



Subject Code: R16CC1201

I B.Tech II Semester Regular and Supplementary Examinations, April-2019.

INTERACTIVE ENGLISH

(Common to CE, EEE, ME, ECE & CSE)

Time: 3 hours

Max Marks: 60

Question Paper Consists of **Part-A** and **Part-B**.

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. a) What are the two achievements of Kalam as scientist?
b) What makes a person a successful according to Satya Nadella?
c) Which attitude makes Azim Premji a successful businessman and How?
d) Which factors made Sachin Tendulkar a unique cricketer?
e) How did Indra Nooyi study the food preferences of the consumers and improved business?
f) How is knowledge essential to a nation's growth according to Sam Pitroda ?
[2+2+2+2+2+2]

PART-B

2. a) Narrate how Abdul Kalam is able to overcome hurdles for education in his childhood
b) What is communication? What elements involve in the process of communication.
[7+5]
3. a) What motivational factors did you find in Satya Nadella's interview? Explain.
b) "The way of using cell phone can make or break one's professional look." Justify the statement.
[7+5]
4. a) "Azim Hashim Premji is an Indian business tycoon and investor of Indian IT Industry."
Substantiate.
b) You are visiting Pune next month as a manager. Provide your schedule and write an E mail to your subordinate and direct him to arrange certain things to accomplish your business trip successfully.
[7+5]
5. a) Sachin Tendulkar is one of the greatest batsmen and an icon of success all time-Explain
b) Convert the following into Indirect speech
 - i. She said, 'I don't want to see any of you; go away.'
 - ii. Alice said, 'How clever I am!'
 - iii. The teacher said, "The earth moves around the sun".c) Convert the following into passive voice
 - i. The teacher gave me a book to read.
 - ii. I know him for a long time.[7+3+2]
6. a) How, according to Sam Pitroda, can 'Knowledge Revolution' change India? Explain
b) Correct the following sentences where ever necessary.
 - i. Give me an another pen.
 - ii. I am tired as I am working since 7 O'clock in the morning.
 - iii. The furniture in this room are made of teak.
 - iv. He has visited Chennai last night.
 - v. I am having AELCS lab now.
 - vi. He will be surprised if he will come here.

- c) Fill in the blanks in the sentence pairs with words that either sound or spelt same
- i. Tom likes to walk around his house in..... (bare/bear) feet.
 - ii. The prisoner spent 10 years in his(cell/sell)
 - iii Vegetarians don't eat.....(meat/meet)
 - iv. I prefer to work at..... (night/knight) since it's quieter and not as hot.

[7+3+2]

7. a) "Indra Nooyi is credited with restructuring and diversification of soft-drink manufacturer PepsiCo,Inc.'s brands and making it a profitable enterprise"-Explain

- b) Write one word substitutes for the following words.

- i. One who eats human flesh.
- ii. Who behaves without moral principles.
- iii. A system of government by one person with absolute power.
- iv. Certain to happen.
- v. Fond of company.
- vi. One who is present everywhere.

- c) Replace the underlined word in following sentences with a suitable synonym

- i. Kavitha is a versatile genius
a. resourceful b. interesting c. famous d. notorious
- ii. This is a credible story.
a. honest b. dishonest c. imaginative d. believable

[7+3+2]



Narasaraopeta Engineering College (Autonomous)

Kotappakonda Road, Yellamanda (P.O), Narasaraopet- 522601, Guntur District, AP.

Subject Code: R16CC1203

I B.Tech II Semester Regular and Supplementary Examinations, April-2019.

ENGINEERING PHYSICS
(Common to CE, EEE & ME)

Time: 3 hours

Max Marks: 60

Question Paper Consists of **Part-A** and **Part-B**.

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

- (a) State Brewster's law of Polarisation.
(b) Explain the Principle of Optical fibre.
(c) Define the terms 'Basis' & 'Packing Fraction'.
(d) Write any **four** basic requirements of Acoustically good hall.
(e) Explain the dependence of Fermi Dirac function on temperature.
(f) State and explain Bloch theorem.

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

- (a) With ray diagram discuss the theory of thin films and derive the conditions for constructive & destructive interference in reflected system.
(b) What is the thickness of the thinnest film of refractive index 1.33 in which the destructive interference of the yellow light 6000\AA of a normally incident beam can take place by reflection?
(8+4)
- a) Distinguish between Spontaneous and Stimulated emissions.
b) What is the reason for mono chromaticity of laser beam?
c) Derive the expression for energy density of radiation in terms of Einstein coefficients.
(4+2+6)
- a) What are Miller Indices? How are they obtained?
b) State and prove Bragg's law of X-ray diffraction.
c) What is the limiting condition for Bragg's law?
(5+6+1)
- a) What are ultrasonic waves? Explain their properties.
b) Write an essay on production of ultrasonics.
(6+6)
- a) Explain the de Broglie hypothesis.
b) Derive time independent Schrodinger wave equation for a free particle.
(2+10)
- a) State and explain Hall effect.
b) Derive expression for Hall coefficient.
c) The R_H of a specimen is $3.66 \times 10^{-4} \text{ m}^3 \text{ c}^{-1}$. Its resistivity is $8.93 \times 10^{-3} \Omega \text{ m}$. Find mobility and charge carrier concentration.
(2+6+4)



Subject Code: R16CC1204

I B.Tech II Semester Regular and Supplementary Examinations, April-2019.

