 8 \end{bmatrix}$
Q10.	The dual of the dual is
Option A:	Dual
Option B:	Doesn't exist
Option C:	Primal
Option D:	In the canonical form
Q11.	The $\int_c (z + z^2)\, dz$ where $\lvert z \rvert$=2
Option A:	$4\pi i$
Option B:	4π
Option C:	$4i$
Option D:	0
Q12.	For the function f(z) = $\frac{1-cosz}{z^3}$, z=0 is

Option A:	Pole of order 1
Option B:	Essential singularity
Option C:	Removable singularity
Option D:	Zero of f(z)
Q13.	Value of the integral $\int_c \frac{sinz}{z-\frac{\pi}{2}}\, dz =$
Option A:	$-2\pi i$
Option B:	$2\pi i$
Option C:	$-\pi i$
Option D:	πi
Q14.	In a standard form of a LPP the constraints are of the type
Option A:	$\geq$
Option B:	$\leq$
Option C:	=
Option D:	<
Q15.	The statement " If f(z) is analytic in a region bounded by a simple closed curve c except at the point z=a , then $\int_c \frac{f(z)}{z-a}\, dz = 2\pi i f(a)$" is
Option A:	Cauchy's theorem
Option B:	Cauchy's Integral theorem
Option C:	Residue theorem
Option D:	Taylor's Theorem
Q16.	The Probability density function of a random variable X is X: 1, 2, 3, 4, 5 P(X=x): 4k, 5k, 6k, 9k, 10k Find P$(1 < X \leq 4)$
Option A:	$\frac{10}{17}$
Option B:	$\frac{12}{17}$
Option C:	$\frac{13}{17}$
Option D:	$\frac{15}{17}$
Q17.	If a random variable X follows Poisson distribution such that $P(X=1) = 2P(X=2)$ then find the value of $P(X=4)$
Option A:	0.07754

Option B:	0.01532
Option C:	0.08945
Option D:	0.06879
Q18.	A random sample of 50 items gives the mean 6.2 and SD 10.24. Then the value of test statistic Z is
Option A:	1.74
Option B:	2.74
Option C:	-1.74
Option D:	4.04
Q19.	What is the value of the cumulative distribution function at 3, i.e. P (X ≤ 3)?
Option A:	6/16
Option B:	10/16
Option C:	11/16
Option D:	15/16
Q20.	What characteristic of a random variable is described by the expected value?
Option A:	Standard deviation
Option B:	Mean
Option C:	Most likely value
Option D:	Maximum value
Q21.	A Binomial Distribution of a random variable X is $P(X = r) = {}^{6}C_r \left(\frac{1}{4}\right)^r \left(\frac{3}{4}\right)^r$ then find Variance of X
Option A:	$\frac{3}{4}$
Option B:	$\frac{9}{8}$
Option C:	$\frac{1}{4}$
Option D:	$\frac{3}{8}$
Q22.	What is the expected value of X, E(X)?
Option A:	3
Option B:	0
Option C:	Cannot be determined
Option D:	2
Q23.	If P(x) = 0.5 and x = 1, then the value of first raw moment is = ?

Option A:	1
Option B:	0.5
Option C:	4
Option D:	2
Q24.	If x is a random variable and f(x) is probability function then $E[e^{tx}]$ Is called
Option A:	Probability generating function
Option B:	Moments generating function
Option C:	Probability distribution function
Option D:	Characteristic function
Q25.	Kuhn Tucker's conditions are used to solve
Option A:	LPP
Option B:	NLPP
Option C:	A matrix equation
Option D:	Linear equations