



Narasaraopeta Engineering College (Autonomous)  
Kotappakonda Road, Yellamanda (P.O), Narasaraopet- 522601, Guntur District, AP.

Subject Code: R16CC1201

I B.Tech II Semester Supplementary Examinations, November-2018.

**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.

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**PART-A**

1. a) What things did Abdul Kalam learn from his parents ?
- b) How does Satya Nadella motivate young people?
- c) What are the types of essays? Give one example each.
- d) Explain how 'since' and 'for' are used in present perfect continuous tense.
- e) What does "inclusive society" mean?
- f) Write two leadership qualities you find in Indra Nooyi with examples.

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

**PART-B**

2. a) How did Abdul Kalam turn his childhood and job experiences to be a blessing to Indian nation? Explain.
  - b) What are the various elements involved in the process of effective communication?  
Explain taking your class room as an example.
- [7+5]
3. a) What qualities do you learn from Satya Nadella when he talks about youth and Microsoft? Explain.
  - b) How does cell phone become crucial in today's communication? Explain some important etiquettes while using it.
- [6+6]
4. a) What business ideologies did transform Azim Premji a successful man in industry.  
Illustrate.

b) Write an ideal paragraph on your own and trace out five characteristics from it.

[7+5]

5. a) Trace out the success formula from the life of Sachin Tendulkar and justify how he can be an icon of youth in sports.

b) Convert the following into indirect speech

i. He said to me, "I can sing very well."

ii. Raju's father said to him, 'Don't be foolish.'

iii. Sita said to Rani, "Will you sing or dance?"

c) Convert the following into passive voice

i. They elected him a leader.

ii. John added salt in water.

[7+3+2]

6. a) How does knowledge bring revolution in society according to Sam Pitroda. Explain.

b) Correct the following sentences where ever necessary.

i. They have been learning English since a longtime.

ii. Did you attended the class yesterday?

iii. The train had left before he was reached the station.

iv. The iron is a strong metal.

v. They are good friends. Do they?

vi. They are having a class now.

c) Fill in the blanks in the sentence with appropriate words.

i. Who walked on the floor with ....(bare/bear) foot?

ii. He was caught in the crime. He has to undergo.....(trail/trial)

iii Writing .....(dairy/diary) is a good habit.

iv. I think ,we need to have some.....(brake/ break) from the work.

[7+3+2]

7. a) How did various career opportunities become stepping stones to Indra Nooyi in her journey of success ?

b) Write one word substitutes for the following words.

- i. The thing that is easy to break.
- ii. One who suspects everything.
- iii. One who believes that god exists in everything.
- iv. One who sells sweets.
- v. One who loves mankind.
- vi. The study of birds.

c) Replace the underlined word in each sentence with a suitable synonym

i. Chetan Bhagat is a promising novelist.

- a.** important **b.** interesting **c.** likely to succeed **d.** notorious

ii. He believes in many fallacies.

- a.** logical thinking **b.** proved facts **c.** wrong beliefs **d.** known theories

[7+3+2]





Subject Code: R16CC1202

I B.Tech II Semester Supplementary Examinations, November-2018.

**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 the Laplace Transform of  $t^3 e^{-3t}$
- (b) Find the Z-transform of  $\{n e^{-an}\}$
- (c) Write the Euler's Formulae
- (d) Write Fourier Sine and Cosine Transform of  $f(x)$ .
- (e) If  $\vec{F} = 2x^2yz + x^2y$  then Find  $\text{div } \vec{F}$
- (f) State Green's Theorem.

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

**PART-B**

4 X 12 = 48

2. (a) Find  $L^{-1} \left\{ \frac{s}{(s^2+1)(s^2+4)} \right\}$  using Convolution theorem.
- (b) Evaluate  $\int_0^\infty t e^{-st} \sin t dt$
3. (a) Show that  $Z \left( \frac{1}{n!} \right) = e^{\frac{1}{z}}$
- (b) Find the inverse Z-transforms of  $\frac{2z^2+3z}{(z+2)(z-4)}$
4. (a) Find a Fourier series to represent  $x - x^2$  from  $x = -\pi$  to  $x = \pi$
- (b) Expand  $f(x) = \begin{cases} \frac{1}{4} - x, & \text{if } 0 < x < \frac{1}{2}, \\ x - \frac{3}{4}, & \text{if } \frac{1}{2} < x < 1, \end{cases}$  as the Fourier series of sine terms
5. (a) Find the Fourier cosine transform of  $f(x) = e^{-ax}$  for  $x \geq 0$  and  $a > 0$  and deduce the integral  $\int_0^\infty \frac{\cos \alpha x}{a^2 + \alpha^2} d\alpha$ .
- (b) Find the finite Fourier cosine transform of  $f(x) = 2x, 0 < x < 4$ .
6. (a) Find the directional derivative of the function  $f = x^2yz + 4xz^2$  at the point  $P(1, -2, -1)$  in the direction  $2i - j - 2k$ .
- (b) Show that  $\Delta^2(r^n) = n(n+1)r^{n-2}$ .
7. Verify Divergence theorem for  $F = (x^2 - yz)i + (y^2 - zx)j + (z^2 - xy)k$  taken over the rectangular parallelepiped  $0 \leq x \leq a, 0 \leq y \leq b, 0 \leq z \leq c$ .

