

24. Solve  $y'' + 6y' + 5y = e^{-2t}$ , given  $y(0) = 0, y'(0) = 1$ .

j h;  $y'' + 6y' + 5y = e^{-2t}$ , given  $y(0) = 0, y'(0) = 1$ .

25. Solve : Solve:  $p^2 + q^2 = z^2(x + y)$

j h;  $p^2 + q^2 = z^2(x + y)$ .

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CODE: 192105

TIME: 3 Hrs

NOVEMBER 2020

MAX. MARKS: 50

PART A

(10 x 2=20)

Answer any **TEN** questions.

1. Solve  $\frac{d^2y}{dx^2} + (a+b)\frac{dy}{dx} + aby = 0$

j h;  $\frac{d^2y}{dx^2} + (a+b)\frac{dy}{dx} + aby = 0$

2. Solve  $\frac{d^2y}{dx^2} - 5\frac{dy}{dx} + 6y = e^{4x}$

j h;  $\frac{d^2y}{dx^2} - 5\frac{dy}{dx} + 6y = e^{4x}$

3. Solve  $(D^2 + D + 1)y = x$

j h;  $(D^2 + D + 1)y = x$

4. Solve :  $(y + z)dx + (z + x)dy + (x + y)dz = 0$

j h;  $(y + z)dx + (z + x)dy + (x + y)dz = 0$

5. Find  $L\left(\frac{e^{3t} - e^{-2t}}{t}\right)$

f h z f  $L\left(\frac{e^{3t} - e^{-2t}}{t}\right)$

6. State the formula for  $L\left(\frac{d^2y}{dt^2}\right)$

$L\left(\frac{d^2y}{dt^2}\right)$  d; Nj j u j i j v G J f /

7. Define Laplace transform.

y h g y h ! ; c U k h w w j i j t i u a W /

$$f \mapsto L^{-1}\left(\frac{1}{s(s+1)}\right).$$

$$f_{hz} \propto L^{-1} \left( \frac{1}{s^2 - a^2} \right)$$

$$j \text{ h: } \frac{\partial^2 z}{\partial x^2} = \sin x$$

gFj p ti ffbfG rkdghl od; thpi ri a ti uaW/

constants  $a$  and  $b$  from  $\mathbf{z} = \mathbf{axy} + \mathbf{b}$ .

$$z = axy + b$$

ef f p g Fj p ti ff; bfGr; rkdghl j l vGJ f

*(2 x 5=10)*

Answer any **TWO** questions.

j)  $(D^2 + D - 2)y = \sin 2x$

j h:  $(x^2 D^2 - 2xD - 4)y = x^4$

$$\text{j } \mathbf{h}_i: yz \log z dx - zx \log z dy + xy dz = 0$$

மதிப்பிடுக:  $\int_0^{\infty} te^{-3t} \cos t \, dt$

மதிப்பிடுக :  $L(\sin^3 2t)$

$$\text{hz f} \quad L^{-1}\left(\frac{s-3}{s^2+4s+13}\right)$$

from  $\mathbf{z} = f\left(\frac{\mathbf{y}}{\mathbf{x}}\right)$

20. Solve:  $p^2 z^2 + q^2 = 1$

$$j \in \mathbb{N} : p^2 z^2 + q^2 = 1$$

$(2 \times 10 = 20)$

Answer any **TWO** questions.

j)  $x^2 D^2 - 2xD - 4)y = x^2 + 2\log x$

j)  $(D^2 + 1)y = \tan x$

$$\text{fhz } f : L^{-1} \left( \frac{s^2}{(s^2 + a^2)^2} \right)$$