Code : 13SH1001

B.TECH. DEGREE EXAMINATION, MARCH 2016

I B.Tech. ENGLISH
(Common to All Branches)

Time : 3 hours   Max. Marks : 60

Answer **FIVE** questions, choosing **ONE** question from each section.
All questions carry equal marks

SECTION - I

1. (a) What techniques did the astrologer use to surprise his customers?   6 Marks
   (b) What seemed more attractive than Heaven to the young Washington?   6 Marks

Or

2. (a) How does Kalam attempt to motivate the Chinmaya Vidyalaya students?   6 Marks
   (b) Name two of Homi Bhaha's reasons for setting up TIFR.   6 Marks

SECTION - II

3. (a) Write an application for the advertisement: Wanted an experienced office assistant   7 Marks
   with a good knowledge of English, Hindi and Marathi. Contact Box no. 9876, c/o
   The Times of India, Mumbai - 400001
   (b) Write a short dialogue for the following situation: 5 Marks
   You meet your classmate in a wedding reception. Introduce him to your sister

Or

4. (a) Write a letter to your friend about an exciting holiday.   5 Marks
   (b) Imagine that you are promoting a detergent in the market. Prepare a presentation   7 Marks
   consisting of five charts or slides to present in your class.

SECTION III

5. (a) Write a technical report on the Blood Donation Camp held by the   7 Marks
   Students' Organisation.
   (b) Fill up the blanks with suitable articles: 5 Marks
   1. There is ...... European and .... English man among the tourists.
   2. Have you had ...... breakfast?
   3. You can catch .... Charminar Express.
   4. The box of nuts weighs .... kilo.

or

6. (a) Write a report on the recent floods in Chennai.   8 Marks
   (b) Fill up the blanks with suitable prepositions: 4 Marks
   1. She is good ... English.
   2. He has been living in Nellore ..... ten years.
   3. Father returned ... 6o'clock.
   4. We went .... the market .... Vegetables.

(P.T.O)

SECTION IV

Correct the errors in the following sentences and rewrite any **twelve** of them:

12 Marks

1. He has returned from London last week.
2. He gave me three thousands rupees.
3. He is my oldest son.
4. The dance was such good that the audience could not stop clapping.
5. Each boy and each girl were given a reward.
6. This pen is superior than that.
7. Though we left for the airport early, but we missed the flight.
8. She has neither a book or a pen.
9. Thank you so much for lending me your's notes.
10. Have you had the lunch?
11. She and I agree on most things.
12. Where is the scissors?
13. This house is more larger than that one.
14. This is an one-way road.
15. When we were watching TV on Sunday night, we hear a noise outside.
16. Seetha looked pretty in the green dress, isn't it?

SECTION V

(a) Read the following passage and answer the questions:

5Marks

Equality of men and women has been a subject of debate since ancient times. Recently we have started talking about the empowerment of women. The term 'empower' means 'to make able' or 'to give power to'. It includes intellectual, social, economic and political power. A woman empowered in this sense can effectively participate in decision making process alongside men. Consequently all the attempts at empowering women like the Women's Reservation Bill are half-heartedly made. But the real question is does a woman need to be empowered by a man? Does empowering women mean weakening men? Strengthening somebody does not necessarily mean weakening somebody else.

1. What is the topic of debate since ancient times?
2. What is the recent topic of debate?
3. What is the meaning of 'empowerment of women'?
4. Is the Women's Reservation Bill made whole heartedly?
5. Does strengthening women mean weakening of men?

(b) Rewrite the following as directed:

7 Marks

1. Rash driving causes many accidents. (Begin with "Many accidents").
2. You are trying to find someone. (Add question tag)
3. The best way to give ... to your children is to find out what they want and then .....them to do it. (Choose the right option advice, advise).
4. Is there .... salt? Please pass me some. (some, any)
5. Sudhir .... (get) up at 6 o' clock every day.
6. Maharashtra is one of the largest cities in India.
   (Change into Positive Degree.)
7. Ramu says, "Sita, what a lovely surprise!" (Change into Indirect Speech.)

