Registration No: | | | | | | | | | | |

Total Number of Pages: 02 **B.Pharm**
15PH106

1st Semester Regular/Back Examination 2017-18
REMEDIAL MATHEMATICS
BRANCH : B.Pharma
Time : 3 Hours
Max Marks : 100
Q.CODE : B1240

Answer Question No.1 and 2 which are compulsory and any four from the rest.
The figures in the right hand margin indicate marks.

Q1 **Answer the following questions :** **(2 x 10)**

a) The value of $\begin{vmatrix} 17 & 58 & 17 \\ 19 & 60 & 19 \\ 18 & 59 & 18 \end{vmatrix}$= _____ (1,0,-1,2)

b) State the order of $[a \quad b \quad c \quad d]$ =_____(1x4,4x1,2x1,1x2)

c) i) The median of the series 1, 3, 2, 8, 6 is _____.
ii) The mode of the series 1, 2, 2, 3, 2, 4, 1 is _____.

d) If cos α=$\frac{3}{5}$,cos$\beta = \frac{5}{13}$,0<α<$\frac{\pi}{2}$, 0<β<$\frac{\pi}{2}$,
the value of cos(α-β)=_____($\frac{63}{65}, \frac{-63}{65}, \frac{56}{65}, \frac{-56}{65}$)

e) The equation of a line passing through the point (-4,-7) and parallel to x-axis=_____ (y+7=0,y-7=0,x+7=0,x-7=0)

f) The equation of a line passing through the point (5,4) and having Slope - 4 is _____
(4x+y=24,4x-y=24,-4x+y=0,-4x-y=24)

g) $\lim_{x\to 2} \frac{x^4-16}{x-2}$=_____

h) Find the differential coefficient of e^{tanx} with respect to x.

i) $\int_{-\pi}^{\pi} cosxdx$ = _____.(0,1,-1,2)

j) $Evaluate: \int xe^x dx.$

Q2 **Answer the following questions: *Short answer type*** **(2 x 10)**

a) Find two consecutive natural numbers whose product is 56.

b) What is singular matrix and give one example?

c) Define median and give one example.

d) Find the value of $sin75^0$

e) Find the distance between the points P (-3, 7) and Q (-1, 9).

f) Prove that the points (-2, 5), (0, 1) and (2,-3) are collinear.

g) Evaluate: $\lim_{x\to 0} \frac{sin3x}{sin2x}$

h) Differentiate e^{cotx} with respect to cosx.

i) Evaluate:$\int \frac{x}{\sqrt{x+a}} dx$

j) $Evaluate: \int xe^x dx.$

Q3 **a)** Prove that $\begin{vmatrix} 1 & 1 & 1 \\ a & b & c \\ a^2 & b^2 & c^2 \end{vmatrix} = (a-b)(b-c)(c-a)$ **(8)**

b) Solve: $9x^4 + 20 = 29x^2$ **(7)**

Q4 **a)** Find the inverse of the matrix A=$\begin{bmatrix} 3 & -3 & 4 \\ 2 & -3 & 4 \\ 0 & -1 & 1 \end{bmatrix}$ **(8)**

b) Solve:$4x^4 - 4x^3 - 7x^2 - 4x + 4 = 0$, x≠0. **(7)**

Q5 Compute the mean, median and mode of the following frequency distribution: **(5+5+5)**

Wages (in Rs.)	20-30	30-40	40-50	50-60	60-70
No. of labourers	22	38	46	35	20

Q6 **a)** Show that (1+cotA-cosecA)(1+tanA+secA)=2 **(5)**

b) If $a\cos\theta + b\sin\theta = p, a\sin\theta - b\cos\theta = q,$ prove that $a^2 + b^2 = p^2 + q^2$ **(5)**

c) Find the Value of $\sin 18^0$ **(5)**

Q7 **a)** The four vertices of a quadrilateral are (1, 2), (6, 2), (5, 3) and (3, 4), find the area of this quadrilateral. **(8)**

b) Find the equations of the altitudes of the triangle whose vertices are A(6,-1),B(-3,8) and C(3,2) **(7)**

Q8 **a)** Evaluate: $\lim_{x\to 0} \frac{2^x - 1}{\sqrt{1+x} - 1}$ **(5)**

b) Find $\frac{dy}{dx}$ $if\ y = (3 - x^2)(x^3 - x + 1)$ **(5)**

c) Find $\frac{dy}{dx}$ $if\ y = \log\log x$ **(5)**

Q9 **a)** Evaluate:$\int \frac{e^x - \sin x}{e^x + \cos x} dx$ **(5)**

b) Solve:$\int x\sin\frac{x}{2} dx$ **(5)**

c) Solve:$\int \frac{6x+7}{(x+2)^2} dx$ **(5)**