I B. Tech. I Semester Regular Examinations Dec/Jan 2015/2016

English through Literature

(Common to All Branches)

Max. Marks: 70   Time: 3 Hours

Answer *all five* units by choosing one question from each unit (5 x 14 = 70Marks)

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UNIT-I

1.	a)	Describe the first meeting of Mini and Abdul Rehman, Cabuliwallah	7M
	b)	What road did the poet choose? Does he regret his choice?	7M

OR

2.	Describe the life of Cabuliwallah.	14M

UNIT-II

3.	What kind of life the dog leads from its childhood to adulthood in Mark Twain is "A dog's tale"?	14M

OR

4.	a)	What is the message presented in the poem 'If' by Rudyard Kipling?	7M
	b)	What is the contribution of Sudha Murthy towards society?	7M

UNIT-III

5.	What sacrifice do Della and Jim make for each other?	14M

OR

6.	Why is Dr. Vijay Bhatkar referred to as the architect of India's Information technological revolution?	14M

UNIT-IV

7.	Describe the astrologer's meeting with the stranger. What challenge they throw to each other?	14M

OR

8.	Give a detailed account of J.C Bose's life at Presidency College.	14M

UNIT-V

9.	What developments did Homi Jehangir Bhabha make towards nuclear programme?	14M

OR

10.	What is the central theme of the play "The Proposal" by Anton Chekov?	14M

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Code: 5G513c

R-15

I B. Tech. I Semester Regular Examinations Dec/Jan 2015/2016
Engineering Drawing–I
(Computer Science & Engineering)

Max. Marks: 70   Time: 3 Hours
Answer *all five* units by choosing one question from each unit (5 x 14 = 70Marks)
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UNIT–I

1. a) Divide a line AB of 95 mm in to ten equal parts   4M
    b) Construct a square of sides 50 mm, using general construction method.   10M

OR

2. a) Bisect an angle of 55^0 4M
    b) Construct a hexagon of side 55mm, using general construction method.   10M

UNIT–II

3. Construct a hyperbola, with the distance between the focus and the directrix as 50 mm and eccentricity as 3/2. Also, draw normal and tangent to the curve at a point 35 mm from the axis.   14M

OR

4. Construct an ellipse, with distance of the focus from the directrix as 70 mm and eccentricity as 3/4. Also find the normal and tangent to the curve at a point 70 mm from directrix.   14M

UNIT–III

5. A circle of 50 mm diameter rolls on a horizontal line for one revolution, clock wise. Draw the locus of a point on the circle. Also, draw a tangent and a normal to the curve at a point 45 mm from the directing line.   14M

OR

6. Draw an epi-cycloid of a circle of 40 mm diameter, which rolls outside on another circle of 150 mm diameter for one revolution clock-wise. Draw a tangent and a normal to it at a point 95 mm from the centre of the directing circle.   14M

UNIT–IV

7. a) A point P is 35 mm from both the principal planes of projection. Draw its projections.   4M
    b) A point P is 25 mm above HP and 15 mm in front of VP. Another point Q is 35 mm behind VP and 30 mm below HP. Draw the projections f P and Q, keeping the distance between the projectors equal to 80 mm. Draw straight lines, joining (**i**) the top views and (**ii**) the front views.   10M

OR

8. a) A line AB, of 25 mm long is perpendicular to HP and parallel to VP. The end points A and B of the line are 35 mm and 10 mm above HP respectively. The line is 20 mm in front of VP. Draw the projections of the line.   7M
    b) A line AB is 40 mm long and inclined at 35^0 to HP and parallel to VP. The end A of the line is 15 mm above HP and 20 mm in front of VP. Draw the projections of the line.   7M

UNIT–V

9. A line AB of 80 mm long is inclined at an angle of 30^0 to HP and 45^0 to VP. One end of the line is 25 mm above HP and 30 mm in front of VP. Draw its projections.   14M

OR

10. One end of the line PQ is 30 mm above HP and 40 mm in front of VP. The other end is 50 mm above HP and 60 mm in front of VP. The distance between the projectors is 55 mm. Draw its projections and find the true length of the line and true angles.   14M