B.TECH. DEGREE EXAMINATION, MARCH 2016

I B.Tech.

ENGINEERING MATHEMATICS - I
(Common to All Branches)

Time : 3 hours   Max. Marks :60

Answer FIVE Questions, Choosing ONE Question from each section
All Questions carry equal marks
* * *

SECTION-I

1. (a) Reduce the matrix to Echelon form and find its Rank $\begin{bmatrix} 5 & 3 & 14 & 4 \\ 0 & 1 & 2 & 1 \\ 1 & -1 & 2 & 0 \end{bmatrix}$

   (b) Solve the system of equations $2x-y+3z=0$; $3x+2y+z=0$ and $x-4y+5z=0$.

2.   Diagonalize the matrix $A=\begin{bmatrix} 8 & -8 & -2 \\ 4 & -3 & -2 \\ 3 & -4 & 1 \end{bmatrix}$.

SECTION-II

3 (a) verify Lagrange's mean value theorem for $f(x) = x^3-x^2-5x+3$ in $[0, 4]$.

   (b) Expand $\mathrm{Tan}\left(\frac{\pi}{4}+x\right)$ in ascending powers of x.

4 (a) Discuss the maxima and minima of the function $f(x, y) = x^2y+xy^2-axy$.

   (b) Find the points on the surface $z^2=xy+1$ that are nearest to the origin.

SECTION-III

5.   Show that the Evolute of the elipse $x=a\cos\theta$; $y=b\sin\theta$ is
      $(ax)^{2/3} + (by)^{2/3} = (a^2-b^2)^{2/3}$.

6 (a) Find the points on the parabola $y^2 =8x$ at which the Radius of the curvature
      is $7\frac{13}{16}$.

   (b) Trace the curve $a^2y^2=x^2(a^2-x^2)$.

[P.T.O.]

SECTION-IV

7. (a) Evaluate $\int_0^5 \int_0^{x^2} x(x^2 + y^2)dxdy$.

   (b) Evaluate $\int_0^\infty \int_0^\infty e^{-(x^2+y^2)} \, dy \, dx$ by changing in to polar coordinates.

8. Evaluate $\iiint xyz \, dx \, dy \, dz$ over the positive octant of the sphere $x^2+y^2+z^2=a^2$.

SECTION-V

9 (a) Evaluate the angle between the surfaces $x^2+y^2+z^2=9$ and $z=x^2+y^2-3$ at the point $(2,-1, 2)$.

(b) Prove that div $(\text{grad } r^m) = m(m+1) \, r^{m-2}$

10. Evaluate by Green's theorem $\oint_c (y - \sin x)dx + \cos x dy$ where C is the triangle enclosed by the lines $y=0$, $x = \frac{\pi}{2}$, $\pi y = 2x$

B.TECH. DEGREE EXAMINATION, MARCH 2016

I B.Tech.

ENGINEERING MATHEMATICS - II
(Common to All Branches)

Time : 3 hours   Max. Marks : 60

Answer FIVE Questions, Choosing ONE Question from each section
All Questions carry equal marks
* * *

SECTION – I

1 (a)   Solve $\dfrac{d^3 y}{dx^3} + 2\dfrac{d^2 y}{dx^2} + \dfrac{dy}{dx} = e^{2x} + Sin\,2x$

   (b)   Solve $(D^2 + 4D + 3)\, y = e^{-x}\, Sin\,x + x$

2 (a)   Solve $\dfrac{d^2 y}{dx^2} + y = Sec\,x$, by the method of variation of parameters.

