



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

Subject Code: R16CC1201

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

PART-A

1. (i) What was Jainulabdeen's daily routine?
(ii) Why is Hyderabad special to Satya Nadella?
(iii) When and why did Azim Premji have to return to India?
(iv) Why do you consider Sachin Tendulkar as philanthropic?
(v) What motivated Sam Pitroda to go to the United States?
(vi) How was Indra Nooyi's education?

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

PART-B

4 X 12 = 48

2. (a) How is Kalam's life an inspiration and guiding force to the young generation?
(b) What are the Barriers to Communication?
[7+5]
3. (a) In what way does Microsoft Technology support India's economic infrastructure
(b) Write a few tips for effective listening?
[7+5]
4. (a) What are some of Azim Premji's core beliefs and how did he transform a 2 million dollar company into an eight million company?
(b) Draft a report on a book exhibition.
[7+5]
5. (a) Write a brief summary of Sachin Tendulkar's achievements.
(b) Change the following sentences into indirect speech.
i. I said to him, "Do you like reading English fiction?"
ii. Teacher said, 'The Earth revolves around the Sun.'
iii. The boss said to her, "Please bring the files."
(c) Change the following into passive voice.
i. He is doing too many things at the same time.
ii. She washes her car every Sunday.
[7+3+2]
6. (a) What changes have the internet and web brought in India according to Sam Pitroda?
(b) Correct the following sentences where ever necessary.
i. Anu plays violin?

- ii. The boy as well as his parents are coming today.
- iii. Arpit is in army..
- iv. The police rushed to the spot, but the burglar already fled.
- v. The house is more larger than that one.
- vi. I am a student here, amn't I?

c) Fill in the blanks with appropriate prepositions.

- i. He seized me ____ the arm.
- ii. _____you and me, this plan won't work.
- iii.I prefer coffee _____ tea
- iv A Preposition always goes _____a noun or pronoun.

[7+3+2]

7. (a) What are the achievements of Indra Nooyi?

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

- i. The way somebody looks or behaves .
- ii. Study of the physical features of the land.
- iii. That which can't be explained.
- iv. A sudden tightening of the muscles.
- v. A mixture of loud unpleasant sounds.
- vi. One who believes in God.

(c). Replace the underlined word in each sentence with a suitable Antonym.

- i. The army consolidated its position.
 - a. Dishonest b. degraded c. Weakened d. Injured
- ii. Make a prudent use of time
 - a. foolish b. Logical c. proper d. Unwise

[7+3+2]



Subject Code: R16CC1202

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

- (a) Find the Laplace Transform of $\sin^2 3t$
(b) Find the Z-transform of $\{na^n\}$
(c) Write formulae for Half – range sine and cosine series.
(d) If $F_s(p)$ is the Fourier Sine Transform of $f(x)$, then prove that
$$F_s(f(ax)) = \frac{1}{a} F_s\left(\frac{p}{a}\right).$$

(e) A vector field is given by $F = (x^2 - y^2 + x)i - (2xy + y)j$ show that the field is irrotational.
(f) State Gauss Divergence Theorem

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

PART-B

4 X 12 = 48

- (a) Find the Laplace transform of $(\sqrt{t} - \frac{1}{\sqrt{t}})^3$
(b) Solve $(D^3 - 3D^2 + 3D - 1)y = t^2 e^t$ given that $y(0) = 1, y'(0) = 0, y''(0) = -2.$
- (a) Solve the difference equation, $u_{n+2} + 4u_{n+1} + 3u_n = 3^n$ using Z-transform; given that $u_0 = 0, u_1 = 1.$
(b) Show that $Z\left(\frac{1}{n!}\right) = e^{\frac{1}{z}}$
- (a) Obtain the Fourier series for $f(x) = e^{-x}$ in the interval $0 < x < 2\pi.$
(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
- (a) Express $f(x) = \begin{cases} 1 & \text{for } 0 \leq x \leq \pi, \\ 0 & \text{for } x > \pi, \end{cases}$ as a Fourier sine integral and hence
Evaluate $\int_0^\infty \frac{1 - \cos \pi \lambda}{\lambda} \sin(x\lambda) d\lambda.$
(b) Find the finite Fourier sine transform of $f(x) = 2x, 0 < x < 4.$
- (a) Find the value of a if the vector $(ax^2y + yz)i + (xy^2 - xz^2)j + (2xyz - 2x^2y^2)k$ has zero divergence. Find the curl of the above vector which has zero divergence.
(b) Evaluate $\text{div}\left(\frac{\vec{r}}{r^3}\right)$ where $\vec{r} = xi + yj + zk$ and $r = |\vec{r}|.$

