KERALA AGRICULTURAL UNIVERSITY

B.Tech (Agrl.Engg) 2013 Admission

III[rd] Semester Final Examination- December -2014

Cat. No: Math.2103

Title: Engineering Mathematics -III (2+1)

Marks: 50.00

Time: 2 hours

PART I

(Answer all questions) **(5 x 3=15)**

1. Evaluate $\left(\frac{\Delta^2}{E}\right)x^3$, the interval of differencing being unity

2. Evaluate $\nabla^2\left(\frac{5x+12}{x^2+5x+6}\right)$, the interval of differencing being 1

3. Solve the difference equation $y_{n+2} - 2\cos\alpha\, y_{n+1} + y_n = 0$

4. Using Newton's iteration method evaluate $\sqrt[3]{41}$

5. Find the Laplace transform of $e^{-3t}\sin 3t\cos t$

PART II

(Answer any 4 questions) **(4 x 5=20)**

6. Solve $x^3 - x + 4 = 0$ using Bisection method

7. Find a root of $x^3 - 3x + 1 = 0$ in the interval (0,0.5) using False Position method.

8. Solve the difference equation $\Delta^2 y_n - 5\Delta y_n + 4y_n = 2^n$

9. Calculate the approximate value of y for x=0.54 and x= 1.36 using the following table.

x	0.5	0.7	0.9	1.1	1.3	1.5
y	0.47943	0.64422	0.78333	0.89121	0.96353	0.99749

10. Derive Newton's divided difference formula for unequal intervals.

11. Calculate the value of $\int_0^{\pi} \sin x\,dx$ by Simpson's 1/3[rd] rule using 11 ordinates.

PART III *(Answer any one question)* **(1 x 15=15)**

12. Solve the following equations by Gauss Seidal iteration method

$$10x_1 - 2x_2 - x_3 - x_4 = 3$$
$$-2x_1 + 10x_2 - x_3 - x_4 = 15$$
$$-x_1 - x_2 + 10x_3 - 2x_4 = 27$$
$$-x_1 - x_2 - 2x_3 + 10x_4 = -9$$

OR

13. Certain corresponding values of x and log x are given below

x	300	304	305	307
f(x)	2.4771	2.4829	2.4843	2.4871

Find log 310 by (i)Lagrange's formula (ii) Newton's divided difference formula