

F 9287

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Reg. No.....

Name.....

B.TECH. DEGREE EXAMINATION, NOVEMBER 2011

Third Semester

Branch : Civil/Mechanical/Electrical and Electronics/Automobile/Aeronautical/Electronics and Communication/Applied Electronics and Instrumentation/Electronics and Instrumentation/Instrumentation and Control Engineering/Production Engineering/Polymer Engineering

EN 010 301 A—ENGINEERING MATHEMATICS—II (CE, ME, EE, AU, AN, EC, AI, EI, IC, PE AND PO)

(Regular)

Time : Three Hours

Maximum : 100 Marks

Part A

*Answer all questions briefly.
Each question carries 3 marks.*

- 1/ Find a unit vector normal to the surface $xy^3z^2 = 4$ at the point $(-1, -1, 2)$.
2. If S is any closed surface, prove that $\int_S \text{curl } \vec{F} \cdot d\vec{S} = 0$.
3. Evaluate $\Delta^2 \cos 2x$.
4. What is Simpson's one-third rule ? How it is related to Newton-Cote's formula ?
5. Find the inverse transform of $\frac{2z^2 + 3z}{(z+2)(z-4)}$.

(5 × 3 = 15 marks)

Part B

*Answer all questions.
Each question carries 5 marks.*

6. Find $\text{div } \vec{F}$ and $\text{curl } \vec{F}$, where $\vec{F} = \text{grad} (x^3 + y^3 + z^3 - 3xyz)$.
7. Find the work done in moving a particle in the force field $\vec{F} = 3x^2\hat{i} + (2xz - y)\hat{j} + z\hat{k}$ along the curve defined by $x^2 = 4y$, $3x^3 = 8z$ from $x = 0$ to $x = 2$.
8. Prove that $e^x = \left(\frac{\Delta^2}{E}\right)e^x \cdot \frac{Ee^x}{\Delta^2 e^x}$, the interval of differencing is h .

Turn over