

GOVERNMENT COLLEGE OF ENGINEERING, AMRAVATI
(An autonomous institute of Govt. of Maharashtra)

CT-1 W-2015 SHU303 [ELPO/EXTC/IN] ENGG.MATHS-III MARKS-15 TIME-1 HOUR

Q.1 Solve the simultaneous equation $\frac{d^2x}{dt^2} - 3x - 4y = 0$, $\frac{d^2y}{dt^2} + x + y = 0$

Q.2 Solve $x^2 \frac{d^2y}{dx^2} - 3x \frac{dy}{dx} + y = \log x \frac{\sin(\log x) + 1}{x}$

Q.3 ATTEMPT ANY THREE

(A) Solve $\frac{1}{8x^2} \left(\frac{d^2y}{dx^2} - 4 \frac{dy}{dx} + 4y \right) = e^{2x} \sin 2x$

(B) Solve $(D^2 + 5D + 6)y = e^{-2x} \sec^2 x (1 + 2 \tan x)$

(C) Solve the method of variation of parameter $(D^3 + D)y = \tan x$

(D) Solve $[(3x+2)D^2 + 3D]y = \frac{3x^2 + 4x + 36y + 1}{(3x+2)}$

$\cos \frac{\cos 2x}{2}$

3

3

9

$u' = \sin x \cos x + \frac{\sin x}{\cos x}$

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$\sin x = \frac{\cos x}{2}$

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CT-1 [Direct-IInd year] W- 2015

MARKS-15 TIME-1 HOUR

SHU301, SHU303, SHU304. ENGG. MATHS-III [CIVIL/ MECH/ ELPO/ EXTC/ CS/ IT/ IN]

Q.1 Using the method of variation of parameters Solve

$$\left(1 + \frac{1}{e^x}\right)^2 \left[(D^2 - 1)y\right] = 1$$

3

Q.2 Solve $y = \log x \frac{\sin(\log x) + 1}{x} - x^2 \frac{d^2 y}{dx^2} + 3x \frac{dy}{dx}$

3

Q.3 ATTEMPT ANY THREE

9

(A) Solve $(D^3 + 1)y = \cos^2\left(\frac{x}{2}\right) + e^{-x}$

(B) Solve $\frac{1}{e^x} \left(\frac{d^2 y}{dx^2} - 2 \frac{dy}{dx} + 2y \right) - \tan x = 0$

(C) Solve the method of variation of parameter $\frac{d^2 y}{dx^2} + y = \tan x$

(D) Solve $(1+x)^2 \frac{d^2 y}{dx^2} + (1+x) \frac{dy}{dx} + y = 2 \sin \log(1+x)$