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# Narasaraopeta Engineering College (Autonomous)

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Subject Code: R16CC1203

I B.Tech II Semester Supplementary Examinations, November-2018.

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) Write condition for constructive and destructive interference in thin film by reflected ray?  
(b) Define Lattice and Unit cell  
(c) What is Quarter Wave Plate?  
(d) Find the ratios between the wave length of the De Broglie matter waves of  $\alpha$ -particle and hydrogen in potential difference of 200 V?  
(e) Draw the energy band diagram of fermi level in N-and P-type semiconductors?  
(f) Write any two applications of Hall effect?

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

## PART-B

- (a) Define diffraction? Write the difference between Fraunhofer and Fresnel diffraction? [4M]  
(b) Find expression for intensity of single slit diffraction (Fraunhofer)? From that derive condition for Principle maxima and secondary maxima and minima? [6M]  
(c) Calculate the angular separation between the first order minima on either side of the central maxima when a slit is  $6 \times 10^{-4}$  cm width and light illuminated has a wavelength 6000 Å? [2M]
- (a) What is optical fiber? Define Acceptance angle and Acceptance cone in Optical fiber? [4M]  
(b) State the characteristic properties of a LASER light that differ from the ordinary light? Describe qualitatively the operation of He-Ne LASER with a rough energy level diagram [8M]
- (a) Derive expression for Braggs law in Crystal? Write down its limitations? [4M]  
(b) How are the planes and directions of a crystal specified? Sketch a unit cell of a simple cubic lattice and draw the following planes: (011) (111) (200)? [4M]  
(c) Explain the term packing fraction and coordinate numbers in crystals? The Braggs angle for reflection from the (111) planes in aluminium (fcc) is  $19.2^\circ$  for an X-ray wavelength of 1.5Å. Compute the cube edge of the unit cell? [4M]
- (a) What are ultrasonic and infrasonic waves? Write the audible rang of the frequency for human ear? [4M]  
(b) Write any two methods for Production of Ultrasonic waves? What are the applications of Ultrasonic waves? [4M]  
(c) Give the theoretical treatment of Sabine's law? Define the term period of reverberation? [4M]

6. (a) Assuming the electron-lattice interaction to be responsible for scattering of conduction electrons in a metal, obtain an expression for conductivity in terms of relaxation time. [8M]
- (b) What is the physical significance of wave function [4M]
7. (a) State Bloch theorem? Write the outcomes of Kronig-Penny model? [4M]
- (b) Explain the concept of effective mass of electron in a band theory of solids? [4M]
- (c) What is Fermi Level? Explain the classification of semiconductors with examples by using band diagram? [4M]





# Narasaraopeta Engineering College (Autonomous)

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

Subject Code: R16CC1204

I B.Tech II Semester Supplementary Examinations, November-2018.

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

- (a) What is permutit process? How is it better than lime soda process?  
(b) Define addition and condensation polymerization.  
(c) What are fullerenes? How are they prepared?  
(d) Explain cladding.  
(e) What is knocking? How can it be minimized?  
(f) Give two examples of photochemical reactions.

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

## PART-B

4 X 12 = 48

- (a) Discuss the internal treatment methods for softening of hard water.  
(b) Explain (i) boiler corrosion (ii) priming and foaming. [6+6]
- (a) Explain cationic mechanism of addition polymerization.  
(b) Discuss the preparation, properties and uses of acrylonitrile rubber. [6+6]
- (a) Describe chemical vapour deposition method and laser ablation method for preparation of carbon nanotubes.  
(b) Explain the construction and working of photovoltaic cell. Mention its applications. [6+6]
- (a) Explain the following methods of application on metals (i) electroplating (ii) galvanizing  
(b) Discuss briefly (i) single electrode potential (ii) electrochemical series [6+6]
- (a) Discuss the working of Junker's gas calorimeter.  
(b) Write short note on fractional distillation of petroleum.  
(c) A sample of coal was analyzed as follows: 1.500g of an air-dried sample was weighed into a crucible. After heating for 1 hr at 110°C, the residue weighed 1.250g. The crucible was then covered with a vented lid and strongly heated for exactly 7 mins at 950°C. The residue weighed 0.900g. The crucible was then heated without cover, until a constant weight was obtained. The last residue was found to be 0.750g. Calculate the percentage results (moisture, volatile matter, ash and fixed carbon) of the above analysis. [4+4+4]
- (a) What is quantum yield. Explain Stark Einstein Law.  
(b) Write notes on colorimetric analysis of ions. [6+6]

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# Narasaraopeta Engineering College (Autonomous)

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

Subject Code: R16CC1205

I B.Tech II Semester Supplementary Examinations, November-2018.