7. (a) Apply Green's theorem to evaluate $\int_C [(2x^2 - y^2)dx + (x^2 + y^2)dy]$, where C is the boundary of the area enclosed by the x -axis and the upper-half of the circle $x^2 + y^2 = a^2$.
- (b) Find volume of the tetrahedron bounded by co-ordinate planes and the plane $\frac{x}{a} + \frac{y}{b} + \frac{z}{c} = 1$



Subject Code: R16CC1203

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

1. (a) What are the conditions for sustained interference pattern?
- (b) Define acceptance angle and acceptance cone.
- (c) Draw the crystal planes having Miller indices (110) and (211).
- (d) Write any two properties of ultrasonics.
- (e) What is de-Broglie's hypothesis? Give the expression for wavelength of an electron.
- (f) What are intrinsic and extrinsic semiconductors?

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

PART-B

4 X 12 = 48

2. (a) Discuss the theory of Newton's rings with relevant diagram.
- (b) Discuss various methods by which polarised light can be produced. [6+6]
3. (a) Write a note on (i) spontaneous emission, (ii) stimulated emission and (iii) population inversion.
- (b) Mention the applications of optical fibers.
- (c) Calculate the numerical aperture of an optical fiber having core and cladding refractive indices 1.59 and 1.40. [6+4+2]
4. (a) Show that the packing factor for SC, BCC and FCC lattices are 52%, 68% and 74% respectively.
- (b) State and prove Bragg's law of X-ray diffraction. [6+6]
5. (a) Explain any one method for the production of ultrasonic waves.
- (b) What are the basic requirements for acoustically good hall? [6+6]
6. (a) What are the merits and demerits of quantum free electron theory?
- (b) Derive Schrodinger's time independent wave equation. [6+6]
7. (a) Write a short notes on effective mass of an electron and hole.
- (b) Derive the expression for Hall coefficient and mention the applications of Hall effect. [6+6]



Subject Code: R16CC1204

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

1. (a) What is meant by calgon conditioning.
- (b) Define thermoplastics and thermosetting plastics.
- (c) What are liquid crystals? Give two applications.
- (d) Write the equations occurring at anode and cathode in Ni-Cd cell.
- (e) What is cracking? How is catalytic cracking better than thermal cracking?
- (f) Write two applications of photochemistry.

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

PART-B

4 X 12 = 48

2. (a) Explain any method for desalination of brackish water and mention its limitations.
- (b) What are boiler troubles? Explain caustic embrittlement and its remedies. [6+6]
3. (a) What are biodegradable polymers? Explain their properties and applications.
- (b) Discuss the preparation, properties and uses of polycarbonates. [6+6]
4. (a) Write the principles of green chemistry.
- (b) Explain the setting and hardening of cement. [6+6]
5. (a) Explain the working principle of (i) dry cell (ii) calomel electrode
- (b) Discuss chemical theory of corrosion. [6+6]
6. (a) Explain Fischer Tropsch method for preparation of synthetic petrol.
- (b) Write a short note on rocket fuel.
- (c) 0.85 g of a fuel containing 70 % carbon, when burnt in a bomb calorimeter, increased the temperature of water from 25.4° to 27.4°C. If the calorimeter contains 275g of water and its equivalent is 175g, Calculate the HCV of the fuel. [4+4+4]
7. (a) Explain Jablonski diagram.
- (b) Discuss (i) Lambert's Beer Law and its limitations (ii) Photosensitization [6+6]



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Subject Code: R16CC1205

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

- (a) What are decomposers? Explain their role in the ecosystem?
(b) What are the methods of conserving soil erosion?
(c) Define biodiversity hotspots and on what basis a region designated as hotspot?
(d) What is the effect of excess nitrates in drinking water on humans?
(e) Name the greenhouse gases present in the atmosphere?
(f) What is EIS?