   (b)   Solve $(2x+3)^2 \dfrac{d^2 y}{dx^2} - (2x+3)\dfrac{dy}{dx} - 12\,y = 6x$

SECTION – II

3 (a)   Find   i) $L[e^{2t} + 4t^3 - 2\,Sin\,3t + 3.Cos\,3t]$ ii) $L[e^t .(t+2)^2]$

   (b)   Find $L\left[t\,e^{-2t}\,Sin\,2t\right]$

4 (a)   Find $L\left[\dfrac{1 - Cos\,2t}{t}\right]$

   (b)   Find $L\left[\dfrac{Sin\,at}{t}\right]$, given that $L\left[\dfrac{Sin\,t}{t}\right] = \tan^{-1}\left(\dfrac{1}{s}\right)$

SECTION – III

5 (a)   Find   i) Inverse Laplace transform of $\dfrac{3\left(s^2 - 2\right)^2}{2s^5}$

            ii) $L^{-1}\left[\dfrac{3s + 7}{s^2 - 2s - 3}\right]$

   (b)   Find $L^{-1}\left[\dfrac{s}{\left(s^2 + a^2\right)^2}\right]$

6   Solve $y^{11} + 2y^1 - 3y = Sin\ t\ ; y(0) = y^1(0) = 0,$ by Laplace tranform

SECTION – IV

7   (a)   Find the Fourier Series for $f(x) = x - x^2$ from $x = -\pi$ to $x = \pi$

   (b)   Obtain the Fourier Series for $f(x) = \pi x$ in $0 \le x \le 2$

8   (a)   Express $f(x)$ $= \dfrac{1}{4} - x;$ $0 < x < \frac{1}{2}$

                    $= x - \dfrac{3}{4};$ $1/2 < x < 1$;as the Fourier series of Sine terms

   (b)   Find the complex form of the Fourier Series of $f(x) = Sinx$ in $0 \le x \le \pi$

SECTION – V

9   Express $f(x)$ $= 1;$ $0 \le x \le \pi$

                     $= 0;$ $x > \pi$ as a Fourier Sine integral

    and hence evaluate $\displaystyle\int_0^\infty \dfrac{1 - Cos(\pi\lambda)}{\lambda}.Sin(x\lambda).d\lambda$

10   Find the Fourier Sine transform of $f(x) = \dfrac{e^{-ax}}{x}$

B.TECH. DEGREE EXAMINATION, MARCH 2016
I B.Tech.
ENGINEERING PHYSICS
(Common to All Branches)

Time: 3Hrs   Max. Marks: 60

Answer FIVE Questions, Choosing ONE Question from each section
All Questions carry equal marks
* * *

SECTION - I

1. (a) Derive Schrodinger's time independent wave equation.
    (b) Discuss the physical significance of the wave function.

2. (a) Explain Bloch theorem.
    (b) Discuss qualitatively the Kronig- penny model for the motion of an electron in a periodic potential.

SECTION – II

3. What are intrinsic and extrinsic semiconductors. Derive an expression for carrier concentration of intrinsic semiconductors?

4. (a) What is Hysteresis? What does it represent and write its significance.
    (b) Distinguish between soft and hard magnetic materials.

SECTION – III

5. (a) Define i) Crystal Structure ii) Lattice Parameters iii) Unit Cell iv) Atomic radius (r).
    (b) What is packing factor? Show that FCC crystals are closely packed than BCC crystals.

6. (a) State and prove Bragg's law of X- ray diffraction. What is the limiting condition for Bragg's law?
    (b) What are dislocations? What are their uses?

SECTION - IV

7. (a) Discuss the essential features to obtain a laser.
    (b) Explain the construction and working of Ruby laser.

8. (a) Describe the Piezoelectric method of producing ultrasonics.
    (b) Mention some applications of ultrasonics.

SECTION – V

9. (a) Derive an expression for acceptance angle and numerical Aperture for an optical fiber.
    (b) Distinguish between stepped index and graded index fibers.

10. (a) Explain the critical parameters and their significance in Superconductors.
    (b) Discuss type-I and Type-II superconductors.