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Hall Ticket Number :

Code: 5GC12

I B. Tech. I Semester Regular Examinations Dec/Jan 2015/2016
Engineering Chemistry
(Common to CE, ME, CSE & IT)

Max. Marks: 70   Time: 3 Hours
Answer *all five* units by choosing one question from each unit (5 x 14 = 70Marks)
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UNIT–I

1. a) What is the principle of EDTA Method? Describe the estimation of hardness of water by EDTA method   7M

   b) With the help of neat diagram, explain the use of zeolite process for softening of water and its limitations.   7M

OR

2. Discuss the various boiler troubles, their causes and prevention.   14M

UNIT–II

3. a) What are fuel cells? Describe the working principle of methanol-oxygen fuel cell with reactions.   7M

   b) Describe the construction lead-acid battery with the reactions occurring during discharge.   7M

OR

4. a) What is electrochemical corrosion? Explain electrochemical theory of corrosion,   7M

   b) How is corrosion prevented by sacrificial anodic protection and cathodic protection? Explain.   7M

UNIT–III

5. a) How the following are produced?

   (i) Buna-S, (ii) Polyurethane. Mention their properties and uses.   7M

   b) Explain with examples the terms: addition polymerisation, copolymerisation and condensation polymeristaion.   7M

OR

6. a) Distinguish between thermoplastic and thermosetting polymers or resins.   7M

   b) Discuss briefly the process of vulcanization of rubber.   7M

UNIT–IV

7. a) A sample of coal containing 92 % C, 5 % H, 3 % ash. When this coal was tested in the laboratory for its calorific value in the bomb calorimeter, the following data were obtained

   Weight of coal burnt = 0.95 gms

   Weight of water taken = 700 gms

   Water equivalent weigh of bomb calorimeter = 200 gms

   Rise in temperature = 2.48^{0}C

   Cooling correction = 0.02^{0}C

   Fuse wire correction = 10.0 Cal

   Acid correction = 60.0 Cal

   Calculate the net and gross calorific values of the coal in Cal/g. (Assume the latent heat of condensation of steam as 580 cal/gm)   7M

   b) Explain the analysis of flue gases by Orsat's apparatus.   7M

OR

8. a) Explain the Fishcer – Tropsch's method of synthesis of petrol.   7M

   b) A sample of coal was found to contain the following constituents. C = 81%,   O = 8%, S = 1 & H = 5%, N = 1% and ash = 4%. Calculate the minimum amount of air required for the complete combustion of 1 Kg of coal. Also, calculate the percentage composition by weight of the dry products of combustion. Oxygen in air is 23% by weight.   7M

UNIT–V

9. a) What is setting and hardening of cement? Explain various reactions involved in setting and hardening of cement.   7M

   b) Explain the classifications and characteristics of rocket propellants.   7M

OR

10. a) What is the composition of Portland cement? Describe manufacture of Portland cement with dry method.   7M

   b) What are lubricants? Write any three properties and applications of lubricants.   7M

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Code: 5GC14

I B. Tech. I Semester Regular Examinations Dec/Jan 2015/2016
Engineering Mathematics-I
(Common to All Branches)

Max. Marks: 70   Time: 3 Hours
Answer *all five* units by choosing one question from each unit (5 x 14 = 70Marks)
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UNIT–I

1. a) Solve $(1+y^2)dx = (\tan^{-1} y - x) dy$ 7M

   b) Find the orthogonal trajectories of the family of $\dfrac{x^2}{a^2+\}} + \dfrac{y^2}{b^2+\}} = 1,\ \}$ is the parameter   7M

OR

2. a) Solve $x(x-y)dy + y^2 dx = 0$ 7M

   b) A tank initially contains 50 gallons of fresh water. Brine containing 2 pounds per gallon of salt, flows into the tank at the rate of 2 gallons per minute and the mixture kept uniform by stirring, runs out at the same rate. How long will it take for the quantity of salt in the tank to increase from 40 to 80 pounds?   7M

