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Roll No

PY - 101(A)**B. Pharm. I Semester**

Examination, December 2012

Remedial Mathematics**Time : Three Hours****Maximum Marks : 70****Note :** 1. Total No. of questions is 05.

2. Attempt any two parts from each question.

3. All questions carry equal marks.

1. a) Solve the following equation

$$\sqrt{1-5x} + \sqrt{1-3x} = 2$$

b) Evaluate the following determinant

$$\begin{vmatrix} 1 & x & x^3 \\ 1 & y & y^2 \\ 1 & z & z^3 \end{vmatrix}$$

c) If $A = \begin{bmatrix} 1 & 2 & 2 \\ 2 & 1 & 2 \\ 2 & 2 & 1 \end{bmatrix}$. Find A^{-1} and hence prove that

$$A^2 - 4A - 5I = 0$$

2. a) The mean of 200 items was 50. Later on it was discovered that two items were misread as 92 and 8 instead of 192 and 88. Find out the correct mean.

b) Calculate the median from the following frequency table:

x	20-30	30-40	40-50	50-60	60-70	Total
f	8	26	30	20	16	100

c) Find the volume of the right circular cone of radius 3 cm and height 7 cm and also find the surface area of the whole cone.

3. a) Find the values of

i) $\sin 75^\circ$ ii) $\cos 15^\circ$

b) Show that

$$\cos 20^\circ \cos 30^\circ \cos 40^\circ \cos 80^\circ = \frac{\sqrt{3}}{16}$$

c) A vertical flag-staff stands in a horizontal plane. From a point distant 150.4 m from its foot, the angle of elevation of its top is found to be 32° . Find the height of the flag-staff.

4. a) Find the distance between the given pair of points

A ($a \cos \alpha$, $a \sin \alpha$), B ($a \cos \beta$, $a \sin \beta$).

b) Find the area of the quadrilateral whose vertices are (2, 1), (6, 0), (5, -2) and (-3, -1).

c) Find the equation of the straight line passing through (2, 3) and perpendicular to $4x - 3y = 10$.5. a) Find $\frac{dy}{dx}$, when $y = \sec(3x+2) + (3x+1)^{1/3}$ b) If $e^y = y^x$, prove that $\frac{dy}{dx} = \frac{(\log y)2}{(\log y - 1)}$ c) Evaluate $\int \log(1+x^2) dx$
