

SUBJECT: Mathematics EXAM 2nd Annual 2022 CLASS: II-V
 GROUP: 01 DATE: 07-12-22

(GENERAL INSTRUCTIONS FOR MARKING KEY)

$$\frac{dy}{dx} = \frac{y^2 - 4x^3}{2y(1-x)}$$

$$8 \frac{dx}{dy} = \frac{2y(1-x)}{y^2 - 4x^3} \quad (1M)$$

$$(iii) \int (4+x^2)^{-\frac{1}{2}} x dx$$

$$= \frac{1}{2} \int (4+x^2)^{-\frac{1}{2}} \cdot 2x dx \quad (1M)$$

$$= \sqrt{4+x^2} + C \quad (1M)$$

$$(iv) - \int \frac{-\sin \theta}{(1^2 + (\cos \theta)^2)} d\theta \quad (1M)$$

$$= -\tan^{-1}(\cos \theta) + C \quad (1M)$$

$$(v) (\ln x) \frac{x^3}{3} - \int \frac{1}{x} \cdot \frac{x^3}{3} dx \quad (1M)$$

$$= (\ln x) \frac{x^3}{3} - \frac{1}{3} \int x^2 dx$$

$$= (\ln x) \frac{x^3}{3} - \frac{x^3}{9} + C \quad (1M)$$

$$(vi) \text{Area} = \int_{-\pi/2}^{\pi/2} \cos x dx$$

$$= \left| \sin x \right|_{-\pi/2}^{\pi/2} \quad (1M)$$

$$= \sin \frac{\pi}{2} - \sin \left(-\frac{\pi}{2}\right)$$

$$= 1 + 1 = 2 \text{ Sq. unit} \quad (1M)$$

(vii) Correct definition

(1+1) Marks

$$(viii) \int \frac{2a}{(x-a)(x+a)} dx$$

After partial fraction we get

$$\int \left(\frac{1}{x-a} - \frac{1}{x+a} \right) dx \quad (1M)$$

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RE-CHECKED BY - نام درج بالا والی پروف (انشائیہ + معروضی) اور ہدایات کے حوالے سے مکمل طور پر تکراری ہے۔ کسی قسم کی غلطی نہ ہے۔

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