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) What are pioneer species?
- 2) What is desertification?
- 3) State two major threats to biodiversity.
- 4) What do you know about ocean water pollution?
- 5) What is rain water harvesting?
- 6) Write about environmental audit. (2+2+2+2+2)

## PART-B

- 2) a) Give the salient features of a pond ecosystem.  
b) Write about ecological succession. (5+7)
- 3) a) What is land degradation? What is man induced land slides?  
b) Write about use and exploitation of mineral resources. (6+6)
- 4) a) Write about endangered and endemic species.  
b) Discuss about bio diversity at National and Global level. (6+6)
- 5) a) What are the causes, effects and control measures of the noise pollution?  
b) What is the role of an individual in controlling the pollution? (7+5)
- 6) a) Discuss the causes and effects of global warming  
b) Discuss the salient features of The Environment (Protection) Act, 1986. (6+6)
- 7) a) Write about EMP and EIS  
b) Discuss the concept of Ecotourism, its principles and merits? (5+7)



**Subject Code: R16CC1206**

**I B.Tech II Semester Supplementary Examinations, November-2018.**

**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) What is a Free Body Diagram?
- (b) Explain the laws of dry friction.
- (c) Explain the difference between centroid and centre of gravity
- (d) Explain the perpendicular axis theorem
- (e) What is the expression for the mass moment of inertia of a sphere about its diameter?
- (f) Write the Work-Energy equation.

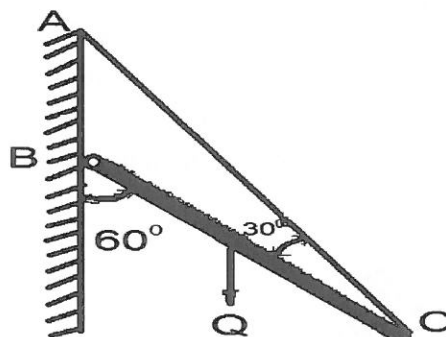
[2+2+2+2+2+2]

**PART-B**

**4 X 12 = 48**

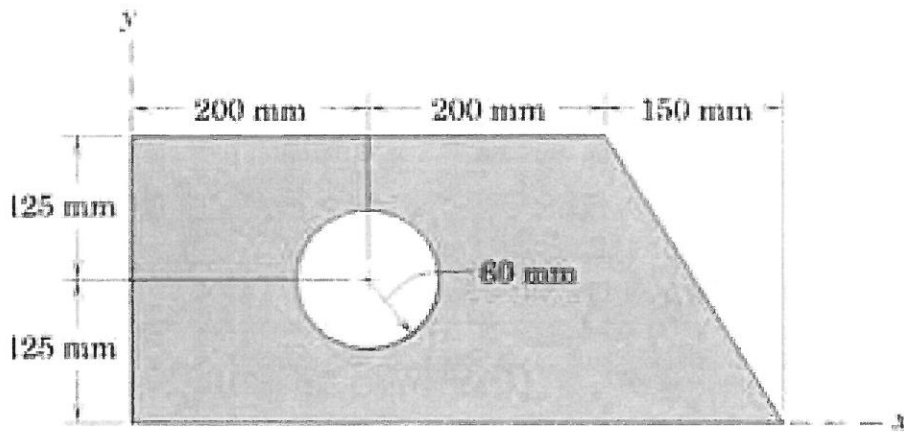
2. (a) The resultant of two forces one of which is 3 times the other is 300 N. When the direction of smaller force is reversed, the resultant is 200 N. Determine the two forces and the angle between them. (6)

- (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. Find the reaction at B and tensile force in the cable AC (6)

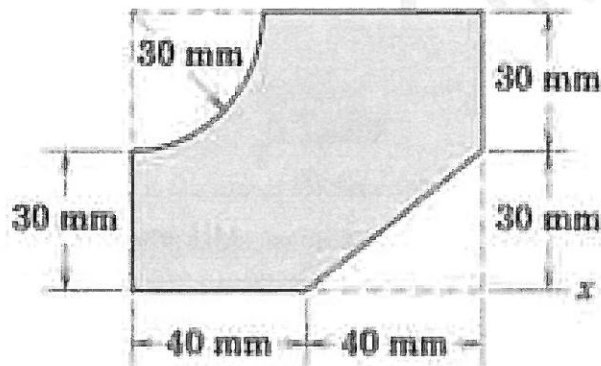


3. A block weighing 500 N just starts moving down a rough inclined plane when it is subjected to 200 N force acting up and parallel to the inclined plane. The same block is at the point of moving up the plane when pulled up by a force of 300 N parallel to the plane. Find the inclination of the plane and the coefficient of friction between the inclined plane and the block. (12)

