# FOUR YEAR B.TECH DEGREE EXAMINATION FEBRUARY 2015
## B.Tech FIRST YEAR
### Branch: COMMON TO ALL BRANCHES
### ENGLISH

Time: 3 Hrs

Max. Marks: 60

**Answer any one question from each unit**

(1).    Read the following passage and answer the questions:    10 Marks

When I was a very small boy I was made to learn by heart certain of the fables of La Fontaine, and the moral of each was carefully explained to me. Among those, I learnt was THE ANT AND GRASS HOPPER which is devised to bring home to the young the useful lesson that in an imperfect world, industry is rewarded and giddiness punished. In this admirable fable, the ant spends a laborious summer gathering its winter store, while the grasshopper sits on a blade of grass singing to the sun. Winter comes and the ant is comfortably provided for, but the grasshopper has an empty larder: he goes to the ant and begs for a little food.

a) What is the belief of the writer in this passage?
b) " to bring home" means _____
c) What is a fable?
d) Who is working hard in this passage?
e) Who has the correct moral quality in this passage?

(2) Correct the Ten of the following sentences and rewrite them:    10 Marks

(a) Each of the Scientists have attended the conference.
(b) One of my books are missing
(c) The news from the desk are bad.
(d) None of the Computers are not working
(e) The two brothers shared their property among themselves.
(f) He always sits besides me in the class.
(g) He looks the picture on the screen
(h) The film is based on true story
(i) I listen him.
(j) The sun is rising in the east.
(k) The man was looking on an opportunity
(l) He bought two pair of shoes.
(m) She likes the apples
(n) Suresh is not as stronger as Subhash

(3)    (a) Write a letter to your parents describing your training at a company.    5 Marks
OR
(b) Write a letter to your friend, describing your plans after your graduation.

(4)    (a) Write a technical report on industries in your district.    10 Marks
OR
(b) Write a technical report on the problems of labour working on daily wages

(5)    (a) Prepare a speech on the need for value education.    10 Marks
OR
(b) Write an imaginary dialogue between two friends on the uses on Information Technology.

[p.t.o.]

(6)     Use any FIVE of the following idioms in your own sentences:          5 Marks

    (a)   Hot potato
    (b)   kept in the dark
    (c)   At the drop of a hat
    (d)   in ones and twos
    (e)   Ball is in your court
    (f)   to blow one's trumpet
    (g)   Best of both worlds
    (h)   irons in the fine
    (i)   at the fag-end
    (j)   take to heels

(7)     Fill in the blanks with suitable articles/ prepositions:          5 Marks

    (a)   He jump _____ the river, causing an accident.
    (b)   I was troubled _____ own people
    (c)   Galileo invented _____ telescope
    (d)   She is watering _____ plants.
    (e)   He is late by _____ hour

(8)     Rewrite the following sentences as directed:          5 Marks

    (a)   Edison discovered electric bulb (add a question tag)
    (b)   Ganga is the longest river in India  (into comparative degree)
    (c)   Vyasa wrote Mahabharata (into Passive voice)
    (d)   Raju said, " I will go to the railway station  to receive his friend." (into indirect speech)
    (e)   He told me that he would meet me on Sunday (into direct speech)

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# FOUR YEAR B.TECH DEGREE EXAMINATION FEBRUARY-2015
## B.Tech : FIRST YEAR
### Branch: COMMON TO ALL BRANCHES
### ENGINEERING MATHEMATICS-I

Time: 3 Hrs                                                                 Max. Marks: 60

### Answer any one question from each unit

## UNIT-I

1(a) Find the rank of matrix $\begin{bmatrix} 1 & 2 & 3 & 0 \\ 2 & 4 & 3 & 2 \\ 3 & 2 & 1 & 3 \\ 6 & 8 & 7 & 5 \end{bmatrix}$.

(b) Investigate the value of λ and μ so that the equations x+ y + z = 6; x +2y +3z = 10; x + 2y + λz = μ have (i) no solution (ii) a unique solution and (iii) an infinite number of solutions.

### (OR)

2. Verify Cayley- Hamilton theorem, and find the inverse of $\begin{bmatrix} 3 & 2 & 4 \\ 4 & 3 & 2 \\ 2 & 4 & 3 \end{bmatrix}$.

## UNIT- II

3. (a) State and prove the Cauchy's mean value theorem.
   (b) Examine the function for maxima and minima values of
   $f(x, y) = x^3 y^2 ( 1 - x - y)$ for x>0, y>0.