ENGINEERING CHEMISTRY

(Common to ECE & CSE)

Time: 3 hours

Max Marks: 60

Question Paper Consists of **Part-A** and **Part-B**.

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. (a) Define reverse osmosis.
- (b) What are thermosetting polymers? Give examples.
- (c) What are cholesteric liquid crystals?
- (d) What are fuel cells? Give an application.
- (e) Define knocking? How can it be minimized?
- (f) Write any two applications of photochemistry.

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. (a) Explain deionization or ion exchange process for softening of hard water.
- (b) Explain any three internal treatment methods used for treating boiler feed water. [6+6]
3. (a) Explain compounding of plastics.
- (b) Discuss the preparation, properties and uses of polycarbonates. [6+6]
4. (a) Discuss (i) photovoltaic cells (ii) preparation and applications of fullerenes.
- (b) Explain how Ibuprofen is prepared by green synthetic method. Give three applications of green synthesis. [6+6]
5. (a) Explain Daniel cell and standard hydrogen electrode with neat sketches.
- (b) Explain the factors affecting corrosion based on nature of metal. [6+6]
6. (a) Discuss fixed bed catalytic cracking method for synthesis of petrol.
- (b) Explain proximate analysis of coal and its significance. [6+6]
7. (a) Explain Grotthus draper law and Stark Einstein law.
- (b) Explain how iron can be determined by calorimetric analysis. [6+6]



Subject Code: R16CC1202

I B.Tech II Semester Regular and Supplementary Examinations, April-2019.
INTEGRAL TRANSFORMS AND VECTOR CALCULUS

(Common to CE, EEE, ME, ECE & CSE)

Time: 3 hours

Max Marks: 60

Question Paper Consists of **Part-A** and **Part-B**.

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. (a) Find $L^{-1} \left[\cot^{-1} \left(\frac{s+a}{b} \right) \right]$
- (b) Find $Z(n a^n)$
- (c) If $f(x) = x^2$ in $-2 < x < 2$, $f(x+4) = f(x)$, find a_n .
- (d) Given $F[e^{x^2}] = \sqrt{\pi} e^{s^2/4}$, find the Fourier transform of $e^{-(x/\sqrt{3})^2}$
- (e) If $A = 2x^2 I - 3yz J + xz^2 K$, find $\nabla \cdot A$
- (f) State Stoke's theorem.

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. (a) Find the inverse Laplace transform of $\frac{16}{(s-2)(s+2)^2}$.
- (b) Solve the following differential equation using Laplace transform $y'' + 2y' + 5y = e^{-t} \sin t$ when $y(0) = 0$ and $y'(0) = 1$.

$$u(z) = \frac{2z^2 + 3z + 12}{(z-1)^4}$$

3. (a) If $u(z) = \frac{2z^2 + 3z + 12}{(z-1)^4}$, find the value of u_2 and u_3 .

- (b) Using convolution, evaluate the inverse Z-transform of $\left(\frac{z}{z-1} \right)^3$

4. (a) Find the Fourier series expansion of $f(x) = \begin{cases} 2\pi + x, & \pi < x < 2\pi \\ 0, & 2\pi < x < 3\pi \end{cases}$ and hence find the value

of $\frac{1}{1} + \frac{1}{3} + \frac{1}{5} + \dots$

- (b) Find the half range sine series for $f(x) = x \cos x$ in $(0, \pi)$.

$$f(x) = \begin{cases} a-x, & 0 \leq x \leq a \\ 0 & \text{for } x > a \end{cases}$$

5. (a) Find the Fourier transform of $f(x)$. Hence deduce that

$$\int_0^{\infty} \frac{\sin t - t \cos t}{t^3} dt = \frac{\pi}{4}$$

- (b) Find the Fourier cosine transform of e^{-ax} for any $a > 0$ and hence prove that $e^{-x^2/2}$ is self-reciprocal under Fourier cosine transform.
6. (a) Find the values of a and b such that the surfaces $ax^2 - byz = (a+2)x$ and $4x^2y + z^3 = 4$ cut orthogonally at $(1, -1, 2)$.

- (b) Prove that $\text{div}(\frac{\mathbf{r}}{r^3}) = -4\pi\delta(\mathbf{r})$. Hence show that $\frac{\mathbf{r}}{r^3}$ is solenoidal.