4. (a) State the theorems of Pappus-Guldinus. (4)
- (b) Determine the coordinates of the centroid of the following shaded area. (8)

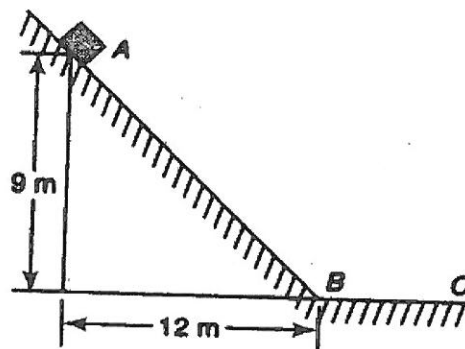


5. Find the moment of inertia for the following composite area about its centroidal axis parallel to its base. (12)



6. Derive the expression for the mass moment of inertia of a solid sphere. (12)

7. A small block starts from rest at point A and slides down the inclined plane AB as shown in Figure. What distance along the horizontal plane BC will it travel before coming to rest? The coefficient of kinetic friction between the block and either plane is  $\mu=0.3$ . Assume that the initial velocity with which it starts to move along BC is of same magnitude as that gained in sliding from A to B (12)





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Subject Code: R16CC1207

I B.Tech II Semester Supplementary Examinations, November-2018.

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) Define a conic. Explain focus, directrix and eccentricity.
- (b) A 5cm long line is parallel to and 3cm from both the reference lines. Draw its projections.
- (c) What is a trace of a line? When a straight line will not have traces?
- (d) A regular hexagonal plane of 25mm side has one side on the VP and perpendicular to the HP. Draw its simple projections
- (e) A hexagonal pyramid of base side 2cm and axis 5cm is resting on the ground with its base, with two sides perpendicular to V.P. Draw its projections
- (f) Draw the isometric view of a cube of edge 5cm.

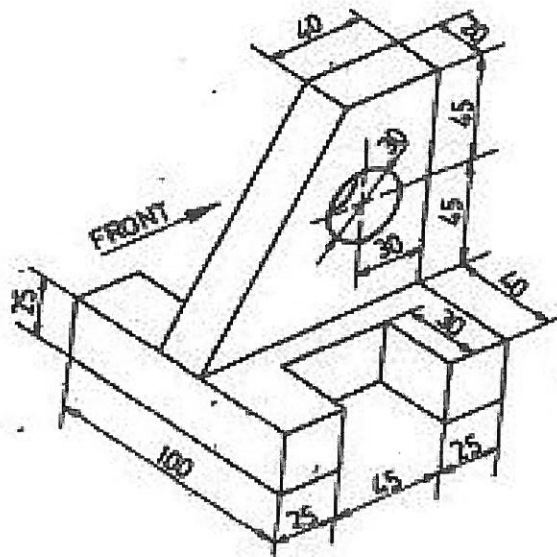
[2+2+2+2+2+2]

## PART-B

4 X 12 = 48

2. (a) A 3 cm long line represents a length of 5 meters. Extend this line to measure up to 30 meters and show on it units of decimetres, meters and 5 meters. Show the length of 22.7 meters on this line (6)
- (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 (6)
3. (a) A point P is 40 mm in front of VP and in the first quadrant. Its shortest distance from the reference line XY is 50 mm. Draw the projections of the point and determine its distance from the HP (6)
- (b) A line AB 80mm long is parallel to and 40mm above HP while its two ends are 20mm and 50mm respectively in front of V.P. Draw its projections. (6)
4. A line PQ of 100 mm long makes an angle of  $30^\circ$  with the H.P. and  $45^\circ$  with the V.P. Its one end is 30mm above the H.P. and 25mm in front of V.P. Draw the projections of the line. Also locate its traces (12)

5. One edge of a pentagonal plate of 30mm side is on V.P and inclined at  $60^\circ$  to the H.P. while its surface is making an angle of  $45^\circ$  to the V.P. Draw its projections. (12)
6. A hexagonal pyramid of base side 2cm and axis 5cm is lying on the H.P. with one of its triangular faces and the vertical plane containing the axis is making an angle of  $30^\circ$  with the V.P. Draw its projections (12)
7. The pictorial view of an object is shown in the following fig. Draw its three views. All the dimensions are in mm (12)







# Narasaraopeta Engineering College (Autonomous)

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

Subject Code: R16EE1208

I B.Tech II Semester Supplementary Examinations, November-2018.

