Class 12 Time : 1 hr.

9-8-2016 Second Unit Test (First Term) in MATHEMATICS M. Marks : 20

GENERAL INSTUCTIONS:

i) Q1 to Q4 are of 1 mark each.

ii) Q5 to Q9 are of 2 marks each.

iii) Q10 & Q11 are of 3 marks each.

Q1. Evaluate: $\int \frac{x^2 - 1}{x^2 + 1} dx$.

Q2. Evaluate: $\int \frac{e^{5 \log x} - e^{4 \log x}}{e^{3 \log x} - e^{2 \log x}} dx$.

Q3. Evaluate: $\int \sin^{-1}(\cos x)\, dx$.

Q4. Using differentials find the approximate value of square root of 26.

Q5. Find the intervals in which the function $f(x) = 5 + 36x + 3x^2 - 2x^2$ is increasing or decreasing?

Q6. The two equal sides of an isosceles triangle with fixed base 'b' cm, are decreasing at the rate of 3 cm/sec. How fast is the area decreasing when each of the equal sides is equal to the base?

Q7. Evaluate: $\int \frac{dx}{1 + \tan x}$.

Q8. Find the co-ordinates of the points of the curve $y = x^2 + 3x + 4$, the tangents at which pass through the origin.

Q9. Find the local maxima and minima of the function $f(x) = \sin x - \cos x$ where $0 < x < 2\Pi$.

Q10. A square piece of tin of side 18 cm is to be made into a box without the top by cutting a square piece from each corner and folding up the flaps. What should be the side of the square to be cut off so that the volume of the box is maximum?

Q11. Evaluate: $\int \frac{dx}{\sin(x - \alpha)\cos(x - \beta)}$.

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