



COMSATS University Islamabad, Vehari Campus.

Department of Computer Sciences

1st Sessional EXAMINATION – Spring 2020

Class: BSCS-B17/BSSE-B10
Subject: Differential Equations (MTH242)
Total Time Allowed: 1 hour
Name: Abmer Jybal

Date: 11-03-20
Instructor: Ghazala Ashraf
Max Marks: 20
Registration # SP18-BSE-002

Q1: (a) Verify that the indicated function is the solution of the given differential equation.

x^2 dy + 2xydx = 0; where y = -1/x^2

(2)

(b) Determine whether the given function is Homogeneous or not?

(2) (3)

If so, describe the degree of homogeneity.

- i) ln x^3 / ln y^3 ii) cos(x^2 / x + y)

Q2: (a) Solve the following exact differential equation.

(y^3 - y^2 sin x - x)dx + (3xy^2 + 2y cos x)dy = 0

(5)

(b) Compute the Integrating Factor (I.F) of the following equation.

cos x dy/dx + sin xy = 1

(5)

Q3: (a) Check whether the following functions are linearly independent.

y = e^-3x, y = e^4x

(2) (1)

Also, verify that they form the fundamental set of solutions for the given differential equations.

y'' - y' - 12y = 0

e^-3x, e^4x

(b) Solve the following 3rd Order homogenous linear diff. equation.

y''' - 5y'' + 3y' + 9y = 0

(3)

Good Luck ☺

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