7. (a) Find the work done in moving a particle in the force field $\mathbf{F} = 3x^2 \mathbf{I} + (2xz - y) \mathbf{J} + z \mathbf{K}$ along
- (i) the straight line from $(0, 0, 0)$ to $(2, 1, 3)$
- (ii) the curve defined by $x^2 = 4y$, $3x^3 = 8z$ from $x = 0$ to $x = 2$.

- (b) Using Green's theorem, evaluate $\int_C [(y \sin x) dx + (x \cos y) dy]$, where C is the plane triangle enclosed by the lines $y = 0$, $x = \pi/2$ and $y = 2x/\pi$.

Subject Code: R16CC1206

I B.Tech II Semester Regular and Supplementary Examinations, April-2019.

ENGINEERING MECHANICS

(Common to CE & ME)

Time: 3 hours

Max Marks: 60

Question Paper Consists of **Part-A** and **Part-B**.

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. (a) State parallelogram law of forces
- (b) Define angle of friction
- (c) What is the difference between centre of gravity and centroid?
- (d) What is the radius of gyration?
- (e) Write the expression for the mass moment of inertia of a cone about its axis of rotation.
- (f) Define the terms impulse and momentum

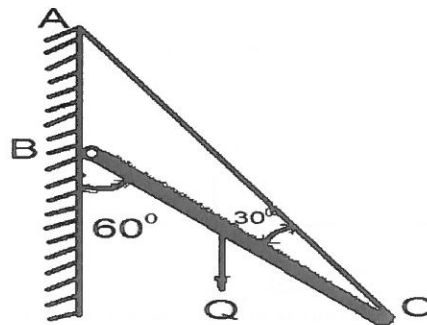
[2+2+2+2+2+2]

PART-B

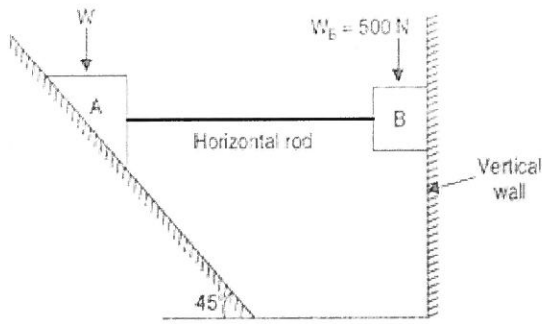
4 X 12 = 48

2. (a) State and prove lami's theorem.

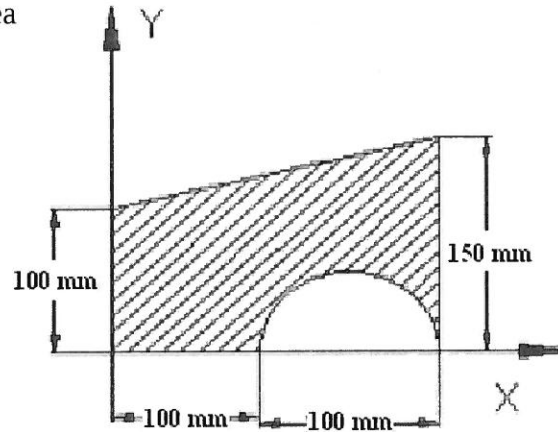
(b) A prismatic bar BC of weight $Q = 2N$ is hinged to a vertical wall at B and supported at C by a cable AC as shown in the following fig.. Find the reaction at B and tensile force in the cable AC.



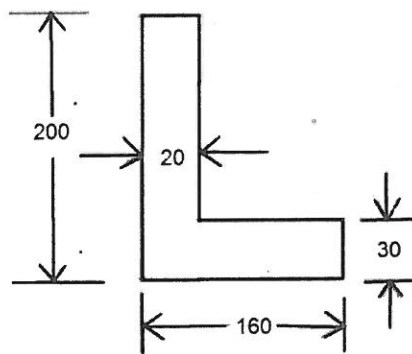
3. A block A weighing W is placed on a rough inclined plane having coefficient of friction 0.2 and is held in position by means of a horizontal rod hinged to a block B which presses against a rough vertical plane having coefficient of friction 0.4 as shown in fig. If the block B weighs 500N, find the minimum value of W consistent with equilibrium.



4. (a) Derive the expressions for the coordinates of the centroid of quarter circular area.
 (b) A semi-circular area is removed from the trapezoid as shown in the figure Determine the centroid of the remaining area



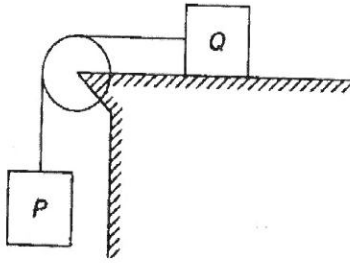
5. (a) Explain polar moment of inertia.
 (b) Find moment of inertia of following L- section about its both the centroidal axes. All the dimensions are in mm



6. Derive the expression for the mass moment of inertia of a cylinder about its centroidal axes perpendicular to its base.

