Pokhara University

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| Level: Bachelor | Semester – Fall | Year : 2012 |
| Programme: BE | | Full Marks: 100 |
| Course: Engineering Mathematics II | | Pass Marks: 45 |
| Time : 3hrs. |

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| *Candidates are required to give their answers in their own words as far as practicable.* |
| *The figures in the margin indicate full marks.* |
| Attempt all the questions. |

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|  | 1. Examine whether the lines are coplanar? If so find the equation the plane containing them 2. Find the equation of the sphere which touches the sphere x2+y2+z2 –x +3y +2z -3 =0 at the point (1,1,-1) | 8  7 |
|  | 1. State and prove Euler’s theorem for homogeneous function of two variables with degree n.  show that . 2. Find the minimum value of, such that. | 8  7 |
|  | 1. Sketch the region of integration and evaluate the integral by reversing the order of integration. 2. Find the volume of the solid whose base is the region in xy-plane that is bounded by the parabola and the line  while the top of the solid is bounded by. 3. Find equation of the sphere through the circle, z = 0 and is cut by the plane in a circle of radius 3. | 5  5  5 |
|  | 1. Solve  + y logy = xyex. 2. Solve | 7  8 |
|  | 1. Solve y" + 2y' + y = e-x, y(0) = -1, y'(0) = 1 2. Show that   **OR**  Solve xy' - 3y = k (Constant) by power series method. | 7  8 |
|  | 1. Find Laplace Transform of te2t sin t. 2. Find £-1 3. Solve by using the laplace transform the initial value problem y''– y| -2y =0, where y(0) = 8, y|(0) = 7 | 8  7 |
|  | Attempt all the questions:   1. Find the integrating factor of 2. Show that Laplace transformation is a linear. 3. Find the Laplace transform of t sinat. 4. State Bessel function of the first kind of order n. 5. Write down Legendre equation. What is legendre's function? | 2  2  2  2  2 |