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

- (a) Explain focus, directrix and eccentricity of a conic  
(b) Differentiate between the first and third angle of projection  
(c) What is a trace of a line? When a straight line will not have traces?  
(d) A square plate of side 50mm is parallel to and 40mm in front of VP. All of its sides are equally inclined to HP. Draw its projections.  
(e) A pentagonal pyramid of base side 30mm and axis 70mm long is resting on HP with its base. Draw its projections when one side of its base is parallel to and 20mm in front of VP.  
(f) Draw the isometric view of a square pyramid of base side 50mm and axis 60mm long.

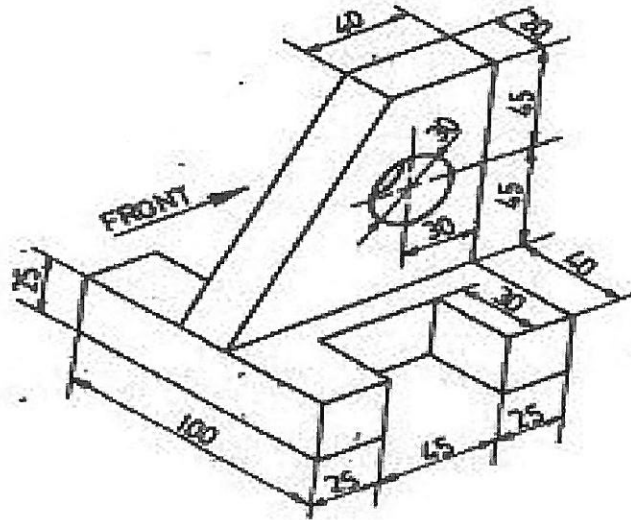
[2+2+2+2+2+2]

## PART-B

4 X 12 = 48

- The major and minor axes of an ellipse are 150mm and 100mm respectively. Construct half of the ellipse by rectangle method and another half by arcs of circles method. Also draw the normal and tangent to the ellipse at a point on it 25mm above the major axis.
- (a) A point P is located in the first quadrant. The shortest radial distance line from the point P to the intersection of HP and VP has 40 mm long and is inclined at 60° to the HP. Draw its projections.  
(b) A 100mm long line is parallel to and 40mm above HP while its two ends are 20mm and 50mm in front of VP respectively. Draw its projections.
- The distance between the projectors of a straight line AB is 50 mm. One end A is 20 mm above the H.P and 30 mm in front of the V.P. while the other end B is 50 mm below the H.P and 60 mm behind the V.P. Draw its projections and mark its traces. Also find its true length and true inclinations with both the reference planes.
- A square of 60mm side has a corner in the HP and its surface is inclined at 45° to the HP .The top view of the diagonal through the corner which is in the HP is making an angle of 60° with the VP. Draw its projections.

6. A hexagonal pyramid, base 30mm side and axis 70mm long, has a corner of its base on the VP. Its axis is inclined at  $30^\circ$  to the VP and parallel to and 40mm above the HP. Draw its projections
7. The pictorial view of an object is shown in the following fig. Draw its three views. All the dimensions are in mm.



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Subject Code: R16EE1209

I B.Tech II Semester Supplementary Examinations, November-2018.

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) State kirchoff's laws.
- (b) Define RMS value and Average value
- (c) Define Bandwidth
- (d) Define Twigs and links
- (e) State Compensation theorem
- (f) Define permeability and Magnetic flux.

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

**PART-B**

4 X 12 = 48

2. (a) State and Explain the Volt-Ampere relationships for R,L and C Parameters. [6]
- (b) Obtain the node voltages in the circuit in Fig.1 [6]

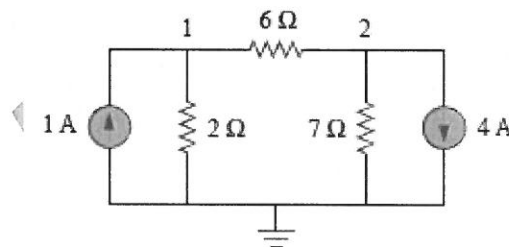


Fig.1

3. (a) Find the rms value of the periodic signal in Fig.2 [6]

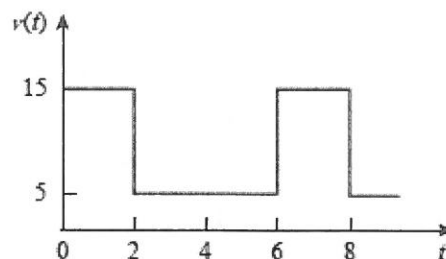


Fig.2

- (b) A coil with a resistance of  $7\Omega$  and an inductance of  $31.8\text{ mH}$  is connected to  $230\text{V}$ ,  $50\text{Hz}$  supply. Calculate (i) the circuit current (ii) phase angle (iii) power factor (iv) power consumed. [6]