7. (a) State and Explain the Newton's laws of motion.

(b) Referring to the following Fig. find the acceleration of a falling weight P if the coefficient of friction between the block Q and the horizontal plane on which it slides is μ . Neglect the inertia of the pulley and friction on its axle. The following numerical data are given $P=50N$, $Q=80N$, $\mu=0.3$





Subject Code: R16CS1214

I B.Tech II Semester Regular and Supplementary Examinations, April-2019.

C PROGRAMMING

(CSE)

Time: 3 hours

Max Marks: 60

Question Paper Consists of **Part-A** and **Part-B**.

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. (a) Enlist different format specifiers in C?
 - (b) In which loop the entry is automatic and there is only a choice to continue it further or not. Explain with an example?
 - (c) How formal parameters are different from actual parameters.
 - (d) Which function is used for allocating memory to an array dynamically? Give the syntax of it.
 - (e) Define bit field. What are the uses of bit-fields?
 - (f) List some basic operations performed on Files.

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. (a) List and explain in detail about the tokens of C language.
 - (b) Describe the structure of C program.
3. (a) Illustrate different types of Iterative statements in detail.
 - (b) Write a C program to find the maximum element of the array.
4. (a) Give the detailed description on storage classes.
 - (b) Write a C program to find the factorial of a given number using recursion.
5. (a) Define pointer. Explain the concept of pointer to an array.
 - (b) Explain dynamic memory allocation concept in detail.
6. Write a C language program to create a structure called student with the following data : rollno of type char, name of type char, 5 theory subjects and 2 laboratory marks, each of type float. In addition, each student will have total and grade. Write functions Sread() to read n student records, Swrite() to print all the student records. Also function calculate() will determine the total and grade of each student. Mention a clear set of all assumptions that you make inorder to solve this problem.
7. List any 6 file operating functions with an example.
 - A) ftell() B)fopen() C)rewind() d)fseek()
 - E)fclose() F)remove()



Narasaraopeta Engineering College (Autonomous)

Kotappakonda Road, Yellamanda (P.O), Narasaraopet- 522601, Guntur District, AP.

Subject Code: R16EC1210

I B.Tech II Semester Regular and Supplementary Examinations, April-2019.

PROGRAMMING WITH C

Time: 3 hours

(ECE)

Max Marks: 60

Question Paper Consists of **Part-A** and **Part-B**.

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

- (a) What value will be assigned to the variable x if $A = 10$, $B = 20$, $C = 30$, $D = 40$ in below expression? $X = a/b+c*d-c$;
(b) How and where to use break and continue statements in a program. Give an example to each.
(c) Define pre-processing. List various pre processor directives with explanation.
(d) Give the differences between static memory allocation and dynamic memory allocation.
(e) Is structure and Union same. Justify your answer.
(f) What are the basic operations performed on files. [2+2+2+2+2+2]

PART-B

4 X 12 = 48

- (a) Explain the structure of C program.
(b) Briefly describe Arithmetic, Logical and Increment/Decrement operators.
- (a) Write a C program to perform Arithmetic operations using multi way selection statement.
(b) Define an array. How to work with character arrays (Declaration, Initialization and accessing).
- (a) Define function. What are the uses of functions? Explain the process of execution of a multi function program.
(b) List and explain the types of storage classes.
- (a) Define pointer. How to pass a pointer as a function argument? Write a C program to swap two numbers by passing a pointer as function argument.
(b) What is command line argument? Explain with an example.
- Write a C language program to create a structure called student with the following data : rollno of type char, name of type char, 5 theory subjects and 2 laboratory marks, each of type float. In addition, each student will have total and grade. Write functions Sread() to read n student records, Swrite() to print all the student records. Also function calculate() will determine the total and grade of each student. Mention a clear set of all assumptions that you make in-order to solve this problem.
- Explain the following functions with examples:
i) f seek ii) ftell iii) rewind iv) feof v) ferror vi) EOF



Subject Code: R16EE1208

I B.Tech II Semester Regular and Supplementary Examinations, April-2019.

ENGINEERING GRAPHICS

(EEE)

Time: 3 hours

Max Marks: 60

Question Paper Consists of **Part-A** and **Part-B**.

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. (a) A room of volume 1728 m^3 volume is shown by a cube of 216 cm^3 volume. find R.F.
- (b) Draw the projection of the point 25 mm below the H.P. and 35 mm behind the V.P.
- (c) Draw the projection of 65 mm long line perpendicular to the H.P. , 25 mm in front of the V.P. and its one end in the H.P.
- (d) A rectangular plate of size 40mm x 30mm is parallel to the H.P. and has a shorter side perpendicular to the V.P. Draw its projections
- (e) Draw the projections of a cone of base diameter 30 mm and axis 60mm when its axis perpendicular to vertical plane.
- (f) Draw the isometric view of a circle 50mm diameter and its surface is parallel to the V.P.