### (OR)

4. (a) Expand $f(x, y) = \tan^{-1}(y/x)$ in powers of $(x - 1)$ and $(y - 1)$ upto $3^{rd}$ degree terms. Hence compute f(1.1, 0.9) approximately using Taylors series.

(b) Find the volume of the greatest rectangular parallelepiped that can be inscribed in the ellipsoid

$$\frac{x^2}{a^2} + \frac{y^2}{b^2} + \frac{z^2}{c^2} = 1$$

## UNIT–III

5. (a) Change the order of integration in the integral $I = \int\limits_{0}^{a} \int\limits_{x/a^2}^{\sqrt{\frac{x}{a}}} (x^2 + y^2)\, dxdy$.

(b) Evaluate $\int\limits_{0}^{5} \int\limits_{0}^{x^2} x(x^2 + y^2)\, dxdy$.

### (OR)

6. (a) Derive the relation between beta and gamma functions.

(b) Evaluate the integral $\int\limits_{0}^{\infty} e^{-ax} x^{m-1} \sin bx \; dx$ in terms of gamma function.

## UNIT-IV

7. (a) Find div F and curl F if $F = x^2yzi + xy^2zj + xyz^2k$ at the point $(1, 2, 3)$.

   (b) Prove that $\nabla^2 r^n = n(n+1)r^{n-2}$

### (OR)

8. (a) If $F = 3xyi - y^2j$, evaluate $\int F.dR$, where C is the curve in the $xy$ – plane $y = 2x^2$ from $(0, 0)$ to $(1, 2)$.

   (b) Verify Greens theorem $\int_C (3x - 8y^2)dx + (4y - 6xy)dy$ where C is the boundary of the region bounded by $x = 0$, $y = 0$ and $x + y = 1$.

## UNIT- V

9. (a) Find the differential equation of all planes which are at a constant distance 'd' from the origin.

   (b) Solve $\dfrac{\partial^2 z}{\partial x \, \partial y} = e^{-y} \cos x$.

### (OR)

10. (a) Solve $(mz - ny)p + (nx - lz)q = ly - mx$.

    (b) Solve $p - q = \log(x + y)$.

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# FOUR YEAR B.TECH DEGREE EXAMINATION FEBRUARY 2015
## B.Tech FIRST YEAR
### Branch: COMMON TO ALL BRANCHES
### ENGINEERING MATHEMATICS-II

**Time: 3 Hrs**  **Max. Marks: 60**

**Answer any one question from each Unit**

## UNIT-I

1. (a) Solve $(D^2 - 2D + 4)y = e^x \cos x$.

   (b) Solve $y^{11} - 4y = x \sinh x$.

(OR)

2. (a) Solve $y^{11} + a^2 y = \sec ax$.

   (b) Solve by the method of variation of parameters, $y^{11} - 2y^1 + y = e^x \log x$.

## UNIT- II

3. (a) Find the Laplace Transforms to the functions.

   (i) $\cosh at - \cos at$ ; (ii) $e^{-3t}\sin 5t \sin 3t$.

   (b) Find the Laplace transforms of (i) $\dfrac{\cos at - \cos bt}{t}$ (ii) $\dfrac{1 - \cos t}{t^2}$

(OR)

4. (a) Evaluate $\displaystyle\int_0^\infty te^{-3t} \sin t\, dt$ by using Laplace transforms.

   (b) Find $L\left\{\sin \sqrt{t}\right\}$.

## UNIT–III

5. Find the inverse Laplace transforms of (a) $\dfrac{4s + 5}{(s-1)^2(s+2)}$; (b) $\dfrac{s}{s^4 + 4a^4}$.

(OR)

6. Solve $y^{11} + 4y^1 + 3y = e^{-t}$, $y(0) = y^1(0) = 1$, by using Laplace transforms.

## UNIT-IV

7. (a) Expand $f(x) = \begin{cases} \dfrac{1}{4} - x, & if\ 0 < x < \dfrac{1}{2} \\ x - \dfrac{3}{4}, & if\ \dfrac{1}{2} < x < 1 \end{cases}$ as the Fourier series of sine terms

   (b) Obtain Fourier series to represent $e^{-x}$ from $x = -L$ to $x = L$.

8. (a)    Express f(x) = cosx as a half –range cosine series in $0 < x < \pi$.

(b)    State and prove Parseval's formula for Fourier series.

## UNIT- V

9. (a)    Find the Fourier Transforms of f(x) = 1 if $|x| < a$, f(x) = 0 if $|x| > a$.

(b)    Find the Fourier sine and cosine transforms of f(x) = 2x for $0 < x < 4$.