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

PART-B

4X 12 = 48

- (a) Write the need of public awareness of environmental studies? 6m
(b) Define ecosystem. Write about types of ecological pyramids with examples? 6m
- (a) Write about use and over utilization of surface and ground waters? 6m
(b) Explain the impacts of modern agriculture practices on crop production? 6m
- (a) What is ex-situ and in-situ conservation of biodiversity? Give examples. 6m
(b) India is a mega diversity nation? Explain. 6m
- (a) What are the causes, effects and control measures of noise pollution? 6m
(b) Explain the role of individual in prevention of pollution? 6m
- (a) What are acid rains? What is their impact on environment? 6m
(b) Explain the main provisions of forest conservation Act, 1980? 6m
- (a) What is Environment audit? Explain how it is carried out? 6m
(b) Discuss the concept of ecotourism, its principles and merits? 6m

Subject Code: R16CC1206

I B.Tech II Semester Regular and Supplementary Examinations, April-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) Find out the resultant of two forces of magnitude 10N and 5N acting at an angle of 0° .
- (b) What are the methods for finding out the resultant force for a given system of forces.
- (c) State the two theorms of Pappus
- (d) Define limiting friction and angle of friction
- (e) State Impulse momentum principle
- (f) State D-Alembert's Principle.

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

PART-B

4 X 12 = 48

- 2.(a) An electric light fixture of weight $Q=178\text{ N}$ is supported as shown in Figure. Determine the tensile forces S_1 and S_2 in the wires **BA** and **BC** if their angles of inclination are as shown in fig.1

[6]

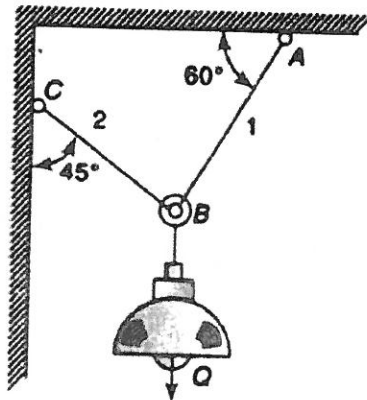


Fig.1

- (b) State and Prove

Parallelogram Law [6]

3. Two blocks connected by a horizontal link AB are supported on two rough planes as shown fig.2 The coefficient of friction for block A on the horizontal plane is $\mu=0.4$. The angle of friction for block B on the inclined plane is $\phi=15^\circ$. What is the smallest weight W of block A for which equilibrium of the system can exist? [12]

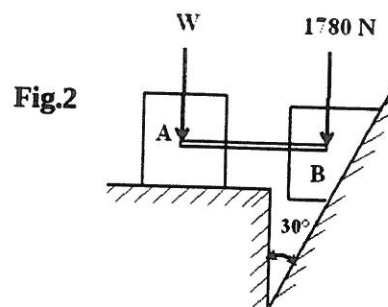
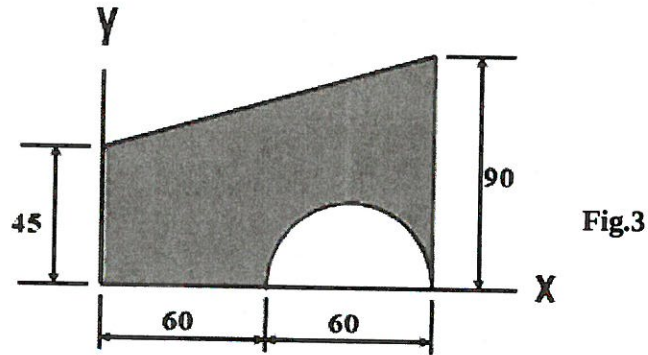
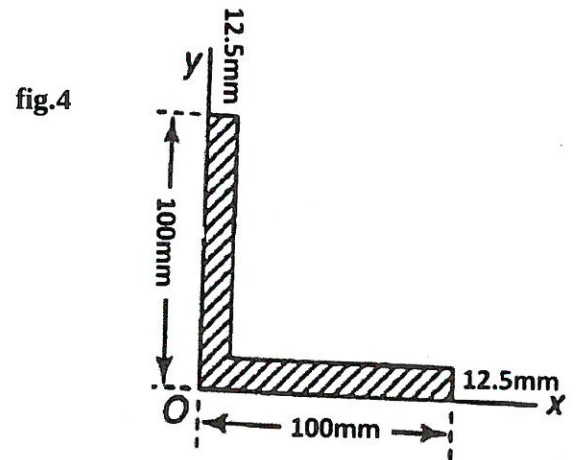


