Question 1

Complete

Mark 0.00 out of 3.00

Consider the differential equation $\frac{dy}{dx} = -\frac{x^2y^3+2y}{2x-2x^3y^2}$

Select one:

- $\frac{1}{x^3y^3}$ is an integrating factor
- $\frac{1}{2x^2y^2}$ is an integrating factor.
- $\frac{1}{xy}$ is an integrating factor
- $\frac{1}{3x^3y^3}$ is an integrating factor

The correct answer is:

$\frac{1}{3x^3y^3}$ is an integrating factor

Question 2

Complete

Mark 4.00 out of 4.00

The solution to the equation $\frac{dQ}{dt}+Q=1$ with $Q=0$ at $t=0$ is

Select one:

- $Q(t)=e^{-t}+1$
- $Q(t)=1-e^{t}$
- $Q(t)=e^{-t}-1$
- $Q(t)=1-e^{-t}$

The correct answer is:
$Q(t)=1-e^{-t}$

Question 3

Complete

Mark 5.00 out of 5.00

Mark Your attendance.

Select one:

- a. Present
- b. Absent

The correct answers are: Present, Absent

Question 4

Complete

Mark 0.00 out of 3.00

If $P(x)$ and $Q(y)$ are arbitrary functions of x and y respectively, then the differential equation $P(x)dx+Q(y)dy=0$ is

Select one:

- always exact
- never exact
- exact only when $P(x)=x$ and $Q(y)=y$
- may or may not be exact

The correct answer is:
always exact

Question 5

Complete

Mark 3.00 out of 3.00

Choose the solution of the differential equation $\{(D-1)^4(D^2+2D+2)^2\}y=0$

Select one:

- $(C_1+C_2x+C_3x^2+C_4x^3)\,e^x+\,e^{-x}\{(C_5+C_6x)\cos x\,+(C_7+C_8x)\sin x\}$
- $(C_1+C_2x+C_3x^2+C_4x^3)\,e^{-x}+\,e^{x}\{(C_5+C_6x)\cos x\,+(C_7+C_8x)\sin x\}$
- $(C_1+C_2x+C_3x^2+C_4x^3)\,e^{-x}+\,e^{-x}\{(C_5+C_6x)\cos x\,+(C_7+C_8x)\sin x\}$
- $(C_1+C_2x+C_3x^2+C_4x^3)\,e^x+\,e^{x}\{(C_5+C_6x)\cos x\,+(C_7+C_8x)\sin x\}$

The correct answer is:

$(C_1+C_2x+C_3x^2+C_4x^3)\,e^x+\,e^{-x}\{(C_5+C_6x)\cos x\,+(C_7+C_8x)\sin x\}$

Question 6

Complete

Mark 4.00 out of 4.00

Choose the correct particular Integral for the Differential equation $(D^3-D^2-6D)y=x^2+1$

Select one:

- $-\frac{1}{6}\left(\frac{x^3}{3}+\frac{x^2}{6}+\frac{25x}{18}\right)$
- $\frac{1}{6}\left(\frac{x^3}{3}-\frac{x^2}{6}+\frac{25x}{18}\right)$
- $-\frac{1}{6}\left(\frac{x^3}{3}-\frac{x^2}{6}+\frac{25x}{18}\right)$
- $\left(\frac{x^3}{3}-\frac{x^2}{6}+\frac{25x}{18}\right)$

The correct answer is:

$-\frac{1}{6}\left(\frac{x^3}{3}-\frac{x^2}{6}+\frac{25x}{18}\right)$

Question 7

Complete

Mark 0.00 out of 3.00

To reduce the differential equation $\frac{dy}{dx} = \frac{y^3}{e^{2x}+y^2}$ to linear form

Select one:

- we substitute $e^{-2x} = v$
- we substitute $y^2 = v$
- we substitute $e^{2x} = v$
- we substitute $y^3 = v$

The correct answer is:

we substitute $e^{-2x} = v$