Total No. of Questions :5] *[Total No. of Printed Pages :4*

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PY-101(A)

B.Pharmacy I Semester

Examination, June 2016

Remedial Mathematics

Time : Three Hours

Maximum Marks : 70

Note: i) Answer five questions. In each question part A, B, C is compulsory and D part has internal choice.
ii) All parts of each question are to be attempted at one place.
iii) All questions carry equal marks, out of which part A and B (Max. 50 words) carry 2 marks, part C (Max. 100 words) carry 3 marks, part D (Max. 400 words) carry 7 marks.
iv) Except numericals, Derivation, Design and Drawing etc.

1. a) Find the sum and product of the roots of the equation without actually solving them.

$x^2 + 3x + 2 = 0$

b) If $\begin{bmatrix} a+b & 2 \\ 5 & ab \end{bmatrix} = \begin{bmatrix} 6 & 2 \\ 5 & 8 \end{bmatrix}$, find the values of a and b.

c) Solve the equation :

$x(x + 4) = 12$

d) Prove that $\begin{vmatrix} b+c & a & a \\ b & c+a & b \\ c & c & a+b \end{vmatrix} = 4abc$

OR

Solve the system of equation by matrix method.

$x + y = 0, y + z = 1, z + x = 3$

2. a) Find the volume and surface of a cuboid whose dimensions are 4 cm, 6 cm and 7 cm.

b) Find the mean for the following data :

15, 20, 25, 19, 12, 11, 13, 17, 18, 20

c) Find the median of the series.

Size :	4	5	6	7	8	9	10
Frequency :	6	12	15	28	20	14	5

d) A pharmaceutical has to supply 2100 spherical tablets to a college. They have powder of 8800 cu.mm. What should be the radius of spherical tablet?

OR

Calculate mean, median and mode of the frequency distribution.

Marks :	10-25	25-40	40-55	55-70	70-85	85-100
Frequency :	6	20	44	26	3	1

3. a) Prove that $\sin\theta \cos(90° - \theta) + \cos\theta \sin(90° - \theta) = 1$

b) Find the value of $\cos^2 45° - \sin^2 15°$

c) Prove that $\frac{1-\cos\theta}{\sin\theta} = \frac{\sin\theta}{1+\cos\theta}$

d) Prove that $\sin 20° \sin 40° \sin 60° \sin 80° = \frac{3}{16}$

OR

Prove that $\frac{8\log 2 - 2\log 4}{\log 2} = 4$

4. a) Find the distance between the points (–3, 3) and (5, 4).

b) Find the equation of the locus of points twice as far from (3, 2) as from (1, 1).

c) Find the value of m if $5x + 2my = 7$, $3x + 2y - 3 = 0$ are parallel.

d) Find the equation of the line passing through (–2, –4) and perpendicular to the line $3x - y + 5 = 0$

OR

Find the point of intersection of the lines

$2x - 3y = 1$ and $5y - x = 3$

5. a) Find the limit :

i) $\lim_{x \to 4} \frac{x^2 - 16}{x - 4}$

ii) $\lim_{x \to 1} \left(x^2 + x + 1\right)$

b) If $f(x) = a^x$, show that $f(x) f(y) = f(x + y)$.

c) Differentiate w.r.t. 'x'

$\left(3x^2 + 1\right) / \left(2x^3 + 1\right)$

d) Evaluate $\int \frac{2x}{(x-1)(x+3)}\, dx$.

OR

Evaluate $\int_1^2 \left(e^x + 3x^2\right) dx$.

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