10. Find the inverse Fourier transforms of

(a) $\dfrac{1}{(s+1)(s-2)^2}$ ; and (b) $\dfrac{1}{s^2(s^2-a^2)}$ .

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# FOUR YEAR B.TECH DEGREE EXAMINATION FEBRUARY 2015
## B.Tech FIRST YEAR
### Branch: COMMON TO ALL BRANCHES
### ENGINEERING GRAPHICS

Time: 3 Hrs                                                                 Max. Marks: 60

### Answer any one question from each unit

## UNIT-I

1. A rectangular plot of land, with an area of 15.0 hectares, is represented on a map by a similar rectangle of 15sq.cm. Calculate the scale of the map. Also, construct a scale to read upto a single metre and long enough to measure 500 mts..

### (OR)

2. Draw tan epi- cycloid of circle of 20 diameter, which rolls outside on another circle of 60 diameter for one revolution clock-wise. Draw a tangent and a normal to it at a point 30 from the centre of a directing circle.

## UNIT- II

3. A line AB is in the first Quadrant. Its end A and B are 20 mm and 60 mm infront of V.P. respectively . The distance between the end projectors in 75 mm. The line is inclined at $30^0$ to the H.P. and its H.T. is 10 mm above XY. Draw the projections of AB and determine its true length and the VT.

### (OR)

4. A regular hexagonal plane of 45 side has a corner on H.P. and its surface is inclined at $45^0$ to H.P. Draw its projections, when the diagonal through the corner, which is on H.P. makes $30^0$ with V.P.

## UNIT–III

5. Draw the projections of cone of diameter 30mm and axis 50 mm long, lying on HP with one of its generators, such that the nearest contour generator is kept parallel to and 20 mm infront of V.P.

### (OR)

6. A cylinder of 40 mm diameter and axis 50 mm height is resting on the ground on its base. It is cut by a plane perpendicular to VP and inclined at $30^0$ to the HP and meets the axis at a point 20 mm from the top. Draw the sectional plan and true shape.

## - UNIT-IV

7. A hexagonal pyramid of base side 25 mm and axis height 50 mm is lying on the ground on its base such that one edge is parallel to VP. It is cut by a plane parallel to HP and perpendicular to VP meets the axis at a distance of 25 mm from the base. Draw the lateral surface development.

### (OR)

8. A cone, 90 mm diameter of base, axis 110 mm long, stands on the ground and is completely penetrated by a cylinder, 50 mm diameter and 110 mm long. The axis of the cylinder is horizontal parallel to V.P. and passes through the axis of the cone, 75 mm from the apex. Draw the projections of both curves of intersection. Develop the surface of the cone.

[P.T.O.]

## UNIT- V

9. Draw the orthographic view of a cone, of diameter 40 mm and height 60 mm rests on its base in the HP when it is cut by a plane perpendicular to VP, inclined at $50^0$ to HP and meeting the axis at 30 mm above the base.

### (OR)

10. Draw the isometric view of a square-headed bolt 24 mm diameter and 70 mm long, with a square neck 18 mm thick and a head, 40 mm square and 18 mm thick.

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# FOUR YEAR B.TECH DEGREE EXAMINATION NOVEMBER, 2012
## B.Tech FIRST YEAR
### Branch: COMMON TO ALL BRANCHES
### ENGINEERING PHYSICS

Time: 3 Hrs                                                    Max. Marks: 60

**Answer any one question from each unit**

## UNIT-I

1. (a) State and explain properties of matter wave.                 4 Marks
   (b) Explain Davisson-Germer experiment for establishing the wave nature of electrons                                                    8 Marks

**(OR)**

2. (a) Derive Schrondinger's time independent wave equation         6 Marks
   (b) Distinguish between metals, insulators and Semiconductors.    6 Marks

## UNIT- II

3. (a) Describe the structure of Diamond                            6 Marks
   (b) Explain defects in crystal structure?                        6 Marks

**(OR)**

4. (a) Define space lattice, Unit cell, Basis, Coordination number, Atomic radius and Atomic packing factor.                                      6 Marks
   (b) Define Miller Indices                                        2Marks
   Describe the Structures of ZNS                                   4 Marks

## UNIT–III

5. (a) What is a Carnot Cycle? Derive an equation for the efficiency of a Carnot engine                                                            8 Marks
   (b) Write a note on reversible and irreversible processes        4 Marks

**(OR)**

6. (a) State and explain First law of Thermodynamics                4 Marks
   (b) State and prove Carnots theorem                              8 Marks