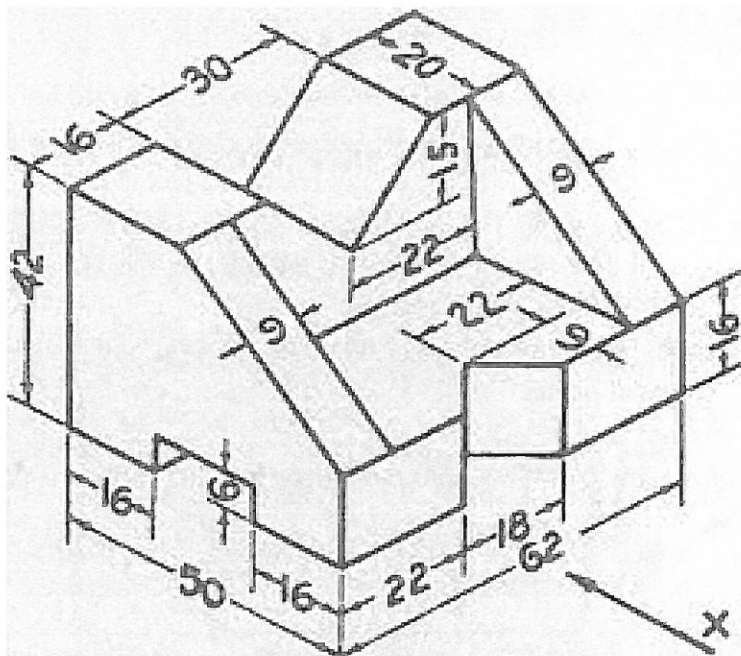
[2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. (a) The foci of an ellipse are 90mm apart and minor axis is 65mm long . Determine the length of the major axis and draw the ellipse by concentric circles method
- (b) On a map the distance between two points is 14 cm. The real distance between them is 20Km. Draw a diagonal scale for this map to read kilometres and hectometres and to measure up to 25km. shows a distance of 17.6km on this scale.
3. (a) A point A is 20mm above the H.P. and in the first quadrant. Its shortest distance from the reference line XY is 40 mm. draw the projections of the point and determine its distance from the V.P.
- (b) A line 75 mm long is in the H.P. and makes an angle of 30° with the V.P. Its one end is 25mm in front of the V.P. draw its projections
4. A line AB, 65mm long has its end A 20mm above the H.P. and 25mm in front of the V.P. The end B is 40mm above the H.P. and 65mm in front of the V.P. Draw the projection of AB and show its inclinations with the H.P. and the V.P.

5. A semi circular plate of 80mm diameter has its straight edges in the V.P. and inclined at 45° to the H.P. The surface of the plate makes an angle of 30° to the V.P. Draw its projection
6. Draw the projection of a pentagonal prism, base 30mm side and axis 60mm long, resting on one of its rectangular faces on the H.P. with the axis inclined at 45° to the V.P.
7. Draw the following views of the block shown in figure. All dimensions are in mm.
 (a) Front View. (b) Top view (c) side view.





Subject Code: R16CC1207

I B.Tech II Semester Regular and Supplementary Examinations, April-2019.

ENGINEERING DRAWING

(Common to CE & ME)

Time: 3 hours

Max Marks: 60

Question Paper Consists of **Part-A** and **Part-B**.

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. (a) What is representative fraction (R.F.) of a scale?
- (b) Write some applications of ellipse, parabola and hyperbola.
- (c) What is meant by an orthographic projection?
- (d) A rhombus of diagonals 60mm and 40mm is parallel to V.P. with its shorter diagonal vertical. Draw its projections.
- (e) Draw the development of a cube of side 50mm.
- (f) Distinguish between isometric view and isometric projection.

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. (a) Construct a diagonal scale of 3:200 showing meters, decimetres and centimetres and to measure up to a distance of 6m. Show a distance of 4.56m on it.
- (b) Construct a hyperbola when the distance between the focus and directrix is 60mm. The eccentricity is 3:2. Also draw the normal and tangents at any point on the curve.
3. (a) A point P is lying in the first quadrant and 30mm above HP.. The shortest distance of this point from the line intersection of HP and VP, is 50mm. Draw its projections and find its distance from VP.
- (b) The length of the top view of a line which is parallel to and 40mm in front of VP, is 50mm. The line is making an angle of 40° to the HP and its one end is 30mm above HP. Draw its projections and find its true length.
4. A line AB of 80 mm long is inclined at an angle of 30° to the V.P and 45° to the H.P. Its one end A is 20 mm above H.P. and 50 mm in front of V.P .Draw its projections. Also mark its traces
5. The front view of an equilateral triangle of side 70 mm is an isosceles triangle of base 70 mm and altitude 40mm with its base side inclined at an angle of 30° to the reference line. Draw its projections,
6. (a) A pentagonal pyramid of base side 2cm and axis 5cm is lying on the ground with one of its slant edges and the axis is parallel to V.P. Draw its projections
- (b) Draw the development of a cone of base diameter 50mm and axis 70mm long.

