KERALA AGRICULTURAL UNIVERSITY

B.Tech.(Ag. Engg.) 2016 Admission

III Semester Final Examination-January-2018

Sacs.2110 Engineering Mathematics-III (2+1)

Marks: 50

Time: 2 hours

I **Fill in the Blanks** (10x1=10)

1 If one of the regression coefficients is greater than unity, the other will be.....

2 $L(\cos 4t)$ =.....

3 $\Delta^2 y_2$ =.....

4 $L[(y'(t)]$=.....

5 COV(X, Y) = ...

State True or False

6 The difference between the variances of two samples can be tested by chi Square test

7 The regression equations X on Y and Y on X meet at $(\bar{X}, \bar{Y})$

8 Mean and standard deviation of standard normal variate are 1 and 0

9 The type 1 error occurs when we rejects a true null hypothesis

10 The sum of deviations of the individual data elements from their mean is zero

II **Write Short notes on any FIVE of the following** (5x2=10)

1 Evaluate $\nabla x(x+1)$, taking h=1

2 Write the Simpson's 1/3 rule for $\int_{x_0}^{x_0+6h} ydx$

3 Find $L^{-1}\left[\frac{s}{(s+2)^2+1}\right]$

4 Describe simple Euler's formula

5 Write the various measures of dispersion.

6 If $Q_1 = 7$, $Q_2 = 12$ and $Q_3 = 22$. Find the coefficient of quartile deviation.

7 If COV(X,Y)= -6.8 , $\sigma_X = 2.2$ and $\sigma_Y = 3.4$, find the coefficient of correlation

PTO

III **Answer any FIVE of the following.** **(5x4=20)**

1 A random sample of 100 farms in Punjab in a particular year gives an average yield of wheat 1400 lbs per acre with standard deviation of 62 lbs. Another random sample of 100 farms in the same year gives an average yield of 1260 lbs with a standard deviation 50 lbs. is the difference between average yields significant?

2 Write the test procedure for finding the significance of difference between two population variances

3 Evaluate $\int_0^1 \frac{dx}{1+x^2}$, using Trapezoidal rule with h=0.2. hence determine the value of π

4 Using stirlings formula to evaluate y(1.22) given:

x	1.0	1.1	1.2	1.3	1.4
y(x)	0.841	0.891	0.932	0.963	0.985

5 Using Newton's divided difference formula , Find the cubic polynomial from the following table

x	0	1	4	5
f(x)	1	4	40	85

6 Given: $\frac{dy}{dx} + y = x^2 , y(0) = 1,$ taking **h = 0.1**. Determine **y(0.2)** using modified Euler's method

7 Find the coefficient correlation between industrial production and export using the following data:

Production (x)	55	56	58	59	60	60	62
Export (y)	35	38	37	39	44	43	44

IV **Write an essay on any ONE of the following** **(1x10=10)**

1 Fit a poison distribution to the following data on number(x) of bacterial colonies per culture plate in 445 culture plates (f). Calculate the theoretical frequencies and test their Goodness-of-fit.

x :	0	1	2	3	4
f :	264	117	42	15	7

2 Solve $\frac{dx}{dt} + y = \sin t \, ; x + \frac{dy}{dt} = \cos t$ with x=2 and y=0 when t = 0

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