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Total Number of Pages : 02

B.Pharm
15PH106

1st Semester Back Examination 2018-19

REMEDIAL MATHEMATICS

BRANCH : B.Pharma

Time : 3 Hours

Max Marks : 100

Q.CODE : E1016

Answer Question No.1 (Part-1) which is compulsory, any EIGHT from Part-II and any TWO from Part-III.

The figures in the right hand margin indicate marks.

Part- I

Q1 Short Answer Type Questions (Answer All-10)

(2 x 10)

- Divide 57 into two parts whose product is 782.
- What is singular matrix?
- Define mode with one example.
- Find the value of $\sin 210^\circ$ and $\cos 315^\circ$
- Find the distance between the points: P(-3,7) and Q(-1,9)
- Find the slope of a line which passes through points (3, 2) and (-1, 5).
- Evaluate: $\lim_{x \rightarrow 0} (3x^2 + 4x + 6)$
- Calculate the derivative of $f(x) = 4 - x^2$
- Evaluate: $\int (3x + 4)^2 dx$
- What is definite integral?

Part- II

Q2 (Answer Any Eight out of Twelve)

(6 x 8)

- Solve: $8x^4 - 28x^2 + 20 = 0$
- Prove that: $\begin{vmatrix} 1 & 1 & 1 \\ a & b & c \\ a^2 & b^2 & c^2 \end{vmatrix} = (a-b)(b-c)(c-a)$
- Solve the system of equations: $2x + y = 4$, $x + 3y = 7$
- Determine the median for the following frequency distribution:

x:	10	20	30	40	50	60	70
f:	18	22	30	38	28	15	13

- Prove that: $(1 + \cot A - \operatorname{cosec} A)(1 + \tan A + \sec A) = 2$
- Find the value of $\sin 18^\circ$
- Prove that the points A (1,-2), B (3, 6), C (5, 10) and D (3, 2) are the vertices of a parallelogram.
- The four vertices of a quadrilateral are (1, 2), (6, 2), (5, 3) and (3, 4), find the area of this quadrilateral.
- Find the angle in between the lines $x - y\sqrt{3} - 5 = 0$ and $\sqrt{3}x + y - 7 = 0$.
- Evaluate: $\lim_{x \rightarrow 0} \left(\frac{3^x - 2^x}{\tan x} \right)$
- Find $\frac{dy}{dx}$ if $x^2 + y^2 = \log(xy)$
- Solve: $\int e^x \cos x dx$

Part-III

Long Answer Type Questions (Answer Any Two out of Four)

Q3 Find $\text{adj } A$ and A^{-1} , Where $A = \begin{bmatrix} 1 & 0 & -1 \\ 3 & 4 & 5 \\ 0 & -6 & -7 \end{bmatrix}$, Also verify $A(\text{adj } A) = (\text{adj } A)A$ **(16)**

Q4 Find the mean, median and mode from the following data : **(16)**

Wages (in Rs.)	20-30	30-40	40-50	50-60	60-70
No.of labourers	4	5	20	10	4

Q5 What is the slope point and two point form of a line? 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). **(16)**

Q6 What is partial fraction and Evaluate: $\int \frac{(-2x+4)}{(x^2+1)(x-1)^2} dx$ **(16)**