SCHOOL OF PLANNING AND ARCHITECTURE, VIJAYAWADA
B. ARCH I YEAR - I Sem. SUPPLEMENTARY EXAMINATION, JAN. 2014

SUBJECT: XM-1 MATHEMATICS

Maximum Marks – 100 **Time – 3.00 Hours**

Instructions:

- ***Answer any FIVE questions; Students are allowed to use Scientific Calculators***

Q1. Given that **(10)**

x	4.0	4.2	4.4	4.6	4.8	5.0	5.2
Log (x)	1.3863	1.4351	1.4816	1.5261	1.5686	1.6094	1.6487

Evaluate $\int_4^{5.2} \log x \, dx$ by Simpson's 3/8 rule

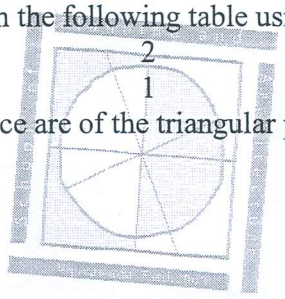
Q2. Find x, correct to four decimal places for which y is minimum and find the value of y **(10)**

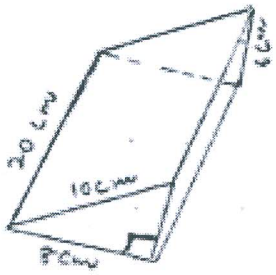
x	0.60	0.65	0.70	0.75
y	0.6221	0.6155	0.6138	0.6170

Q3. Compute f'(4) from the following table using Newton's divided difference formula **(10)**

x	1	2	4	8	10
f(x)	0	1	5	21	27

Q4. Find the total surface are of the triangular prism shown in the diagram **(10)**





Q5. Apply simplex procedure to solve **(10)**

$4x_1+3x_2 \leq 12$

$4x_1+x_2 \leq 8$

$4x_1-x_2 \leq 8$

$x_1, x_2 \geq 0$

Max $z = 2x_1+x_2$

Q6. Solve the unbalanced Route finder problem using North – West Corner Rule. **(10)**

	D_1	D_2	D_3	D_4	ai
S_1	13	16	19	17	250
S_2	17	19	16	15	200
S_3	15	17	17	16	250
bj	100	150	250	100	~~700~~ 600

Q7. A river is 80 ft wide. The depth d in feet at a distance x ft from one bank is given by the following table: **(10)**

Find approximately the area of the cross-section

x	0	10	20	30	40	50	60	70	80
y	0	4	7	9	12	15	14	8	3

Q8. Use Coordinate geometry to make the following rotations **(10)**

$R_{(0,0),\,90^0}^{(2,3)}$ and $R_{(-1,-2),\,-90^0}^{(2,3)}$