Code No: B1102/R10 **R10**

I B.Pharmacy I Semester Supplementary Examinations, Feb/Mar 2014
MATHEMATICS-I

Time: 3 hours **Max Marks: 75**

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) Find the value of $\sqrt{3\sqrt{3\sqrt{3\sqrt{3}.....to\ \infty}}}$.
   (b) Evaluate $\begin{vmatrix} 3 & 2 & 1 \\ 2 & 3 & 0 \\ 5 & -2 & 2 \end{vmatrix}$ [8+7]

2. (a) Find the coefficient of x^7 in the expansion of $\left(x^2 + \frac{2}{x}\right)^{11}$.
   (b) Evaluate $\begin{vmatrix} 4 & 2 & -8 \\ 2 & -3 & -6 \\ 0 & -2 & 2 \end{vmatrix}$ [8+7]

3. (a) If $\cos\theta = k, 0 < k < 1$ and 'θ' is not an angle in the first quadrant, find the values of the other trigonometric ratios in terms of k.
   (b) If A + B = 45^0 and none of A and is an odd multiple of $\frac{\pi}{2}$, prove that $(1 + \tan A)(1 + \tan\beta) = 2$and hence deduce that $\tan 22\frac{1}{2}^0 = \sqrt{2} - 1$. [8+7]

4. (a) If 2A is not an integral multiple of π, show that cot A + tan A = 2 cosec 2A, cot A - tan A = 2 cot 2A and deduce the values of $\tan 52\frac{1}{2}^0$and $\tan 37\frac{1}{2}^0$.
   (b) Show that $\cos\ 42^0 + \cos\ 78^0 + \cos\ 162^0 = 0$. [8+7]

5. (a) Find the perpendicular distance of the point (3,-4) from the line $2x-5y+2=0$
   (b) Find the equation of the line passing through the point (-4,0) and perpendicular to the line $x = 3$ [8+7]

6. (a) Find the value of P if the lines $3x + 4y = 5,\ 2x + 3y = 4$ and $Px + 4y = 6$ are concurrent
   (b) Find the area of the triangle formed by the straight lines $2x - y - 5 = 0$, $x - 5y + 11 = 0$ and $x + y - 1 = 0$ [8+7]

7. (a) If $n \in N,\ a \in R$ then show that $\lim_{x\to a} x^n = a^n$
   (b) $If\ f(x) = xe^x sinx$ then find $f^1(x)$ [8+7]

8. (a) Compute $\lim_{x\to 0}\left[\frac{\sqrt{1+x}-\sqrt{1+x^2}}{\sqrt{1-x^2}-\sqrt{1-x}}\right]$
   (b) If $Y = x^x\ (x > 0)$ then find $\frac{dy}{dx}$ [8+7]

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