Fig.2

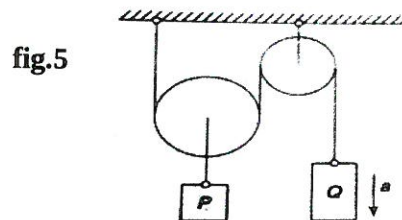
4. A semi circular area is removed from the trapezium as shown in the fig.3. Determine the centroid of the remaining shaded area. (all dimensions in mm). [12]



5. (a) State and prove perpendicular axis theorem. [6]
 (b) Calculate the Moment of Inertia of angle section about Y – axis as shown in fig.4 [6]



6. (a) Determine the mass moment of inertia of rectangular plate from basic principles [6]
 (b) Determine the mass moment of inertia of a uniform rod of length L about its centroidal axis normal to rod [6]
7. (a) State and prove work-Energy Principle [6]
 (b) Two weights P and Q are connected by the arrangement shown in Fig.5, neglecting friction and the inertia of the pulleys and cord, find the acceleration a of the weight Q . Assume that $P=178\text{N}$ and $Q= 133.5\text{N}$. [6]





Subject Code: R16CC1207

I B.Tech II Semester Regular and Supplementary Examinations, April-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) A room of volume 1728 m^3 volume is shown by a cube of 216 cm^3 volume. find R.F.
- (b) A point P is 40 mm above the H.P. and 20 mm in front of the V.P. Draw its projections
- (c) Draw the projection of straight line of 60 mm parallel to both H.P. and V.P. and 20mm from each
- (d) A regular pentagonal plane of 25mm side has one side on the ground and perpendicular to the VP draws its simple projections.
- (e) Draw the projections of a cone of base diameter 30 mm and axis 60mm when its axis perpendicular to vertical plane.
- (f) A cylinder of base 40mm diameter and axis 55 mm long is laying on HP. Draw its isometric projections when axis is horizontal.

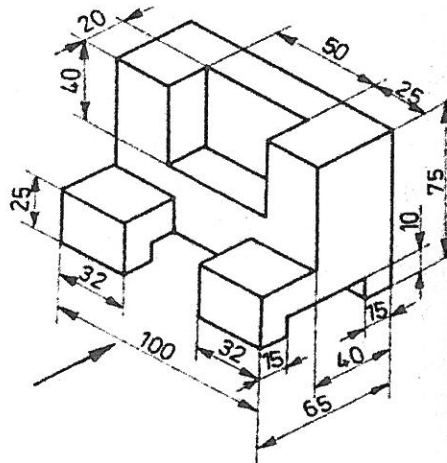
[2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. (a) Draw a hexagon given the length of side 25 mm, using general method?
- (b) The area of a field is 50,000 sq m. The length and the breadth of field , on the map is 10 cm and 8 cm respectively. Construct a diagonal scale which can read up to one metre. Mark the length of 235m on the scale. What is the R.F. of the scale
3. (a) A point A is 20mm above the HP 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 VP
- (b) The front view of a 75 mm long line measures 55 mm. The line is parallel to the H.P. and its end is in the V.P. and 25 mm above the H.P. Draw the projections of the line and determine its inclination with the V.P.
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 square ABCD of 50mm side has its corner A in the H.P., its diagonal AC inclined at 30° to the H.P. and the diagonal BD inclined at 45° to the V.P. and parallel to the H.P. Draw its projections
6. (a) A hexagonal pyramid, base 30 mm side axis 60 mm long, has an edge of its base on the ground. Its axis is inclined at 30° to the ground and parallel to the VP. Draw its projections.
- (b) Draw the development of the lateral surface of the cylinder of base diameter 40 mm and altitude 60 mm.
7. (a) Draw the (a) Front view (b) Top view and (c) Side view for the following figure





Subject Code: R16EE1208

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

- 1.(a)What is representative fraction (R.F.)?
- (b)Differentiate between the first and third angle of projection.
- (c) When a straight line will not have traces?
- (d)A hexagonal plate of side 2cm is lying in the V.P. with two sides horizontal. Draw its projections
- (e) What are the different types of solids?
- (f) Define isometric axes

