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DF-2624

First Year B. Com. (Honours) (Sem. I) Examination

March/April – 2016

Mathematics & Statistics : Paper - I

Time : Hours] [Total Marks : **50**

Instructions :

(1)

નીચે દર્શાવેલ ☛ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fillup strictly the details of ☛ signs on your answer book.

Name of the Examination :

☛ **FIRST YEAR B. COM. (HONS.) (SEM. 1)**

Name of the Subject :

☛ **MATHEMATICS & STATISTICS : PAPER - I**

☛Subject Code No. : **2 6 2 4** ☛Section No. (1, 2,.....) : **Nil**

Seat No. :

Student's Signature

(2) All the questions are **compulsory**.

(3) Figures to the right indicate full marks of the questions.

(4) Simple calculator can be used.

1.	(a) Evaluate : (i) $\lim_{x\to 3}\left[\frac{1}{x-3}-\frac{2}{(x-1)(x-3)}\right]$ (ii) $\lim_{n\to\infty}\left[\frac{1}{n^2}+\frac{2}{n^2}+\frac{3}{n^2}\ \ldots\ldots\ldots+\frac{n}{n^2}\right]$	6
	(b) If $y = \log\left(x+\sqrt{1+x^2}\right)$, prove that $(1+x^2)\frac{d^2y}{dx^2}+x\frac{dy}{dx}=0$	4
	(c) If $\sqrt{x}+\sqrt{y}=1$ then, find $\frac{dy}{dx}$	3
2.	(a) Evaluate : (i) $\int \frac{3x+4}{6x+7}\,dx$ (ii) $\int_{-3}^{-1}\left(\frac{1}{x^2}-\frac{1}{x^3}\right)dx$	6
	(b) If the marginal cost of a firm is $2+3\sqrt{x}+\frac{1}{\sqrt{x}}$ and if the fixed cost is 7, then find the total cost.	4
	(c) Evaluate : $\int_1^4 \frac{1}{\sqrt{x}}dx$	2
3	(a) State the difference between Determinant and Matrix.	3
	(b) If $A=\begin{bmatrix}2&-1&1\\-1&2&-1\\1&-1&2\end{bmatrix}$, then prove that $A^3-6A^2+9A-4I=0$ Where 0 is null matrix and I is unit matrix,	4

	(c) Solve the following equations by using inverse of a matrix $4x+7y = 13$ $-5x+9z = 55$ $x+y+z = 6$	6
4.	(a) Explain: Symmetric matrix, Unit matrix, Scalar matrix, Minors	4
	(b) If $A=\begin{bmatrix}1 & -1\\ 2 & -1\end{bmatrix}$, $B=\begin{bmatrix}1 & 1\\ 4 & -1\end{bmatrix}$, then show that $(A+B)^2 = A^2 + B^2$	4
	(c) If $A=\begin{bmatrix}3 & 1\\ 2 & 4\end{bmatrix}$, $B=\begin{bmatrix}5 & 6 & 0\\ 0 & 1 & 2\end{bmatrix}$, then show that $(AB)^T = B^T A^T$	4