7. Draw the orthographic views for the given isometric block. All dimensions are in mm.



Subject Code: R16CS1213

I B.Tech II Semester Regular and Supplementary Examinations, April-2019.

MATHEMATICAL METHODS

(CSE)

Time: 3 hours

Max Marks: 60

Question Paper Consists of **Part-A** and **Part-B**.

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. (a) Define the rank of a matrix and write the properties of rank.
- (b) Prove that the matrices A and A^T have same eigen values.
- (c) Evaluate $\int_0^{\pi} \int_0^{\sin \theta} r dr d\theta$.
- (d) Find a real root of $x^3 - x = 1$ between 1 and 2 by bisection method.
- (e) Show that $E = e^{hD}$.
- (f) Evaluate $\int_0^1 \frac{dx}{1+x^2}$.

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. (a) Find the inverse of the matrix $\begin{bmatrix} 2 & -1 & 3 \\ 1 & 1 & 1 \\ 1 & -1 & 1 \end{bmatrix}$ by using elementary operations.
- (b) Solve the system of equations using Gauss – Seidel method
 $10x + y + z = 12, 2x + 10y + z = 13, 2x + 2y + 10z = 14$.
3. (a) Verify Caley – Hamilton theorem for the matrix $A = \begin{bmatrix} 1 & 0 & 3 \\ 2 & 1 & -1 \\ 2 & -1 & 1 \end{bmatrix}$, hence find A^{-1} and A^4 .
- (b) Find the orthogonal transformation which transforms a quadratic form
 $3x^2 - 2y^2 + z^2 - 4xy + 12yz + 8xz$ to the canonical form and determine the nature, index and signature.
4. (a) Find the surface area of the solid generated by revolving the arc of the parabola, $x^2 = 12y$ bounded by its latus rectum about y – axis.
- (b) By change of order of integration Evaluate $\int_0^{\infty} \int_0^x x e^{-\frac{x^2}{y}} dy dx$.
5. (a) Find the route of the equation $2x - \log_{10} X = 7$, which lies between 3.5 and 4 by Regula-Falsi method.
- (b) Find a positive root of the equation $x^3 + x^2 - 1 = 0$ by iteration method.

6. (a) The following are the numbers of deaths in four successive ten year age groups. Find the number of deaths at 45 – 50 and 50 – 55.

Age group	25 – 35	35 – 45	45 – 55	55 – 65
Deaths	13229	18139	24225	31496

(b) Use Lagrange's interpolation formulae to fit a polynomial to the data

x	-1	0	2	3
y	-8	3	1	2

7. (a) Use the Runge – Kutta fourth order method to find the value of y when x = 1, given that y = 1

when x = 0 and $\frac{dy}{dx} = \frac{y-x}{y+x}$.

(b) Using Simpson's 3/8 th rule evaluate $\int_0^6 \frac{dx}{1+x^2}$ by dividing the range into 6 equal parts.

Subject Code: R16EC1211

I B.Tech II Semester Regular and Supplementary Examinations, April-2019.

NETWORK ANALYSIS

(ECE)

Time: 3 hours

Max Marks: 60

Question Paper Consists of **Part-A** and **Part-B**.

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

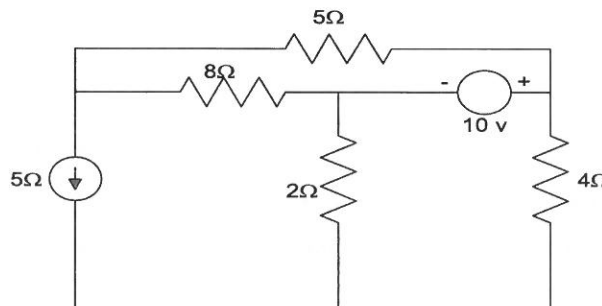
1. (a) State and explain Kirchhoff's laws.
- (b) Define the following terms i) RMS value , ii) Average value, iii) Form factor and iv) Peak factor.
- (c) Explain sinusoidal response of series RL circuit.
- (d) State Tellegen's theorem.
- (e) Write the relation between H-parameters and Y Parameters.
- (f) Write the Laplace transform of an Exponential function and Unit impulse function.

[2+2+2+2+2+2]

PART-B

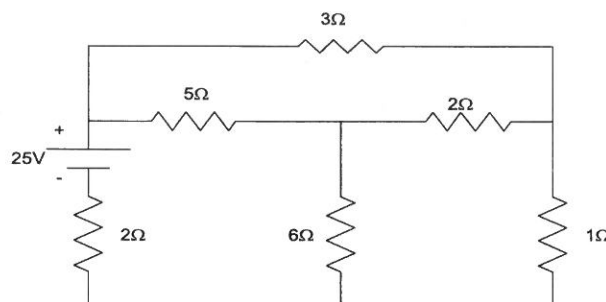
4 X 12 = 48

2. (a) What are the various types of network elements? Explain.
- (b) Find mesh currents and determine voltage across each element in the circuit shown in below Figure.



