

**I B.Pharmacy II Semester Supplementary Examinations, Feb/Mar 2014  
MATHEMATICS-II****Time: 3 hours****Max Marks: 75****Answer any FIVE Questions  
All Questions carry equal marks**

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1. (a) Find the derivative of  $\sin x(\tan x)^2$ .  
(b) Show that the maximum value of  $x \log x$  is  $-\frac{1}{e}$
2. (a) If  $y = \cos^5 x \cos(x^2)$  find  $\frac{dy}{dx}$   
(b) Find the derivative of  $y = \sin^3 x$
3. (a) Evolute  $\int \frac{(1+x)e^x}{\sin^2(xe^2)} dx$   
(b) Find the area between the curves  $y^2=4x$  and  $x=2y$
4. (a) Evolute  $\int e^{2\log x} dx dx$   
(b) Evolute  $\int_0^\pi \frac{1}{1+\cos x} dx$
5. (a) Form a differential equation to represent the family of curves  $y = Ae^x + Be^{-2x}$   
(b) solve  $[1 - x] dy + (1 - y) dx = 0$
6. (a) solve  $(x e^{xy} + 2y) \frac{dy}{dx} + y e^{xy} = 0$   
(b) solve  $x \cos x \frac{dy}{dx} + (x \sin x + \cos x) y = 1$
7. (a) Find L  $[\cos^2 t]$   
(b) Find L  $[\sin^2 at]$
8. (a) Find L  $[\frac{e^{-a t} - 1}{a}]$   
(b) Find L  $[(\sin t + \cos t)^2]$

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