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

PART-B

4 X 12 = 48

2. The major and minor axes of an ellipse are 140 mm and 90 mm respectively. Find the foci and draw the ellipse using arcs of circle method. Draw a tangent and a normal to the ellipse at a point 40 mm above the major axes. (12)
3. (a) A point A is 30mm above the HP and in the first quadrant. Its shortest distance from the intersection of both the reference planes is 50mm. Draw the projections of the point and determine its distance from the VP. (6)
(b)The front view of a 75mm long line which is parallel to and 40mm above the H.P. and one end being 20mm in front of V.P, is 50mm.Draw its projections. (6)
4. The distance between the projectors of a straight line AB is 60 mm. One end A is 10 mm above the H.P and 20 mm in front of the V.P. while the other end B is 40 mm below the H.P and 50 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. (12)
5. One edge of a pentagonal plate of side 25 mm is on H.P and inclined at 60° to the V.P. while its surface is making an angle of 45° to the H.P. Draw its projections. (12)
6. A cone of base diameter 50mm and axis 70mm long is lying on the H.P. with one of its generators and its axis is parallel to and 40mm in front of V.P. (12)
7. A cone of base diameter 50 mm and axis 70 mm long is placed centrally on the top of a cube of 60 mm side. Draw the isometric view of the combination of the solids. (12)

Subject Code: R16EE1209

I B.Tech II Semester Regular and Supplementary Examinations, April-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 Ohm's law and its limitations
- (b) Define power factor.
- (c) Define quality factor.
- (d) Define Graph and sub-graph.
- (e) State Tellegen's theorem
- (f) Define magneto motive force, Magnetic flux density.

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

PART-B

4 X 12 = 48

2. (a) Explain about source transformation technique with suitable example [6]
- (b) Calculate the equivalent resistance R_{ab} in the circuit in Fig.1 [6]

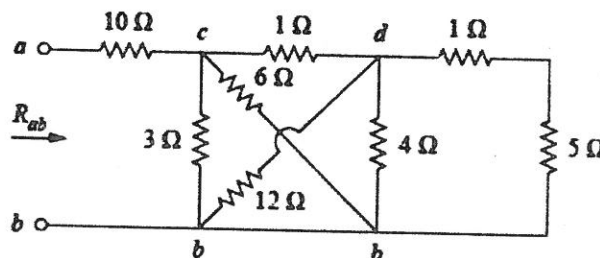


Fig.1

3. (a) Obtain Average value and RMS value for an Alternating Voltage waveform [6]
- (b) The impedances of a parallel circuit are $Z_1 = (6 + j8)$ ohms and $Z_2 = (8 - j6)$ ohms. If the applied voltage is 120V, find (i) current and power factor of each branch (ii) overall current and power factor of the combination (iii) power consumed by each impedance. [6]
4. (a) Explain and derive the relationships for bandwidth and half power frequencies of RLC series Circuit [6]
- (b) A series RLC circuit with $R = 10$ ohms, $L = 0.4$ H and $C = 50 \mu\text{F}$ 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. [6]

5. (a) Write the fundamental cut-set matrix for the network graph shown in Fig. 2. [6]

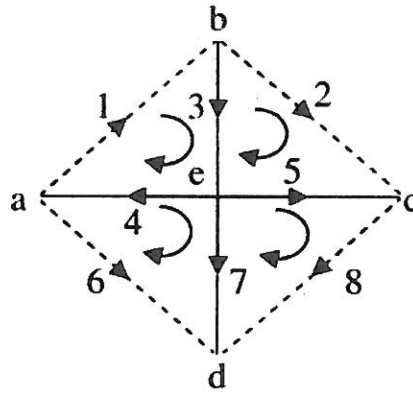


Fig.2

(b) For the circuit in Fig. 3, obtain the dual circuit. [6]

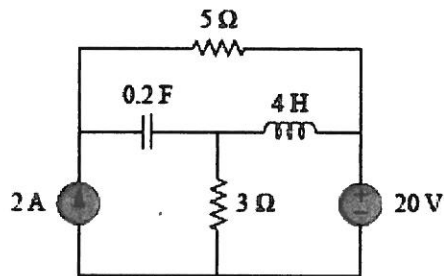


Fig.3

6. (a) State and explain super position theorem with an example [6]

(b) Find the Thevenin equivalent at terminals *a-b* of the circuit in Fig. 4.