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B. Tech DEGREE EXAMINATION, MARCH 2016
I B. Tech
Engineering Chemistry
(Common to All branches)

Time: 3 Hrs   Max. Marks: 60

Answer any FIVE Questions, choosing one question from each section
All Questions carry equal marks

Section-I

1. (a) Discuss the functioning of hydrogen gas electrode
   (b) Give the diagram of Hydrogen –Oxygen fuel cell and give its applications

2. (a) Explain the effect of the following factors on the rate of corrosion
       (i) Nature of corrosion product   (ii) Temperature
   (b) Give an account on mechanism of corrosion

Section-II

3. (a) Define Semi conductor ? Give suitable examples
   (b) What is aniline point? Give its significance.

4. (a) What are refractories? Write their classification
   (b) Write a short note on solid lubricants

Section -III

5. (a) What are chemical fuels? Give their classification with examples
   (b) Explain Junker's gas calorimeter for the determination of calorific value of a gaseous fuel

6. (a) Describe the fractional distillation of petroleum
   (b) How do you synthesize petrol by Fischer Troph's synthesis

Section –III

7. (a) What is meant by hardness? How the hardness can be expressed
   (b) Discuss the impurities in water and its effects

8. (a) Describe Ion exchange method for softening of water
   (b) How do you estimate dissolved oxygen in water

Section-IV

9. (a) What are liquid crystal polymers? How they are produced
   (b) What are conducting polymers? Write important engineering applications.

10. (a) Discuss the moulding methods of plastics
    (b) Describe the preparation and properties of Bakelite and PVC

B.TECH. DEGREE EXAMINATION, MARCH 2016
I B.Tech.
C PROGRAMMING AND DATA STRUCTURES
(Common to All Branches)

Time : 3 hours   Max. Marks : 60

*Answer **FIVE** Questions, Choosing **ONE** Question from each section*
All Questions carry equal marks
* * *

SECTION - I

1   a)   Write an algorithm and draw the flow chart for prime numbers upto the given number.

   b)   What is a variable? Explain the various types of variables in C.

2   a)   Write a program to check whether the given input is vowel or not.

   b)   Explain with an example about break and continue statements.

SECTION - II

3   a)   Define an array. Describe about various applications of arrays.

   b)   Write a program which demonstrates call by reference.

4   Write a program for string copy, string concatenation, string compare using user-defined functions.

SECTION - III

5   Define Structure. Write a program to accept the details of 'n' students such as name, age, rollno, address, marks and display the same using pointers to the structures.

6   Explain the various storage classes in detail with examples.

SECTION - IV

7   Define data structure. Explain linked lists in detail with examples.

8   Define Queue. Describe about various operations that can be performed on Queues with examples.

SECTION - V

9   Explain in detail about graph traversal.

10   Write a program for merge sort and trace the program.

B.TECH. DEGREE EXAMINATION, MARCH 2016

I B.Tech.

ENGINEERING GRAPHICS
(CIVIL ENGINEERING)

Time : 3 hours   Max. Marks: 60

Answer FIVE Questions, ONE Question from each section
All Questions carry equal marks

* * *

Answer FIVE Questions, Choosing ONE Question from each section
All Questions carry equal marks
* * *

SECTION – I

1. Construct the ellipse with major axis length 120 mm and minor axis length 80 mm by concentric circles method. Also draw a tangent to it at a distance of 40 mm from its foci.

2. A circle of 100 mm diameter rolls on another circle of 60 mm diameter with internal contact. Draw the locus of a point on the circumference of the rolling circle for its ¾ revolution.

SECTION – II

3. Draw the projections of the line PQ of 90 mm long, a point M is 1/3 distance from P, being 50 mm above HP and 40 mm in front of VP. The end P is 20 mm above HP and 10 mm in front of VP.

4. The top view of a 75 mm long line AB measures 65 mm, while the length of its front view is 50 mm. Its one end A is in the H.P and 12 mm in front of the V.P. Draw the projections of AB and find its inclinations with the H.P and the V.P.

SECTION – III

5. A thin rectangular plate of sides 50x30 mm has its shorter side in VP and inclined at 30^0 to the HP. Project its top view if its front view is a square of 30 mm long side.

