Sardar Patel Institute of Technology

Bhavan's Campus, Munshi Nagar, Andheri (West), Mumbai-400058, India
(Autonomous College Affiliated to University of Mumbai)

Mid Semester Examination

March - 2018

Max. Marks: 30 | Duration: 1.5 Hrs
Class: SE(Comp. and IT) | Semester: IV
Course Code: BS41 | Branch: Comp, IT
Name of the Course: Applied Mathematics-II

Instructions:
(1) All questions are compulsory.
(2) Assume suitable data if necessary.

Q No.		Max Marks	CO
Q.1	Define and verify Cayley Hamilton's theorem for matrix A and hence find A^{-1} and A^4 where $A = \begin{bmatrix} 1 & 2 & -2 \\ -1 & 3 & 0 \\ 0 & -2 & 1 \end{bmatrix}$	06	CO1
	or		
	If $A = \begin{bmatrix} -1 & 4 \\ 2 & 1 \end{bmatrix}$ then prove that $3 \tan A = A \tan 3$	06	CO1
Q.2	Find the Singular value Decomposition of $\begin{bmatrix} 4 & 4 \\ -3 & 3 \end{bmatrix}$	06	CO1
Q.3	A random variable X is defined by $f(x) = kx^2(1-x^3)$, $0 \le x \le 1$ $= 0$ otherwise. Find 1) k 2) P $(0 \le x \le 1/2)$ 3) mean 4) variance.	06	CO3
Q.4	Show that in a Poisson distribution with unit mean and the mean deviation about the mean is 2/e times the standard deviation.	06	CO4
Q.5	Calculate Karl Pearson's coefficient of correlation for the following bivariate series. X : 28 45 40 38 35 33 40 32 36 33 Y : 23 34 33 34 30 26 28 31 36 35	06	CO2