

TED (15) – 1002

(REVISION — 2015)

Reg. No.

Signature

DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/
MANAGEMENT/COMMERCIAL PRACTICE — APRIL, 2018

ENGINEERING MATHEMATICS - I

[Time : 3 hours

(Maximum marks : 100)

PART — A

(Maximum marks : 10)

Marks

I Answer *all* questions in one or two sentences. Each question carries 2 marks.

1. If $\sin \alpha = 5/13$, α is acute, find $\cos \alpha$.
2. Prove that $\sin 60 \cos 30 + \cos 60 \sin 30 = 1$.
3. In a triangle ABC, $a = 6$ cm, $b = 8$ cm and $\sin B = 3/5$. Find $\sin A$.
4. Find the derivative of $e^x + \sin^{-1} x$ with respect to x .
5. Find the rate of change of volume of a cube with respect to its side. $(5 \times 2 = 10)$

PART — B

(Maximum marks : 30)

II Answer any *five* of the following questions. Each question carries 6 marks.

1. If $A + B = 45^\circ$, prove that $(1 + \tan A)(1 + \tan B) = 2$.
2. Prove that $\cos A + \cos (A + 2\pi/3) + \cos (A - 2\pi/3) = 0$
3. Solve ΔABC , given $A = 34^\circ$, $b = 40$ cm and $c = 25$ cm.
4. Show that $\sin 20 \sin 40 \sin 60 \sin 80 = 3/16$.
5. Differentiate 'cos x ' by the method of first principles.
6. Find $\frac{dy}{dx}$ if $x^3 + y^3 = 3axy$.
7. Find the equation to the tangent and normal to the curve $y = 3x^2 + x - 2$ at $(1, 2)$. $(5 \times 6 = 30)$