6. Draw the projections of a cone, base 75 mm diameter and axis 100 mm long, lying on the H.P. on one of its generators with the axis parallel to the V.P.

SECTION – IV

7. A square prism of base side 40 mm and axis 75 mm has its axis parallel to VP and inclined at 30^0 with HP. A vertical sectional plane cuts the cone through the midpoint of the axis. Draw the front view and top view of the prism.
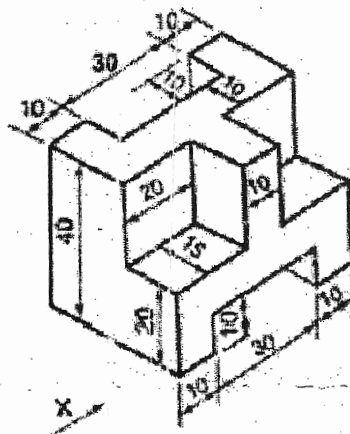
8. Draw the projections of the cylinder 40 mm diameter and 70 mm long, axis making 45^0 with HP and making an angle of 30^0 with VP.

SECTION – V

9. Draw front view, top view and side view of the following. Assume suitable dimensions if necessary.
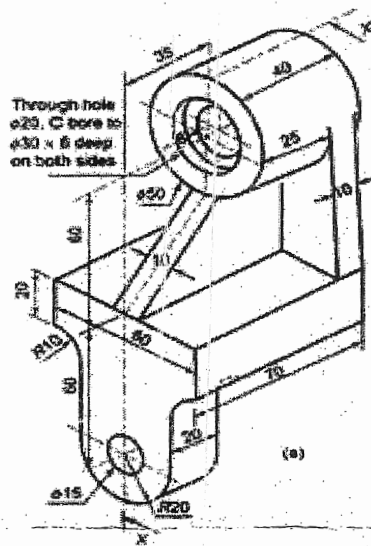
10. Draw front view, top view and side view of the following. Assume suitable dimensions if necessary.

B.TECH. DEGREE EXAMINATION, MARCH 2016
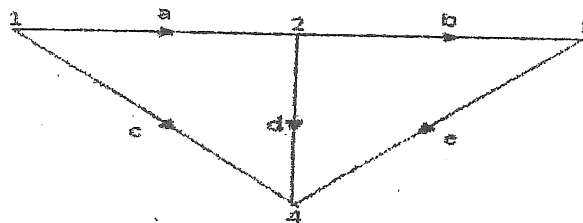# I B.Tech.

BASIC ELECTRICAL SCIENCES
(Common to EEE, ECE & CSE)

Time : 3 hours

Max. Marks: 60

Answer FIVE Questions, Choosing ONE Question from each section
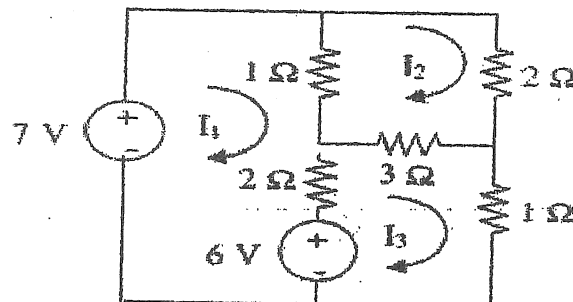*All Questions carry equal marks*
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SECTION - I

1 a Formulate the tie-set matrix & cut set matrix for the graph shown in figure by taking a, b & d as twigs.

b Find the dual of the given network in below figure
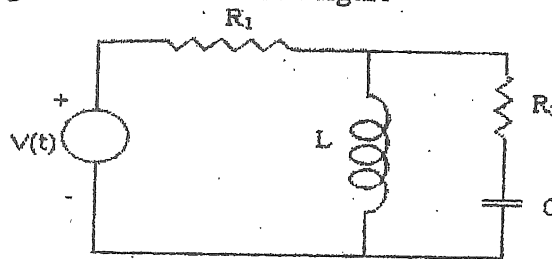
2 a Use mesh analysis to determine the three mesh currents in the circuit shown in Figure.

