

Registration No:

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Total Number of Pages: 02

B.Pharm
PH.1.131st Semester Back Examination 2017-18

REMEDIAL MATHEMATICS

BRANCH : B.Pharma

Time : 3 Hours

Max Marks : 70

Q.CODE : B1237

Answer Question No.1 which is compulsory and any five from the rest.
The figures in the right hand margin indicate marks.

- Q1** Answer all questions : (2 X 10)
- a) Find the value of the determinant $\begin{vmatrix} 5 & 0 & 5 \\ 1 & 2 & 1 \\ 1 & 2 & 3 \end{vmatrix}$
- b) Find $2A + I$ where $A = \begin{pmatrix} -2 & 1 \\ 3 & 4 \end{pmatrix}$ and $I = \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}$
- c) Define median.
- d) Evaluate: $\cos 2\pi/3 \cos \pi/4 + \sin 2\pi/3 \sin \pi/4$
- e) Find the value of the following trigonometric ratios.
(i) $\sin 210^\circ$ (ii) $\cos 315^\circ$
- f) Find the area of triangle whose vertices are A(6,3), B(-3,5) and C(4,-2)
- g) Determine the equation of a line passing through the point (-4,-7) and parallel to x-axis.
- h) Evaluate: $\lim_{x \rightarrow 0} \frac{3^x - 2^x}{\tan x}$
- i) Find $\frac{dy}{dx}$ if $y = (3 - x^2)(x^3 - x + 1)$
- j) Evaluate $\int \frac{2x^3 + 3x - 7}{x^{2/3}} dx$
- Q2** a) Solve the simultaneous equations $2x + y = 10$ and $3x - y = 5$ (5)
by using Cramer's rule .
- b) If $\Delta = \begin{vmatrix} 3 & 8 & 7 \\ -4 & 5 & 6 \\ 7 & 3 & -8 \end{vmatrix}$ (5)
Find the minors & co-factors of the elements in the second column. Hence, expand Δ to find its value.
- Q3** a) Find the Median of the distribution given below. (5)
Class Interval: 0 – 10 10 – 20 20 – 30 30 – 40 40 – 50 50 – 60
Frequency : 2 6 8 13 7 4
- b) Solve: $x - 2\sqrt{x} - 6 = 0$ (5)

- Q4** a) Find the value of $\sin 15^\circ$ and $\cos 15^\circ$. (5)
 b) Show that: $\frac{\tan A + \tan B}{\tan A - \tan B} = \frac{\sin(A+B)}{\sin(A-B)}$ (5)
- Q5** a) Prove that $(1 + \cot A - \operatorname{cosec} A)(1 + \tan A + \sec A) = 2$. (5)
 b) Find the equations of the medians of a triangle ABC, the co-ordinates of whose vertices are A(-1,6), B(-3,-9) and C(5,-8) (5)
- Q6** a) Four points A(6,3), B(-3,5), C(4,-2) and D(x,3x) are given in such a way that $\frac{\text{Area of triangle DBC}}{\text{Area of Triangle ABC}} = \frac{1}{2}$, find x. (5)
 b) Show that the quadrilateral with vertices (2, -2), (8, 4), (5, 7) & (-1, 1) is a rectangle. (5)
- Q7** a) Find $\frac{dy}{dx}$ where $x = a(t + \sin t)$ and $y = a(1 - \cos t)$. (5)
 b) if $y = \sqrt{\log x + \sqrt{\log x + \sqrt{\log x + \dots \infty}}}$ (5)
 Show that $(2y - 1) \frac{dy}{dx} = \frac{1}{x}$.
- Q8** a) Evaluate $\int \frac{x^3}{(x-1)(x-2)(x-3)} dx$ (5)
 b) Solve $\int \frac{5x-3}{(x+1)(x-3)} dx$ (5)