Sample Question Paper

Branch: SE EXTC

Sub. : AM-IV

Q1.	Find 4^A if A = $\begin{bmatrix} 3/2 & 1/2 \\ 1/2 & 3/2 \end{bmatrix}$.
Option A:	$\begin{bmatrix} 10 & 6 \\ 6 & 10 \end{bmatrix}$
Option B:	$\begin{bmatrix} 10 & -6 \\ 6 & 2 \end{bmatrix}$
Option C:	$\begin{bmatrix} 2 & 65 \\ 6 & 10 \end{bmatrix}$
Option D:	$\begin{bmatrix} -9 & 6 \\ 20 & 1 \end{bmatrix}$
Q2.	Find Eigen values of $A^3 + I$ where A = $\begin{bmatrix} 2 & 2 & 1 \\ 1 & 3 & 1 \\ 1 & 2 & 2 \end{bmatrix}$
Option A:	2, 2, 125
Option B:	9, 6, 20
Option C:	25, 1, 1
Option D:	126, 2, 2
Q3.	If A = $\begin{bmatrix} 1 & 2 & 3 \\ -1 & 3 & 1 \\ 1 & 0 & 2 \end{bmatrix}$ then find $A^9 - 6A^8 + 10A^7 - 3A^6 + A + I$
Option A:	A - I
Option B:	A + I
Option C:	2A
Option D:	A^2
Q4.	Find 5^A if A = $\begin{bmatrix} 3 & 1 \\ 1 & 3 \end{bmatrix}$.
Option A:	$\begin{bmatrix} 325 & -300 \\ 300 & 325 \end{bmatrix}$
Option B:	$\begin{bmatrix} 325 & 100 \\ 100 & 325 \end{bmatrix}$
Option C:	$\begin{bmatrix} 325 & 300 \\ 300 & 325 \end{bmatrix}$
Option D:	$\begin{bmatrix} 125 & 300 \\ 300 & 125 \end{bmatrix}$

Q5.	Find Eigen values of $A^3 + 4\ A^{-1}$ where A = $\begin{bmatrix} 1 & 0 \\ 2 & 4 \end{bmatrix}$
Option A:	5, 65
Option B:	2, 20
Option C:	5, 60
Option D:	3, 20
Q6.	Verify the matrix A = $\begin{bmatrix} 2 & 1 & 1 \\ 1 & 2 & 1 \\ 0 & 0 & 1 \end{bmatrix}$ is non-derogatory or derogatory
Option A:	Derogatory
Option B:	Non derogatory
Q7.	The probability distribution of random variable is given by X: 0 | 10 | 15 P(x): (k-6)/5 | 2/k | 14/5k Find (i) K (ii) Mean and variance.
Option A:	K = 8, M=3.32, V = 20
Option B:	K = 6, M=7.75, V = 43.6875
Option C:	K = 8, M=1.23, V = 2.16
Option D:	K = 8, M=7.75, V = 43.6875
Q8.	A pdf of random variable is defined as $f(x) = 6(x-x^2)$, $0 < x < 1$. Then find mean and variance.
Option A:	M=0.5, V=3
Option B:	M=0.9, V=0.05
Option C:	M=0.5, V=0.05
Option D:	M=3, V=0.05
Q9.	A transmission channel has per digit error probability 0.01. Calculate the probability of more than 1 error in 10 received using Poisson distribution.
Option A:	0.0025
Option B:	0.26
Option C:	0.4856
Option D:	0.0047
Q10.	Assume the mean height of soldiers to be 172 cms with a s. d. 5 cms. How many