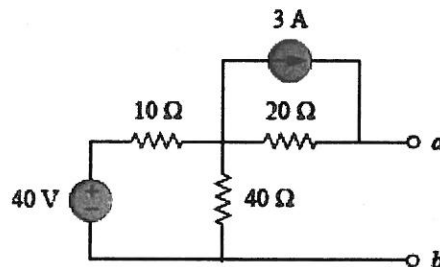


Fig.4

7. (a) State and explain Faraday's laws of electromagnetic induction. [6]

(b) Two coils A and B having turns 100 and 1000 respectively are wound side by side on closed circuit coil of X-section 8 cm^2 and mean length 80 cm. The relative permeability of iron is 900. Calculate the mutual inductance between the coils. [6]



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Subject Code: R16EC1210

I B.Tech II Semester Regular and Supplementary Examinations, April-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) Define Identifier? What are the rules used for naming an identifier?
- (b) Differentiate between break and continue statements.
- (c) Differentiate between local and global variables.
- (d) Discuss briefly about realloc() function.
- (e) Discuss about bit-fields.
- (f) List any four file opening modes.

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

PART-B

4 X 12 = 48

2. (a) Discuss about Data types and their sizes.
- (b) Explain about conditional operator with an example program.
3. (a) Discuss about the for loop.
- (b) Write a C language program to calculate the sum of digits of a given number.
4. (a) What are the Storage classes? Explain.
- (b) Write a C language program to calculate factorial of n using recursion.
5. (a) Define pointer. What are the operations performed on pointers. Discuss.
- (b) Discuss about command line arguments.
6. (a) Differentiate between Structures and Unions.
- (b) Write a C language program to accept and display employee details using pointer to structure.
7. (a) Discuss about formatted I/O.
- (b) Write a C language program to create and display the text file.

Subject Code: R16EC1211

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

1. (a) Define electric potential and electric energy
- (b) Define planar and non-planar graph
- (c) Define quality factor and bandwidth
- (d) State compensation theorem.
- (e) Define mutual inductance and self inductance
- (f) Distinguish between steady state and transient response.

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

PART-B

4 X 12 = 48

2. (a) State and Explain Kirchoff's laws with an example.

[6]

- (b) Use nodal analysis to obtain v_o in the circuit in Fig.1

[6]

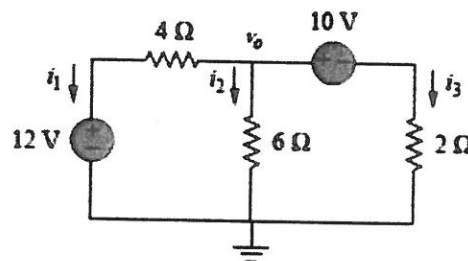


Fig:1

3. (a) Determine the effective value of the periodic waveform in Fig.2

[6]

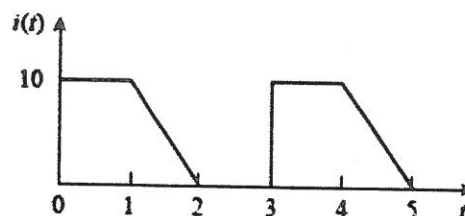


Fig.2

- (b) Define incidence matrix. For the graph shown in Fig.3, find the complete incidence matrix.

[6]

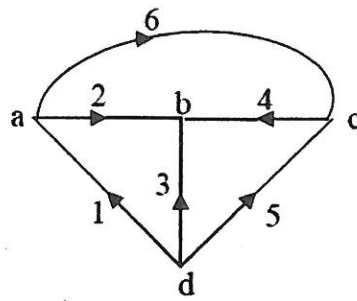


Fig.3

4. (a) Write the expression for total impedance of the circuit having (i) only resistance (ii) pure inductor (iii) Pure capacitor (iv) R-L parameters (v) R-C parameters (vi) R-L-C parameters. Write the expression for phase difference in all the above cases. [6]
- (b) In a series RLC circuit $R= 2\Omega$, $L=2\text{mH}$ and $C= 10\mu\text{f}$. Find the Resonant frequency, Quality factor, Bandwidth and Half power frequencies [6]
5. (a) Prove that the power transfer to the load becomes maximum when the load impedance is equal to the complex conjugate of the Thevenin's impedance. [6]
- (b) Using the superposition theorem, find v_o in the circuit in Fig. 4 [6]

