



ANJUMAN-I-ISLAM'S

AKTC KALSEKAR TECHNICAL CAMPUS

INNOVATIVE TEACHING · EXUBERANT LEARNING

School of Architecture

School of Engineering & Technology

School of Pharmacy

Knowledge Resource & Relay Centre (KRRC)

AIKTC/KRRC/SoP/ACKN/QUES/2013-14/73

Date: 13/06/2014

School: SoP-REV.

Branch: SoP

SEM: III

To,
Exam Controller,
AIKTC, New Panvel.

Dear Sir/Madam,

(ATKT)

Received with thanks the following Semester/Periodic question papers from your exam cell:

Sr. No.	Subject Name	Subject Code	Format		No. of Copies
			SC	HC	
1	Organic Chemistry – III				
2	Pharmaceutical Analysis – II				
3	Pharmaceutics – III				
4	APP – III				
5	Biochemistry – I				
6	Pharmaceutical Engineering – II				
7	Mathematics – I			✓	02

Note: SC – Softcopy, HC - Hardcopy

G. Ansari

(Shaheen Ansari)
Librarian, AIKTC

(2 Hours)

- N.B. : 1) Question No. 1 is compulsory.
 2) Attempt any four Questions from the remaining.
 3) Use of non scientific calculator is allowed.
 4) Figures to the right indicate full marks.

Q. 1 (a) Find the n^{th} derivative of $Y = \frac{x}{(x+1)^4}$ (4)

OR

(a) Find the Extreme values of $f(x, y) = x^2 + y^2 + 6x + 12$ (4)

Q.1 (b) Obtain the reduction formula for $\int_0^{\pi} \sin^n x \, dx$, hence evaluate $\int_0^{\frac{\pi}{2}} \sin^8 x \, dx$ (4)

OR

- (b) Find the volume of the solid generated by revolving about x-axis and the region bounded by the curve $9x^2 - 4y^2 = 36$ in the interval $x = 2$ to $x = 4$. (4)

Q. 2 (a) Solve the system of equations by Cramer's rule. (4)

$$x + y + z = 0, \quad 2x + 3y - z = -5, \quad x - y + z = 4.$$

(b) Find the Inverse of the Matrix A if exists (4)

$$A = \begin{bmatrix} 3 & -1 & 2 \\ 1 & 0 & -1 \\ -2 & 1 & 3 \end{bmatrix}$$

Q. 3 (a) Find the polynomial passing through the points (0,2), (1,5), (3,17) and (4,38) using Lagrange's Interpolation formula. (4)

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(b) If $U = \log (e^x + e^y)$ prove that $\frac{\partial^2 U}{\partial x \partial y} = \frac{\partial^2 U}{\partial y \partial x}$ (4)

Q. 4 (a) Verify Lagrange,s mean value Theorem for $f(x) = x^2 - 5x + 6$ (4)
in the interval $[2 , 4]$.

(b) Find Maclaurin's series expansion for $f(x) = \cos x$ (4)

Q. 5 (a) Solve any one Differential Equation. (4)

i) $\frac{dy}{dx} - x y^2 = 3 y^2$

ii) $\frac{dy}{dx} = \frac{x^2 y + x y^2}{x^3 + y^3}$

(b) Find the area bounded by the parabola $y = x^2$, X axis and (4)
the line $x = 3$ and $x = 6$.

Q. 6 (a) Solve any one Differential Equation. (4)

i) $\frac{d^2 y}{dx^2} + 2 \frac{dy}{dx} - 3y = e^{2x}$.

ii) $\frac{d^2 y}{dx^2} - 4 \frac{dy}{dx} + 4 y = \cos 2x$

(b) Find the % error in the area of Ellipse if an error of 1.5% is found (4)
in measuring it's major and minor axis.

Q. 7 (a) Evaluate any one Integral. (4)

i) $I = \int_0^{\pi/2} \cos^2 x dx$

$$\text{ii) } I = \int \frac{2x-3}{x+2} dx$$

(b) Use Simpson's 1/3 rd rule to evaluate the Integral (4)

$$\int_0^1 \frac{1}{1+x^2} dx \quad (h=0.25)$$