4. (a) Derive the expression for the resonant frequency of a parallel AC circuit. Draw the relevant circuit diagram. [6]
- (b) For a series circuit  $R=28.8\Omega$ ,  $L=0.024\text{H}$  and  $C=0.008\mu\text{F}$ . Determine the following [6]
- Resonant frequency
  - Half power frequencies
  - Q factor
  - Bandwidth
5. (a) For the network shown in Fig.3 draw the graph and write a tie set schedule. Using tie set schedule obtain the loop equations and find the all branch currents. [8]

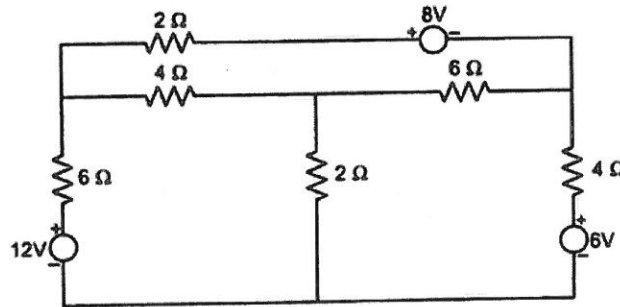


Fig.3

- (b) Obtain the dual of the circuit in Fig. 4 [4]

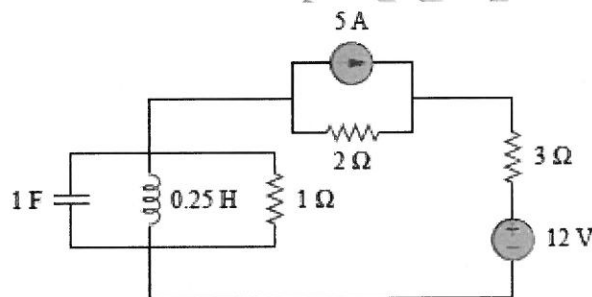


Fig.4

6. (a) State and explain Miiiman's Theorem [6]
- (b) Compute the value of  $R$  that results in maximum power transfer to the  $10\Omega$  resistor in Fig. 5. Find the maximum power. [6]

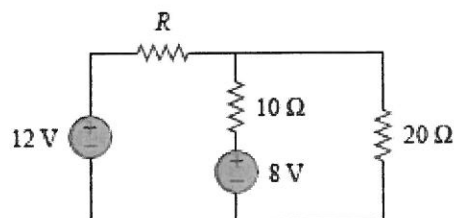


Fig.5

7. (a) What is mutual inductance? Derive an expression for the mutual inductance between two magnetically coupled coils having self-inductances  $L_1$  and  $L_2$  respectively [6]
- (b) Two coupled coils with  $L_1=0.01\text{H}$  and  $L_2=0.04\text{H}$  and  $K=0.6$  are connected in four different ways. Find the equivalent inductance if coils are connected in (i) series aiding (ii) series opposing (iii) parallel aiding (iv) parallel opposing. [6]



# Narasaraopeta Engineering College (Autonomous)

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

Subject Code: R16EC1210

I B.Tech II Semester Supplementary Examinations, November-2018.

PROGRAMMING WITH C

(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 data type? What are the data types in C language?
  - b) What is the syntax of conditional operation statement?
  - c) What is need of return statement?
  - d) What is pointer? Give example.
  - e) What is a structure?
  - f) List the basic operations performed on files.

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

## PART-B

4 X 12 = 48

2.
  - a) What are the advantages of high level languages over machine language?
  - b) Explain the use of printf and scanf functions with examples
3.
  - a) Write a C program to find the sum of numbers from 1 to N
  - b) Discuss any four string handling functions in C.
4.
  - a) What are header files? What is the need of header files in 'C' programming?
  - b) What is call by value? How it is different from call by reference?
5.
  - a) Write on the usage of command line arguments.
  - b) Differentiate between pointer to array and array of pointers.
6.
  - a) What is the difference between structure declaration and structure initialization?
  - b) Explain the salient features of typedef?
7.
  - a) What is file? Explain various function used for opening, closing and processing a file in 'C' language.
  - b) Write a program to read data from keyboard, write it to a file called INPUT, and read the same data from the INPUT file and display it on the screen.

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Subject Code: R16EC1211

**I B.Tech II Semester Supplementary Examinations, November-2018.**

**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**

- (a) What is meant by Unilateral and bi-lateral element?  
(b) Define Form factor and peak factor  
(c) Write the differences between series and parallel resonance  
(d) State Substitution theorem.  
(e) Define two port network  
(f) Define time constant of RC circuit

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

**PART-B**

4 X 12 = 48

- (a) Explain about Source transformation technique with suitable examples [6]  
(b) Obtain the equivalent resistance  $R_{ab}$  for the circuit in Fig.1 and use it to find current  $i$ . [6]