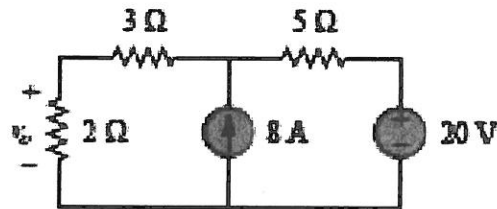


Fig:4

6. (a) Derive h-parameters in terms of z-parameters? [6]
- (b) Two similar coils connected in series gave a total inductance of 600 mH and when one of the coil is reversed, the total inductance is 300 mH. Determine the mutual inductance between the coils and coefficient of coupling. [6]
7. (a) For an RC series circuit, a sinusoidal voltage $V(t)= V_m \sin \omega t$ is applied at $t=0$. Find the expression for transient current using Laplace transform approach. [6]
- (b) A 200Ω resistor is in series with an inductor L . The initial value of the inductor current is 5 mA and its value after 5 ms is 3mA. Find the time constant and the inductance. [6]



Narasaraopeta Engineering College (Autonomous)

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

Subject Code: R16EC1212

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

1. (a) Define Spirituality.
- (b) What is the need to study Ethics?
- (c) List the Responsibilities of engineer to Society
- (d) Discuss Intellectual Property Rights
- (e) State the meaning of "utility patent"?
- (f) Write about the trade Secrets?

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

PART-B

4 X 12 = 48

2. (a) Discuss in detail the concept of Service Learning
- (b) Explain the concept of values in detail with an example [6 +6]
3. (a) Discuss the various roles played by engineers. [6]
- (b) Give the examples of ethical issues faced by a consultant engineer. [6]
4. Write a short note on
- (a) Cross Cultural Issues
- (b) Occupational Crimes
- (c) Industrial Espionage [4+4+4]
5. (a) Describe the importance of Intellectual Property Rights [8]
- (b) Express your views about the intellectual property rights necessity for the countries [4]
6. (a) Explain about different types of Intellectual Property Rights [6]
- (b) Explain the Process of Patent Registration [6]
7. (a) Explain the conditions for registration of a trade mark and the procedure for Registration of trademark. [6]
- (b) Explain the trade secret. What are the rights of an owner of trade secrets? [6]



Subject Code: R16CS1213

I B.Tech II Semester Regular and Supplementary Examinations, April-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) Determine the rank of a matrix $A = \begin{bmatrix} 2 & 3 & 4 \\ 4 & 3 & 1 \\ 1 & 2 & 4 \end{bmatrix}$
- (b) If λ is an Eigen value of A. Then λ^{-1} is an Eigen value of A^{-1} , if it exists.
- (c) Evaluate $\int_0^1 \int_0^1 \int_0^1 xyz \, dz \, dy \, dx$.
- (d) Write merits and demerits of Secant method.
- (e) Evaluate $\Delta^n(e^x)$ interval of differencing being unity.
- (f) Write Runge - kutta Method (fourth order only) formulae.

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

PART-B

4X 12 = 48

2. (a) Using the loop current method on a circuit, the following equations are obtained:
 $3i_1 + i_2 + i_3 = 8$; $2i_1 - 3i_2 - 2i_3 = -5$; $7i_1 + 2i_2 - 5i_3 = 0$ by Gauss - Jordan method, solve for i_1 , i_2 and i_3 .
- (b) Investigate the values of λ and μ so that the equations $2x + 3y + 5z = 9$, $7x + 3y - 2z = 8$, $2x + 3y + \lambda z = \mu$ have (i) no solution (ii) a unique solution, and (iii) an infinite number of solutions.
3. (a) Reduce the quadratic form $2xy + 2yz + 2zx$ into canonical form also find the nature, rank, signature and index.
- (b) Verify Cayley Hamilton theorem and hence find A^{-1} of the matrix $A = \begin{bmatrix} 1 & 4 \\ 2 & 3 \end{bmatrix}$. Also express $A^5 - 4A^4 - 7A^3 + 11A^2 - A - 10I$ as a linear polynomial in A.
4. (a) Find the perimeter of the cardioid $r = a(1 + \cos\theta)$. Also, show that the upper half of the cardioid is bisected by the line $\theta = \frac{\pi}{3}$.
- (b) Evaluate $\int_0^{\frac{\pi}{2}} \int_0^{a \cos\theta} r \, dr \, d\theta$.