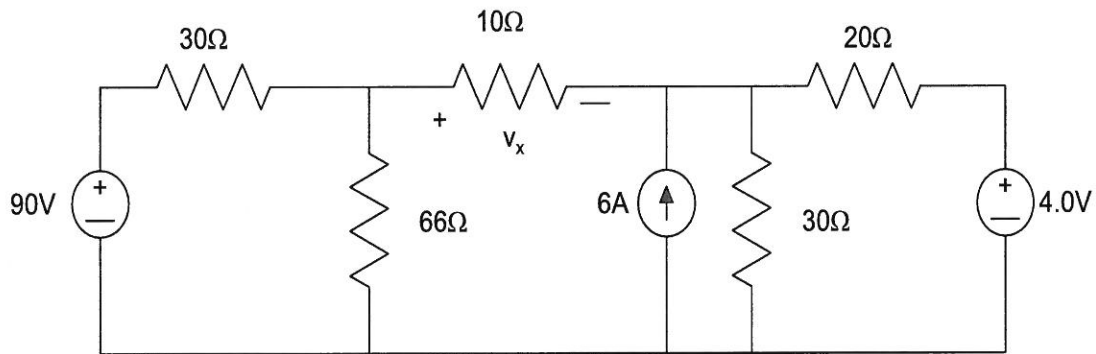
3. (a) Explain the RMS value and Average value of alternating quantity. Derive its necessary expressions.

- (b) Find the branch currents shown in below figure by using the concept of the tie-set matrix



4. (a) A series R-L-C circuit consists of a resistance 20Ω , inductance 0.2 H , and capacitance of $200\mu\text{F}$. A supply of 230 V with 50Hz is given to a series circuit. Find the total impedance, current power, power factor, voltage across coil, and voltage across the capacitance.
 (b) State and Explain the Star-delta conversion in AC systems.

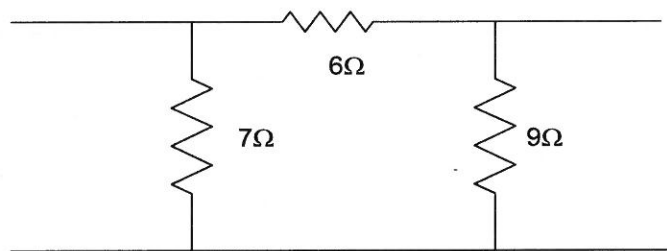
5. (a) Use Superposition theorem to obtain v_x in the circuit shown below



- (b) Prove that Thevenin's and Norton's theorems are dual to each other?

6. (a) The Z parameters of a two-port network are $Z_{11}=10\Omega$, $Z_{22}=15\Omega$, $Z_{12}=5\Omega$, $Z_{21}=5\Omega$. Find the equivalent ABCD parameters.

- (b) Determine the h parameters for the circuit shown below



7. (a) Discuss the DC transient of R-L series circuit.

- (b) Write the Homogeneous and Nonhomogeneous differential Equations.

Subject Code: R16EE1209

I B.Tech II Semester Regular and Supplementary Examinations, April-2019.

ELECTRIC CIRCUIT ANALYSIS - I

(EEE)

Time: 3 hours

Max Marks: 60

Question Paper Consists of **Part-A** and **Part-B**.

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B.

All questions carry equal marks of 12.

PART-A

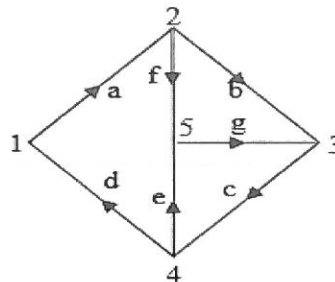
1. (a) What is the use of source transformation
- (b) What is power factor? What is its significance?
- (c) Define the quality factor. What is its significance?
- (d) What is duality? What are dual quantities?
- (e) State Millman's theorem.
- (f) State Faraday's laws of electromagnetic induction.