UNIT–II

3. a) Solve $\dfrac{d^2 y}{dx^2} - 6\dfrac{dy}{dx} + 25 y = e^{3x} + \sin x + x^2$ 7M

   b) Solve $y'' - 2y' + y = e^x \log x$ by the method of variation of parameters   7M

OR

4. a) Solve $(D^3 - 5D^2 + 7D - 3) y = e^{2x} \operatorname{Cosh} x$ 7M

   b) In an $L-C-R$ circuit, the charge q on a plate of a condenser is given by

   $L\dfrac{d^2 q}{dt^2} + R\dfrac{dq}{dt} + \dfrac{q}{C} = E \sin pt$. The circuit is tuned to resonance so that $p^2 = 1/LC$. Find the current i 7M

UNIT–III

5. a) Solve $(1-x^2)y'' + 2y = 0$ by series method with $y(0) = 4,\ y'(0) = 5$ 7M

   b) Verify Rolles mean value theorem on $[a,b]$ for the function $f(x) = (x-a)^m (x-b)^n$, m,n are positive integers.   7M

OR

6. a) Solve in series of $9x(1-x)\dfrac{d^2 y}{dx^2} - 12\dfrac{dy}{dx} + 4y = 0$ 7M

   b) Verify Taylors theorem for $f(x) = \log(1+x)$ with Lagranges form of remainder upto 2 terms in the interval $[0,1]$ 7M

UNIT–IV

7. a) If $z = f(x+ct) + w(x-ct)$ then prove that $\dfrac{\partial^2 z}{\partial t^2} = c^2 \dfrac{\partial^2 z}{\partial x^2}$ 7M

   b) Find the maxima and minima of $f(x,y) = x^3 y^2 (1-x-y)$ 7M

OR

8. a) Let $r^2 = x^2 + y^2 + z^2$ and $V = r^m$ then prove that $V_{xx} + V_{yy} + V_{zz} = m(m+1) r^{m-2}$ 7M

   b) Find the maximum and minimum distances of the point $(3,4,12)$ from the sphere $x^2 + y^2 + z^2 = 4$ 7M

UNIT–V

9. Trace the curve $y^2(x-a) = x^2(x+a)$ 14M

OR

10. Trace the curve $r^2 = a^2 \cos 2\}$ 14M

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Code: 5GC15

I B. Tech. I Semester Regular Examinations Dec/Jan 2015/2016
Mathematical Methods-I
(Common to CSE & IT)

Max. Marks: 70   Time: 3 Hours
Answer *all five* units by choosing one question from each unit (5 x 14 = 70Marks)
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UNIT–I

1. a) Find the rank of the matrix $\begin{bmatrix} 0 & 1 & -3 & -1 \\ 1 & 0 & 1 & 1 \\ 3 & 1 & 0 & 2 \\ 1 & 0 & 2 & 0 \end{bmatrix}$ 7M

   b) Find the values of 'k' for which the system of equations
   (3k-8)x+3y+3z=0;   3x+(3k-8)y+3z=0;   3x+3y+(3k-8)z =0
   has a non-trivial solution   7M

OR

2. a) Find the values of 'a' and 'b' for which the equations
   x+ay+z=3; x+2y+2z = b;   x+5y+3z=9
   are consistent, when will these equations have a unique solution?   7M

   b) Find whether the following equations are consistent and if possible find the
   solutions *x+2y+3z=16; x+y-3z = -9; x-2y+2z=8*   7M

UNIT–II

3. a) If λ is an eigen value of a non-singular matrix A, show that $\dfrac{|A|}{\}}$ is an eigen
   value of the matrix adj A   5M

   b) Using Cayley-Hamilton theorem, find the inverse of $A = \begin{pmatrix} 2 & -1 & 2 \\ -1 & 2 & -1 \\ 1 & -1 & 2 \end{pmatrix}$ 9M