5. (a) Find a root of the equation $x^3 - 4x - 9 = 0$, using the Bisection method correct to three decimal places.

(b) Find a root of $f(x) = x + \log_{10} x - 2 = 0$ using Newton Raphson method. Take $x_0 = 1.8$.

6.(a) Show that $\Delta + \nabla = \frac{\Delta}{\nabla} - \frac{\nabla}{\Delta}$

(b) Given the values

| | | | | | |
|-------|-----|-----|------|------|------|
| X: | 5 | 7 | 11 | 13 | 17 |
| f(x): | 150 | 392 | 1492 | 2366 | 5202 |

Evaluate $f(9)$, using Lagrange's formula.

7.(a) Evaluate $\int_0^6 \frac{1}{1+x^2} dx$ by using

i. Trapezoidal rule.

ii. Simpson's $\frac{3}{8}$ rule.

(b) Apply Runge-Kutta method of fourth order method, to find an approximate value of y

when $x = 0.2$, given that $\frac{dy}{dx} = x + y$ and $y = 1$ when $x = 0$.



Narasaraopeta Engineering College (Autonomous)

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

Subject Code: R16CS1214

I B.Tech II Semester Regular and Supplementary Examinations, April-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) Classify and explain Computer Software?
(b) What is a string? What are the various string handling functions?
(c) What is meant by function prototype? Explain?
(d) What is a pointer? Explain types of Pointers?
(e) Explain about enum data type?
(f) Explain Text files and Binary files?

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

PART-B

4 X 12 = 48

- (a) Explain the different steps involved in creating and running programs with a neat flowchart?
(b) Write short notes on data types and sizes? [6+6]
- (a) Explain the concept of counter controlled loops with an example?
(b) With suitable code snippets explain the concept of 1-D and 2-D arrays and how a variable can be declared as array, initialized and accessed? [6+6]
- (a) Write short notes on passing 1-D arrays to function?
(b) Write a C program to solve the towers of hanoi problem using recursive function? [6+6]
- (a) Describe in detail how pointers can be declared, initialized and used to access data stored inside the memory pointed by the pointer with example code?
(b) Differentiate malloc() and calloc() functions? [6+6]
- (a) Demonstrate how to declare and use a single dimensional array of structure with an example program?
(b) Differentiate structures and unions? [6+6]
- (a) Write short notes of feof function and show its use with an example?
(b) Describe in detail different file handling functions in C? [6+6]



Subject Code: R16CS1215

I B.Tech II Semester Regular and Supplementary Examinations, April-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) Draw the V-I characteristics of Diode biasing and write the Diode current equation?
(b) Discuss the BJT Configurations
(c) Write about the Barkhausen criterion.
(d) Explain universal gates with truth tables.
(e) Compare combinational and sequential circuits
(f) What is the operational difference of the counter and register

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

PART-B

2. What are the types of filters and explain operation of each filter? [12]
3. Explain modes of MOSFET with relevant construction and working? [12]
4. (a) With neat schematics explain the working of CE Amplifier. [6]
(b) What is an oscillator? Explain Hartley Oscillator. [6]
5. (a) Convert the following number system:
i. $(786)_{10} = (\quad)_2$
ii. $(56)_8 = (\quad)_{10}$ [4]
(b) Minimize the following functions using K-maps. Give your answer in POS form.
 $f = \Sigma (1, 4, 5, 9, 11, 14) + d(0, 2, 7, 8, 13)$ [8]
6. (a) Design 8X1 Mux and explain? [6]
(b) Draw the logic diagram of JK Flip-Flop and explain its operation? [6]
7. (a) With neat diagrams explain the working of universal shift register. [6]
(b) Design and explain Mod-10 counter? [6]