	soldiers in a regiment of 1000 have height greater than 180 cms?
Option A:	55
Option B:	89
Option C:	70
Option D:	123
Q11.	*Evaluate:* $\int_0^{3+i} z^2 dz$ *along the path* $x = 2y$.
Option A:	(1+i)/5
Option B:	(2+10i)/5
Option C:	(1-5i)/3
Option D:	(2+11i)/3
Q12.	Evaluate: $\int_C \frac{sin\pi z^2 + cos\pi z^2}{(z-2)(z-4)}$ dz , C: |z| = 3.
Option A:	0
Option B:	-πi
Option C:	π
Option D:	πi
Q13.	Find Lauren't series for f(z) = $\frac{2}{(z-1)(z-2)}$ when $1 < \|z\| < 2$.
Option A:	$\frac{-2}{z}\left[1 + \frac{1}{z} + \frac{1}{z^2} + \cdots \ldots\right] - [1 + \left(\frac{z}{2}\right) + \left(\frac{z}{2}\right)^2 + \cdots ..]$
Option B:	$\frac{2}{z}\left[1 + \frac{1}{z} + \frac{1}{z^2} + \cdots \ldots\right] + [1 + \left(\frac{z}{2}\right) + \left(\frac{z}{2}\right)^2 + \cdots ..]$
Option C:	$\frac{-4}{z}\left[1 + \frac{1}{z} + \frac{1}{z^2} + \cdots \ldots\right] - [1 + \left(\frac{z}{2}\right) + \left(\frac{z}{2}\right)^2 + \cdots ..]$
Option D:	$\frac{-2}{z}\left[1 + \frac{1}{z} + \frac{1}{z^2} + \cdots \ldots\right] - 3[1 + \left(\frac{z}{2}\right) + \left(\frac{z}{2}\right)^2 + \cdots ..]$
Q14.	*Compute Residue for f(z)* = $\frac{3z+1}{z(z-2)}$
Option A:	1 /2, 2
Option B:	1/9, 6
Option C:	-1/2, 7/2
Option D:	7/2, 3/2
Q15.	*Evaluate:* $\int_{-\infty}^{\infty} \frac{x^2}{(x^2+4)(x^2+9)} dx$

Option A:	π/2
Option B:	π/5
Option C:	π/3
Option D:	π/4
Q16.	Evaluate $\int_0^{2\pi} \frac{d\theta}{5+3\,sin\theta}$
Option A:	π/2
Option B:	π/5
Option C:	π/3
Option D:	π
Q17.	*The following data gives HDL and LDL cholesterol levels of 7 adults in a locality:* *HDL* 52 63 45 36 72 65 45 25 *LDL* 62 53 51 25 79 43 60 33 *Obtain the rank correlation coefficient*
Option A:	-0.96
Option B:	0.95
Option C:	0.648
Option D:	0.223
Q18.	*The equations of lines of regressions are x + 2y = 5 and 2x + 3y = - 8 then find means of x and y.*
Option A:	31,18
Option B:	-31, 18
Option C:	18, 12
Option D:	-18, 12
Q19.	The following data find the line of regression and estimate the value of y at x = 15.5 X 10 12 13 16 17 20 25 Y 19 22 24 27 29 33 37
Option A:	Y = 0.8x + 13.23; 25.63
Option B:	Y = 8x + 10.23; 30.63
Option C:	Y = 0.18x + 13.23; 20.23
Option D:	Y = 0.8x + 10.23; 22.63
Q20.	*Evaluate:* $\oint_C \frac{z+4z}{z-6} dz$, *where* $\mid z \mid = 3$.

Option A:	-1
Option B:	2
Option C:	0
Option D:	32
Q21.	*For the following data* *X* | *2* | *4* | *5* | *6* | *8* | *11* *y* | *18* | *12* | *10* | *8* | *7* | *5* *Obtain the rank correlation coefficient*
Option A:	R=0.33
Option B:	R=-0.58
Option C:	R= -0.92
Option D:	R=0.12
Q22.	Probability distribution for discrete r.v. is X | 0 | 1 | 2 | 3 P(x) | 1/8 | 3/8 | 3/8 | 1/8 Find Moment generating function and hence find mean.
Option A:	$\frac{1}{8}+\frac{3}{8}e^{t}+\frac{3}{8}e^{2t}+\frac{1}{8}e^{3t}, M=1.5$
Option B:	$\frac{1}{8}+\frac{3}{8}e^{t}+\frac{3}{8}e^{2t}+\frac{1}{8}e^{3t}, M=3$
Option C:	$\frac{3}{8}e^{t}+\frac{3}{8}e^{2t}+\frac{1}{8}e^{3t}, M=1.5$
Option D:	$\frac{3}{8}e^{t}+\frac{3}{8}e^{2t}+\frac{1}{8}e^{3t}, M=15$
Q23.	For two lines of regression 3x + 2y = 26, 6x + y = 31, find correlation coefficient between x and y.
Option A:	r = 0.96
Option B:	r = -0.63
Option C:	r = -0.5
Option D:	r = 0.22
Q24.	The following data find the line of regression and estimate the value of y at x = 10. X | 2 | 4 | 6 | 8 Y | 1 | 2 | 2.5 | 3
Option A:	Y = 0.28x + 0.5897, y= 12
Option B:	Y = 3.28x + 0.5897, y= 6

Option C:	Y = 0.28x + 0.2358, y= 3.39
Option D:	Y = 0.28x + 0.5897, y= 3.39
Q25.	Find E(x) where X is number of heads appeared when three coins were tossed
Option A:	20
Option B:	1.5
Option C:	3
Option D:	6.8