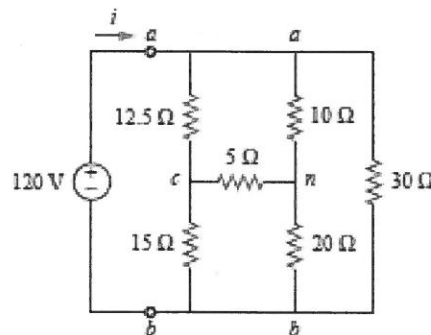


Fig.1

3. (a) Calculate the rms value of the current waveform of Fig.2 [6]

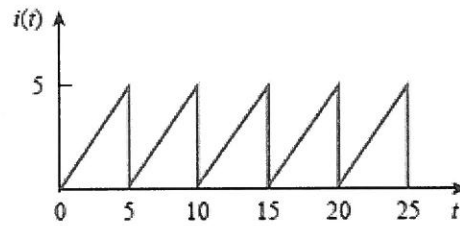


Fig.2

- (b) Define the following with respect to a graph [6]  
 (i) Loop (ii) Cutset (iii) Tree (iv) Co-tree
4. (a) A series RLC circuit consists of a resistance of  $25\Omega$ , inductance  $0.4\text{ H}$ , capacitance of  $250\ \mu\text{F}$  is connected a supply of  $230\text{V}$ ,  $50\text{ Hz}$ . Find the total impedance, current, power, power factor, voltage across coil and capacitance. [6]
- (b) Derive the expressions for quality factor and bandwidth in a series RLC resonant circuit. [6]
5. (a) State and explain Superposition theorem with an example [6]
- (b) Find the Norton equivalent circuit for the circuit in Fig.3 [6]

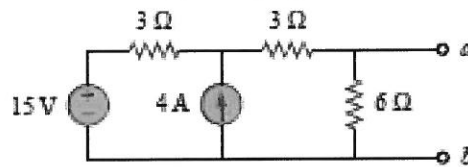


Fig.3

6. (a) Obtain an expression for coefficient of coupling. [6]
- (b) Determine the Y- parameters of the network shown in Fig.4 [6]

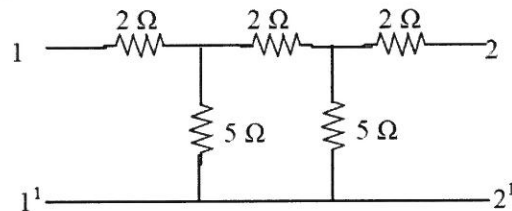


Fig.4

7. (a) Draw the transient response of a series RL circuit with DC input. Sketch the variation of current and voltage across the inductor [6]
- (b) A series RLC circuit with  $R=50\Omega$ ,  $L=0.1\text{H}$  and  $C=50\ \mu\text{F}$  has a constant voltage  $V=100\text{ volts}$  applied at  $t=0$ . Find the current transient assuming zero initial charge on the capacitor. [6]

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# Narasaraopeta Engineering College (Autonomous)

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

Subject Code: R16EC1212

I B.Tech II Semester Supplementary Examinations, November-2018.

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

- (a) Write a short note on Empathy.  
(b) What Meta ethics?  
(c) What is cyber crime?  
(d) What is Whistle blowing?  
(e) What do you mean by IPR?  
(f) Define a copy right. Give suitable examples.

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

## PART-B

4 X 12 = 48

2. What are work ethics? How work ethics strengthened? (12M)
3. a) Explain the professional roles played by an engineer in an organisation. (8M)  
b) What is Heinz's Dilemma? (4M)
4. What is industrial espionage? Explain how industrial espionage dealt by a profession with suitable examples. (12M)
5. (a) What are cyber laws? (4M)  
(b) Discuss the legal tasks in IPR. (8M)
6. (a) Discuss the formalities and procedure for registration of a copy right. (6M)  
(b) What is a patent? What are the rights associated with a patent? (6M)
7. (a) What is the post registration process of a trademark? (6M)  
(b) What is a cyber law? What is the need of a cyber law? (6M)

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Subject Code: R16CS1213

I B.Tech II Semester Supplementary Examinations, November-2018.

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) Find K. If the Rank of the matrix  $\begin{bmatrix} k & -1 & 0 \\ 0 & k & -1 \\ -1 & 0 & k \end{bmatrix}$  is 2.

(b) The matrix A is defined as  $A = \begin{bmatrix} -1 & 2 & 3 \\ 0 & 3 & 5 \\ 0 & 0 & -2 \end{bmatrix}$ . The Eigen values of  $A^2$  are

(c) Evaluate  $\int_0^1 \int_1^{e^x} dx dy$ .

(d) Write merits and demerits of Iteration method.

