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so many fake sites. this is the first one which worked! Many thanks

First Semester BCA Degree Examination

BCA 102 Mathematics

(2007 Admission onwards)

Time: 3 hrs

Marks: 75

Part A

(Answer any TEN questions, each question carries 3 marks)

1. Define a) conjugate of a matrix b) hermitian matrix
2. Prove that
$$\begin{vmatrix} 1+a & 1 & 1 \\ 1 & 1+b & 1 \\ 1 & 1 & 1+c \end{vmatrix} = abc(1+1/a+1/b+1/c)$$
3. What is a singular matrix? Give an example.
4. Derive the partial differential equation $z = (x+a)(y+b)$
5. Find d^2y/dx^2 when $x=\sin t, y=\cos t$
6. Differentiate e^{ax^2+b} with respect to $\cos^{-1}x$
7. If $y = a \cos(\log x) + b \sin(\log x)$, prove that $x^2y'' + xy' - y = 0$
8. State the Dirichlet's conditions of the Fourier series
9. Find the Laplace transform of $\sin^{-1}3t$
10. State the convolution theorem
11. Let $A = \begin{pmatrix} 1 & 2 \\ 2 & 2 \end{pmatrix}$ and $f(x) = x^2 - 3x + 4$ Find $f(A)$
12. If $L\{f(t)\} = F(s)$, then prove that $L\{e^{at}f(t)\} = F(s-a)$

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