OR

4. Define a modal matrix. Diagnolize the matrix $A = \begin{pmatrix} 8 & -8 & -2 \\ 4 & -3 & -2 \\ 3 & -4 & 1 \end{pmatrix}$ 14M

UNIT–III

5. Reduce the quadratic form $3x_1^2 + 3x_2^2 + 3x_3^2 + 2x_1x_2 + 2x_1x_3 - 2x_2x_3$ to the
   canonical form. Find index and signature   14M

OR

6. Show that $A = \begin{pmatrix} i & 0 & 0 \\ 0 & 0 & i \\ 0 & i & 0 \end{pmatrix}$ is a Skew-Hermitian matrix and also unitary. Find
   eigen values and the corresponding eigen vectors of A.   14M

UNIT–IV

7. a) Find a real root of the equation $xe^x = 2$ using false position method   7M

  b) Evaluate $\sqrt{28}$ to four decimal places by Newton-Raphson method   7M

OR

8. a) Find a root of the equation $x^3 - 4x - 9 = 0$, using the bisection method   7M

  b) Find a real root of the equation $3x = \cos x + 1$, using Newton-Raphson method   7M

UNIT–V

9. a) Using Newton's forward interpolation formula, find the value of *f(0.25)* if

x :	0.1	0.2	0.3	0.4	0.5
f(x):	9.9833	4.9696	3.2836	2.4339	1.9177

  7M

  b) Find the polynomial *f(x)*, by using Lagrange's formula and hence find *f(3)* for

x :	0	1	2	5
f(x):	2	3	12	147

  7M

OR

10. a) The following data gives the velocity of a particle for 20 seconds at an interval of 5 seconds. Find the initial acceleration using the entire data :

Time t (sec) :	0	5	10	15	20
Velocity V (m/sec):	0	3	14	69	228

  7M

  b) Evaluate $\int_0^1 \dfrac{dx}{1+x^2}$ using Simpson's 3/8th rule

  7M

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R-15

Code: 5G111

I B. Tech. I Semester Regular Examinations Dec/Jan 2015/2016
Problem Solving Techniques and Introduction to C Programming
(Common to All Branches)

Max. Marks: 70   Time: 3 Hours
Answer *all five* units by choosing one question from each unit (5 x 14 = 70Marks)
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UNIT–I

1. a) Explain software development method with suitable example.   10M
    b) Draw flowchart for factorial of a number.   4M

OR

2. a) What is an algorithm? Explain the properties of an algorithm and write an algorithm to find whether a number is even or odd.   7M
    b) What is flowchart? Describe various symbols used in flowcharts and draw flowchart for reversing the digits of a given number.   7M

UNIT–II

3. a) Define a variable. What are the rules used in naming a variable? Give examples.   5M
    b) What is data type? Explain basic data types and their sizes used in a C Language.   9M

OR

4. a) What is type conversion? Explain about implicit and explicit type conversion with suitable examples.   8M
    b) Define constant. Explain different types of constants used in c language with examples.   6M

UNIT–III

5. a) Define nested loop. Write a c program to print the following pattern.

    1 2 3 4 5
    1 2 3 4 5
    1 2 3 4 5   5M

    b) Write a c program to print the following pattern using while, do-while and for loop.

    1
    1 2
    1 2 3
    1 2 3 4   9M

OR

6. a) Explain if, if-else, nested-if and else-if-ladder with suitable examples.   10M
    b) Explain goto statement with suitable example program.   4M

UNIT–IV

7. a) Write a c program to read one matrix and find the sum of its diagonal elements.   8M
    b) What is string? Describe at least six string handling functions with suitable examples.   6M

OR

8. a) Define an array. Write a c program to perform matrix multiplication on two 3x3 matrices.   7M
    b) Define string. Write a c program to find whether the given string is palindrome or not.   7M

UNIT–V

9. a) Write a c program to swap two numbers using call by value and call by reference.   9M
    b) What is library function? Explain about any five-library functions.   5M

OR

10. a) Write a short note on macros.   6M
    b) What is user defined function? Describe different categories of user defined functions with suitable examples.   8M

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