

Question (1): Choose the correct answer?

10marks

1) $\int_{\frac{\pi}{2}}^{\pi} e^x \sin 4x dx =$ (1)

a) π	b) 0	c) e^x	d) 1
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2) $\int \sec x dx = \dots\dots\dots + c$ (1)

a) $\ln \sec x $	b) $\sec x \tan x$
c) $\ln \sec x + \tan x $	d) $\ln \sec x \tan x $

3) $\int_{-2}^2 x^3 \sin x dx =$ (1)

4) 2	5) -2	6) 0	7) 1
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4) $\int \sinh x dx = \dots\dots\dots + c$ (1)

a) $\tanh x$	b) $\cosh x$	c) $\operatorname{sech} x$	d) $\operatorname{csch} x$
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5) $\int \frac{dx}{9+x^2} = \dots\dots\dots + c$ (1)

a) $\tan^{-1} x$	b) $\frac{1}{9} \tan^{-1}(\frac{x}{9})$
c) $\frac{1}{3} \tan^{-1}(\frac{x}{3})$	d) $\ln 3 \tan x $

6) $\int_0^1 e^x dx =$ (1)

a) $e - 1$	b) $1 - e$	c) e	d) $-e$
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7) $\int \operatorname{sech}^2 x dx = \dots\dots\dots + c$ (1)

a) $\tanh x$	b) $\cosh x$	c) $\operatorname{sech} x$	d) $\operatorname{csch} x$
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8) $\int 3x e^x dx = \dots\dots\dots + c$ (1)

a) $3xe^x - 3e^x$	c) $3xe^x$
c) $3e^x$	d) $3xe^x + 3e^x$

9) $\int_0^{\frac{\pi}{2}} \cos x dx = \dots\dots\dots$ (1)

a) 0	b) 2	c) 1	d) $\frac{\pi}{2}$
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10) $\int_0^4 x dx = \dots\dots\dots$ (1)

a) 0	b) 2	B) 4	C) 8
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Question(2) : Evaluate the following integrals? 10marks

1) $\int \frac{dx}{\sec x} =$ (2)

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2) $\int \sqrt{x^3} dx = \dots\dots\dots$ (2)

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3) $\int (\csc^2 x + 2) dx =$ (2)

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4) $\int \tan^3 x \sec^2 x dx =$ (2)

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5) $\int 3x^2 \cos x dx =$ (2)

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Question(3) :Find the following integrals 15marks

1) $\int \tan^{-1} x dx = \dots\dots\dots$ (3)

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2) $\int \tan^5 x \sec^4 x \, dx = \dots\dots\dots(3)$

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3) $\int \sin 5x \cos 2x \, dx = \dots\dots\dots(3)$

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4) $\int (x^2 + 2)^2 \, dx = \dots\dots\dots(3)$

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5) $\int \sqrt{\operatorname{sech} x} \operatorname{sech} x \tanh x \, dx = \dots\dots\dots(3)$

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Question(4) :

15marks

1) Evaluate by using completing square

(5)

$$\int \frac{x dx}{x^2 - 10x + 28}$$

2) Determine the surface area of the solid obtained by rotating

$$y = \sqrt{9 - x^2}, \quad 0 \leq x \leq 2 \text{ about x-axis ?}$$

(5)

3) Find the volume obtained by rotating

$$y = x^2 + 2, \quad x = 0 \text{ and } x = 2 \quad \text{about } x - \text{axis ?} \quad (5)$$