(e) Newton's iteration formula to find the value of  $\sqrt{N}$

(f) State Trapezoidal rule and Simpson's rule

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

PART-B

4 X 12 = 48

2. (a) Determine whether the following equations will have a non-trivial solution if so solve them [6M]

$$4x + 2y + z + 3w = 0, 6x + 3y + 4z + 7w = 0, 2x + y + w = 0$$

(b) Solve the equations  $x + 5y + z = 14, 2x + y + 3z = 13, 3x + y + 4z = 17$   
by LU decomposition method [6M]

3. (a) Find the characteristic roots and the corresponding characteristic vectors of the matrix

$$\begin{bmatrix} 6 & -2 & 2 \\ -2 & 3 & -1 \\ 2 & -1 & 3 \end{bmatrix}$$

[6M]

(b) Reduce the quadratic form  $3x_1^2 + 5x_2^2 + 3x_3^2 - 2x_1x_2 - 2x_1x_3 + 2x_2x_3$  into canonical form. [6M]

4. (a) Evaluate  $\int \int r dr d\theta$  over the cardioids  $r = a(1 - \cos\theta)$  about the initial line. [6M]

(b) By change the order of integration  $I = \int_0^a \int_x^a (x^2 + y^2) dy dx$  and hence evaluate. [6M]

5. (a) Find a root of the equation  $x^3 + x^2 - 1 = 0$ , using the bisection method. [6M]

(b) Find a root of  $e^x - x^3 - x = 0$  using Regula Falsi method. [6M]

6. (a) From the following table, find  $y$  when  $x = 1.45$  by using Central Backward difference formula [6M]

X	1.0	1.2	1.4	1.6	1.8	2.0
Y(x)	0.0	-0.112	-0.016	0.336	0.992	2.0

(b) By using Lagrange's Interpolating formula, fit a polynomial to the data [6M]

x:	0	1	3	4
f(x):	-12	0	6	12

7. Find  $y(0.1)$ ,  $z(0.1)$ ,  $y(0.2)$ , and  $z(0.2)$  from the system of equation  $y' = x + z$ ,  $z' = x - y^2$ , given that

$y(0) = 2$  and  $z(0) = 1$  by RK fourth order. [12]

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# Narasaraopeta Engineering College (Autonomous)

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

Subject Code: R16CS1214

I B.Tech II Semester Supplementary Examinations, November-2018.

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

- (a) What is a flow chart? What are the various symbols used in flow chart?  
(b) Write a do-while construct and explain?  
(c) What is pre-processor directive? Explain any two?  
(d) Explain realloc() and free() methods?  
(e) What are bit fields? Explain?  
(f) Why is it important to close the file opened in a C program?

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

## PART-B

4 X 12 = 48

- (a) Explain about assignment and conditional operators?  
(b) What is type conversion and define implicit and explicit type conversion?  
[6+6]
- (a) Explain in detail entry-controlled and exit-controlled loops in C with suitable code examples?  
(b) Write a C program that prints multiplication table of a given number up-to 10 multiples? [6+6]
- (a) Write a C program that illustrates scope rules in blocks?  
(b) Illustrate nesting of functions with an example. [7+5]
- (a) What do you understand by pointers? Give the syntax of declaration of a pointer?  
(b) How do you use a pointer to a function? Give example? [6+6]
- (a) What is nested structure? Write a program to print the details of employees of an organization like (Name, dateOfJoin, Salary) using nested structures? [6+6]  
(b) Write short notes on referring to structure members using pointer to structure?
- (a) How do i know the current position in a file? Explain will example how i can get it for an open file.  
(b) What is a file? How do you declare a file? Explain different modes of operations on files with examples? [6+6]

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**Subject Code: R16CS1215**

**I B.Tech II Semester Supplementary Examinations, November-2018.**

**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) How PN-Diode act like a switch?
- (b) Why BJT is named as Bipolar Junction Transistor? Explain
- (c) Explain need of biasing?
- (d) Explain universal gates with truth tables.
- (e) Give any two differences of combinational and sequential circuits.
- (f) What is the purpose of registers in digital circuits?

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

**PART-B**

2. (a) Discuss the Zener diode and its characteristics
- (b) Explain how it acts as voltage regulator? [6+6]
3. (a) Explain JFET with relevant construction and working?
- (b) Compare MOSFET & JFET? [6+6]
4. (a) With neat schematics explain the working of CE Amplifier. [6]
- (b) What is an oscillator? Explain Colpitt's Oscillator. [6]
5. (a) Convert the following number system:
  - i.  $(01101)_2 = (\underline{\quad})_{10}$
  - ii.  $(756)_8 = (\underline{\quad})_{2}$[4]
- (b) Minimize the following functions using K-maps.  
 $f = \Sigma (1,2,3,5,7,11,13)$  [8]
6. (a) Design 2X4 Decoder and explain? [6]
- (b) Draw the logic diagram of RS Flip-Flop and explain its operation? [6]
7. (a) With neat diagrams explain the working of Bidirectional shift register. [6]
- (b) Explain Ring counter? [6]

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