[P.T.O]

b Transform a voltage source of 100V with an internal resistance of 5Ω into an equivalent current source.

SECTION - II

3 a Derive the expressions for R.M.S & Average value of a sine wave

   b Define the following (i) Active power (ii) reactive power (iii) apparent power

4 An AC circuit has a resistance of 5 ohms, an inductance of 0.1H and a capacitance of 100μF, all in series. Determine for the circuit (i) Total Reactance (ii) Impedance (iii) Admittance (iv) Susceptance (v) Conductance Given that the supply frequency is 60Hz.

SECTION - III

5 Calculate the current, power, power factor and voltage across the resistor of 8Ω in series with an inductor of 20mH and a capacitor of 140 μF excited by an AC supply of 110V.

6 a Derive the expression for resonant frequency of series RLC circuit.

   b Find the value of C which results in resonance for the circuit shown in figure, when ω = 5000rad/s.
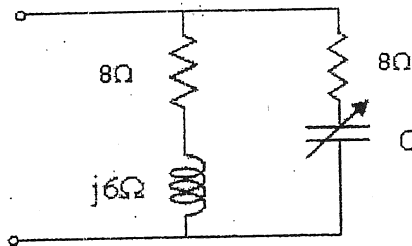
SECTION - IV

7 Discuss in detail the V-I characteristics of PN junction diode.

8 Write short notes on following
   (a) Zener diode (b) Tunnel diode (c) photo transistor

SECTION - V

9 Explain CB configuration of a BJT and discuss its input and output characteristics.

10 Explain the construction & characteristics of JFET

B.TECH. DEGREE EXAMINATION, MARCH 2016

I B.Tech.

ENGINEERING GRAPHICS
(Mechanical engineering)

Time : 3 hours   Max. Marks : 60

*Answer **FIVE** Questions, Choosing ONE Question from each section*
All Questions carry equal marks
* * *

SECTION – I

1) Construct an ellipse, when the distance of the focus from the directrix is equal to 60 mm and eccentricity 2/3 . Also draw a normal and tangent to the curve at a point 35 mm from the focus

2) A circle of 60 mm diameter rolls on a horizontal line for one revolution clock - wise. Draw the curve traced by a point P on the circumference the circle. Draw a tangent and normal to the curve at a point 40 from the directing line.

SECTION - II

3) The point A is on H.P. and 40mm in front of V.P. Another point B is on V.P. and below H.P. The line joining their front views makes an angle of 45^0 with x y, while the line Joining their top views makes an angle of 30^0. Find the distance of the point B from H.P.

4) A line AB of 70mm long, has its end A at 10mm above H.P. and 15mm in front of V.P. Its front view and top view measure 50mm and 60mm respectively. Draw the projections of the line and determine its inclinations with H.P. and V.P .

SECTION – III

5) A semicircular plate of 80 diameter has its straight edge on VP and the surface is inclined at 45 degrees to the VP. Draw the projections of the plane.

6) A hexagonal prism, side of base 20mm & axis 60mm long lies with one of its longer edges on HP & its axis is parallel to both HP & VP. Draw its projections.

SECTION – IV

7) A cone, diameter of the base 50 mm and axis 50 mm long is resting on its base on the H.P. It is cut by a section plane perpendicular to the H.P. and passing through the apex. Draw its front view, sectional top view and true shape of the section

8) A hexagonal pyramid, side of base 30 mm axis 70 mm is resting on HP on its base. It is cut by a section plane perpendicular to V.P and at 45o to H.P and passing through the midpoint of the axis of the pyramid. Draw the development of the lateral surface of the truncated pyramid

SECTION – V

9) Draw the isometric projection of a cone of base diameter 50 mm and axis 100 mm, when the axis is horizontal.

10) For the figure shown below draw the front view, top view, and right side view