## UNIT-IV

7. (a) Describe the construction and working of a He-Ne laser       7 Marks
   (b) State the application of lasers                              5 Marks

**(OR)**

8. (a) Discuss population inversion.                                7 Marks
   (b) State the applications of Ultrasonic Waves                   5 Marks

## UNIT- V

9. (a) Distinguish between direct and indirect Semiconductors       4 Marks
   (b) What are intrinsic Semiconductors? Derive an expression for Carrier Concentration in intrinsic Semiconductors.                            8 Marks

**(OR)**

10. (a) Derive an expression for the electrical conductivity of a Semiconductors.                                                        5 Marks
    (b) What is Hall effect? Derive an expression for Hall Coefficient.   7 Marks

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# FOUR YEAR B.TECH DEGREE EXAMINATION FEBRUARY 2015
## B.Tech FIRST YEAR
### Branch: COMMON TO ALL BRANCHES
### ENGINEERING CHEMISTRY

Time: 3 Hrs        Max. Marks: 60

**Answer any one question from each unit**

## UNIT-I

1.  (a) Distinguish between Protective Colloids and Stability of Colloids   6marks
    (b) Explain Properties and applications of Colloids     6 Marks

**(OR)**

2.  (a) Write a short notes on   (i) multimolecular   (ii) Macro molecular Colloidals     6 Marks
    (b) Explain different applications of Colloidal Solutions     6 Marks

## UNIT- II

3.  (a) What is Ph ? How it is determined?     6 Marks
    (b) Write a short notes on    (i) Hot dipping (ii) Cladding     6 Marks

**(OR)**

4.  (a) Explain different types of corrosion.     6 Marks
    (b) Write a short notes on (i) Reference electrodes     (ii) Metallic Coating     6 Marks

## UNIT–III

5.  (a) Explain scale and surge formation in boilers?     4 Marks
    (b) Give an account of   (i)     Effect of water on rocks and minerals
                         (ii) Disadvantages of hard water     8 Marks

**(OR)**

6.  (a) How do you estimate alkalinity of water.     6 Marks
    (b) How do you Convert the hard water into Soft Water by Zeolite method.     6Marks

## UNIT-IV

7.  (a) Discuss Boy's gas Calorimeter with neat diagram.     6 Marks
    (b) Explain how calorific value of a fuel.     6 Marks

**(OR)**

8.  (a) Give an account of   (i) Petro Chemicals
                         (ii) Synthetic Petrol     6 Marks
    (b) Write the Classification of different fuels     6 Marks

## UNIT- V

9.  (a) Write the monomers of (i) Buna-N    (ii) Nylon     (iii) Teflon   6 Marks
    (b) Explain classification of Plastics     6 Marks

**(OR)**

10.  (a) What are rubbers? How they are Vulcanized? What are their advantages over raw rubber?     6 Marks
    (b) Explain different types of Polymerization Process.     6 Marks

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# FOUR YEAR B.TECH DEGREE EXAMINATION FEBRUARY 2015
## B.Tech FIRST YEAR
### Branch: COMMON TO ALL BRANCHES
### C AND DATA STRUCTURES

Time: 3 Hrs                                                                 Max. Marks: 60

### Answer any one question from each unit

## UNIT-I

1. (a) Explain tokens in C.
   (b) Explain bitwise operations in 'C' language with example.

(OR)

2. (a) What are the storage classes in C? Explain with example mention few string handling functions.
   (b) Explain conditional and unconditional statements with suitable example.

## UNIT- II

3. (a) Explain difference between do while and while do with suitable example.
   (b) Write a program to roots of quadratic equation by using switch statement.

(OR)

4. (a) Write a short notes on

   (i)    One-dimensional and character array.

   (ii)   Two- dimensional character arrays.

## UNIT–III

5. (a) Explain difference between iterative the Recursion procedure with examples.
   (b) Write a C program for printing the prime numbers and Fibonacci numbers in a given range.

(OR)

6. (a) Define a structure. Explain how it is different from an array. What are rules to be Followed while using them.
   (b) Distinguish between structure and union in a C with example.

## UNIT-IV

7. (a) Explain sequential file processing.
   (b) What is file? Explain about various file operations.

(OR)

8. (a) Explain the input and output operation on files.
   (b) Define a queue. Explain the linked implementation of queue.

## UNIT- V

9. (a) Write the procedure for linear search technique.
   (b) What is general tree? Explain how it is different from a binary tree.

(OR)

10. Write a program to quick sort with an example.

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