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. (a) Obtain the expressions for star-delta and delta-star equivalence of resistive network
- (b) Four 60 W, 110 V bulbs are to be operated from a 230 V source. Determine the value of resistance connected in series with the line so that the voltage across the bulb does not exceed 110 V.
3. (a) Show that power consumed in a purely inductive circuit is zero when sinusoidal voltage is applied across it.
- (b) A coil takes a current of 2A at 0.6 lagging power factor a 220 volts, 50Hz single phase. If the coil is modelled by a series RL Circuit. Find (i) the Complex power in a the coil and (ii) The value of R and L
4. (a) With respect to series resonant circuit, prove that bandwidth is inversely proportional to the Q-factor at resonance
- (b) A series RLC Circuit with $R=10\Omega$, $L= 0.4H$ and $C=50\mu F$ has applied voltage of 200V with variable frequency. Calculate the resonant frequency, current at resonance, voltage across R, L and C. Also calculate the Q-factor, upper and Lower half power frequencies and bandwidth.
5. (a) Describe the procedure to construct the dual of a network with an example
- (b) Find basic tie-set and cut-set matrices for the graph and its tree shown in figure 1



6. (a) State and prove the Reciprocity theorem with the help of an example.
(b) State and prove the Thevenin's theorem with the help of an example.
7. (a) Explain the importance of dot convention in coupled circuits
(b) Two similar coils connected in series gave a total inductance of 600mH and when one of the coils is reversed, the total inductance is 300mH. Determine the mutual inductance between the coils and coefficient of coupling



Subject Code: R16CC1205

I B.Tech II Semester Regular and Supplementary Examinations, April-2019.

ENVIRONMENTAL STUDIES

(Common to CE, EEE & ME)

Time: 3 hours

Max Marks: 60

Question Paper Consists of **Part-A** and **Part-B**.

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. (a) Define ecosystem.
- (b) What is meant by land degradation?
- (c) What is hot spot of biodiversity? Name the hot spots in India.
- (d) Write the sources and effect of SO₂.
- (e) What is meant by acid rain?
- (f) What is meant by indoor pollution?

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. (a) Discuss the salient features of river ecosystem.
- (b) Discuss Ecological succession. [6+6]
3. (a) Write the major causes and consequences of deforestation. Give a case study.
- (b) Discuss the Effects of modern agriculture [6+6]
4. (a) Explain the major threats to biodiversity.
- (b) Discuss about the various Ex-situ methods of biodiversity conservation. [6+6]
5. (a) Discuss how smog, aerosols and fly ash cause pollution? How can they be minimized?
- (b) Write notes on industrial waste water pollution. [6+6]
6. (a) Discuss the Traditional and modern techniques in rain water harvesting.
- (b) Explain the WATER (prevention and control of pollution) Act, 1974 [6+6]
7. (a) Explain Environmental audit and mention its benefits.
- (b) Discuss Environmental impact assessment. [6+6]



Subject Code: R16CS1215

I B.Tech II Semester Regular and Supplementary Examinations, April-2019.

ELECTRONIC DEVICES AND LOGIC DESIGN

(CSE)

Time: 3 hours

Max Marks: 60

Question Paper Consists of **Part-A** and **Part-B**.

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. (a) Draw the PN-Diode V-I characteristics in ideal and practical cases.
- (b) Compare BJT and FET
- (c) What is the need for Biasing?
- (d) List out the universal gates
- (e) Draw 2:4 Decoder?
- (f) What is the purpose of the registers in Digital circuits?

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. (a) Explain the switching operation of a PN-Diode?
- (b) Explain Full rectifier operation with and without filter?
3. (a) Explain the operation of Common emitter configuration of transistor with input and output characteristics?
- (b) Explain working of Colpitt's oscillator.
4. Minimize the criterion the following using K-map.
 - (i) $F(A,B,C,D) = \prod (0,1,2,3,5,6,7,8,9,10,11,13)$
 - (ii) $F(A,B,C,D) = \sum (0,2,3,8,9,12,13,15)$
5. (a) Design a 1:8 demultiplexer using two 1:4 demultiplexer.
- (b) Design and draw a full adder which will use two half adders.
6. (a) Draw the circuit diagram of MOD-10 Counter and explain the operation.
- (b) Explain bi-directional and uni-directional shift register.
7. (a) Solve the following
 - i) $(27.125)_{10} = ()_8$
 - ii) $(10.6875)_{10} = ()_2$
- (b) Explain the working of common emitter amplifier with neat diagrams.



Subject Code: R16EC1212

I B.Tech II Semester Regular and Supplementary Examinations, April-2019.
PROFESSIONAL ETHICS, VALUES & PATENTS
(ECE)

Time: 3 hours

Max Marks: 60

Question Paper Consists of **Part-A** and **Part-B**.

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. (a) What is self confidence
- (b) Why Heinz Dilemma occurs
- (c) Explain occupational crimes
- (d) What do you mean by Property?
- (e) Define patent
- (f) What is the role of WIPO?

[2+2+2+2+2+2]

PART-B

2. Explain the importance of value of time in human life [12]
3. Write about the role of manager in an organization [12]
4. (a) Write about rights of an Engineer [6+6]
- (b) Explain the models of responsibilities
5. (a) Explain about Ethical obligations in IP Law [8+4]
- (b) What is cyber Law
6. (a) What do you mean by patent & its rights [6+6]
- (b) Write about patent registration process
7. Explain in detail about the employee confidentiality Agreement [12]
