TED (10) – 1015 Reg. No. ...........................................

(REVISION – 2010) Signature ...........................................

**SECOND SEMESTER EXAMINATION IN ENGINEERING/**

**TECHNOLOGY-MARCH, 2014**

**TECHNICAL MATHEMATICS-II**

 (Maximum marks: 100) [*Time*: 3 hours

 Marks

PART – A

I Answer ***all*** questions. Each question carries 2 marks.

 1. Evaluate.

 2. Find k if , is continuous at .

 3. Find the slope of the curve  at .

 4. Find .

 5. Solve . (

PART – B

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

 1. Find the differential coefficient of  using first principle.

 2. For what values of  will the tangent to the curve  be parallel to: (i) *x*-axis (ii) *y*-axis.

 3. The distance S meters travelled by a particle is given by  where *t* represents the

 time. Prove that the acceleration varies as the distance .

 4. Evaluate .

 5. Find the area included between one arch of the curve and the x-axis.

 6. Evaluate .

 7. Solve  . 

PART – C

(Answer ***one*** full question from each unit. Each question carries 15 marks.)

Unit – I

**III** 1. Evaluate . 4

 2. If , prove that . 5

 3. Find:

 (a)  (b)  6

**OR**

**IV** 1. Find the differential coefficient w.r.t *x*

 (a)  (b)  5

 2. Find  , if  5

 3. If , , prove that . 5

Unit – II

**V** 1. Find the equation of the tangent to the parabola  at. 5

 2. A hollow cylindrical vessel to hold 100 cc of water is to be made so that the area of the metal

 used is minimum. Prove that the radius which will give minimum area is cms. 5

 3. Show that the function is increasing for all value of *x* . 5

**OR**

**VI** 1. A circular plate of radius 3 inches expands when heated at the rate of 2 inch/sec.

 Find the rate at which the area of the plate increasing at the end of 3 seconds. 5

 2. Find the equation of the tangent to the curve  at. 5

 3. An open box is to be made out of a square sheet of side 18 cm, by cutting off equal squares at

 each corner and turning up the sides. What size of squares should be cut in order that the

 volume of the box may be maximum? 5

Unit – III

**VII** Find :

 1. . 4

 2. . 5

 3. . 3

 4. . 3

**OR**

**VIII**

 1. Find . 4

 2. Find . 3

 3. . 4

 4. . 4

Unit – IV

**IX** 1. Find the area enclosed between the parabola and the line. 5

 2. Find the volume of a sphere of radius r using integration. 5

 3. Solve . 5

**OR**

**X** 1. Find the area bounded by the curve and the x-axis. 5

 2. Find the volume of a cone of radius *r* and height *h*, using integration. 5

 3. Solve . 5