(CS/EC 30117)

B.Tech. DEGREE EXAMINATION, NOVEMBER 2018.

(Regular)

Second Year — First Semester

Computer Science and Engineering/Electronics and Communication Engineering

Paper I — HUMAN VALUES AND PROFESSIONAL ETHICS

(Regulation 2017-2018)

Time : Three hours Maximum : 70 marks

Answer ONE question from each Unit.

UNIT I

1. (a) Explain in detail the process of self exploration.

   (b) What do you mean by natural acceptance and experimental validation?

Or

2. (a) Discuss in detail how ethics is related to religion, politics, business, law, medicine and environment.

   (b) What is meaning of prosperity? How can you say that you are prosperous?

UNIT II

3. (a) Discuss about the a critical appraisal of the current scenario.

(b) Explain about the understanding and living in harmony at various levels.

Or

1. (a) Explain about the basic requirements for fulfillment of aspirations of every human being with their correct priority.

(b) What is the difference between prosperity and wealth? Which is more acceptable to us?

UNIT III

5. (a) Discuss in detail the seven ways to practice Aparigraha.

(b) What do you mean by imagination?

Or

6. Explain in detail of under standing the needs of self (I) and 'Body'-Sukh and Suvidha.

UNIT IV

7. Explain in detail understanding the characteristics and activities of "I" and harmony in "I".

Or

8. (a) What is sanyama and svasthya? How the two are related?

(b) Explain how activities in self (I) an inter related.

UNIT V

9. What is basic unit of human interaction? Explain.

Or

10. What is trust and respect? Explain in detail.

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B.Tech. DEGREE EXAMINATION, NOVEMBER 2018.

(Regular)

Second Year — First Semester

Computer Science and Engineering

Paper II — DISCRETE MATHEMATICAL STRUCTURES

(Regulation 2017-18)

Time : Three hours Maximum : 70 marks

Answer ONE question from each Unit.

All questions carry equal marks.

UNIT I

1. (a) Prove that $(p \to (q \to r)) \to ((p \to q) \to (p \to r))$ is a tautology.

(b) Determine whether $f : z \to z$ defined by $f(x) = x + 1$ for every $x \in z$ is one to one and onto.

Or

(c) Explain basic concepts of set theory in discrete mathematical structures.

UNIT II

2. (a) Show that the function $f(x) = \begin{cases} x/2 & \text{when } x \text{ is even} \\ (x-1)/2 & \text{when } x \text{ is odd} \end{cases}$ is primitive recursive.

Or

(b) Use mathematical induction to show that $1^2 + 2^2 + 3^2 + \ldots + n^2 = \frac{n(n+1)(2n+1)}{6}$.

(c) What is the coefficient of x^2y^3 in the expansion of $(2x - 3y)^{25}$?

UNIT III

3. (a) State and prove principle of inclusion and exclusion.

Or

(b) Solve the recurrence relation $a_n - 3a_{n-1} - 4a_{n-2} = 0$, where $a_0 = a_1 = 0$.

UNIT IV

4. (a) Explain about roots, trees and binary trees.

Or

(b) Explain Dijkstra's algorithm for finding minimal spanning tree a planar graphs.

UNIT V

5. (a) Show that the symmetric functions form a Boolean algebra.

Or

(b) Describe the Prim's algorithm for finding the minimum spanning tree of a graph.

(c) Show that the absorption laws $x + xy = x$, $x(x + y) = x$ are valid in Boolean Algebra.

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B.Tech. DEGREE (Regular) EXAMINATION,
NOVEMBER 2018.

Second Year — First Semester

Computer Science and Engineering

Paper III — COMPUTER ORGANIZATION

(Regulation 2017-2018)

Time : Three hours Maximum : 70 marks

Answer ALL questions.

UNIT I

1. (a) What is flip-flop? Explain D flip-flop and JK flip-flop with neat diagram.

Or

(b) Draw the block diagram of a dual u-to-1-line multiplexers and explain its operation by means of a function table.

UNIT II

2. (a) Explain and figure out the control unit of basic computer.

Or

(b) Represent the following conditional control statement by two register transfer statements with control functions. If $(P = 1)$ then $(R1 \leftarrow R2)$ else if $(a = 1)$ then $(R1 \leftarrow R3)$.

UNIT III

3. (a) Draw and explain the block diagram of stored program organization.

(b) What is control unit? Explain control memory with a block diagram.

Or

(c) What are the major components of CPU? Explain the register organization with a block diagram.

(d) Explain in detail about the data transfer and manipulation.

UNIT IV

4. (a) What are the three ways of adding decimal numbers? Explain with figures.

Or

(b) Explain about the signed addition, signed subtraction with signed -2's complement data.

(c) Explain about decimal arithmetic unit.

UNIT V

5. (a) Explain clearly the types of data transfer modes.

Or

(b) Explain arithmetic operations on floating point numbers.

(c) Explain Booth's multiplication algorithm with an example.

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B.Tech. DEGREE EXAMINATION, NOVEMBER 2018.

(Regular)

Second Year – First Semester

Computer Science and Engineering

Paper IV — COMPUTER NETWORKS

(Regulation 2017-2018)

Time : Three hours Maximum : 70 marks

Answer ONE question from each Unit.

All questions carry equal marks.

UNIT I

1. (a) Explain about error detecting codes in detail.

(b) Explain different sliding window protocols.

Or

(c) What are the basic comparison between OSI and TCP/IP inference model?

(d) Write about data link layer design issues.

UNIT II

2. (a) Explain the binary exponential Backoff algorithm.

(b) Explain

(i) Blue tooth

(ii) Routers and Gateways

(iii) Switches

(iv) Bridges.

Or

(c) Explain Eathernet with an example.

(d) Explain in detail about various IEEE 802.11 MAC sub layer protocol.

UNIT III

3. (a) Write about network layer design issues.

(b) Explain IP protocol.

Or

(c) Explain in detail about exterior Gateway Routing Protocol.

(d) Write in detail

(i) Flooding,

(ii) Link state routing.

UNIT IV

4. (a) Discuss about the transport layer services and primitives.

Or

(b) Explain about the multiplexing.

(c) Explain in detail about UDP.

UNIT V

5. (a) Explain DMS components and its working procedure.

Or

(b) Explain the concept of video and audio compression.

(c) Explain in detail about world wide web architecture.

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B.Tech. DEGREE EXAMINATION, NOVEMBER 2018.

(Regular)

Second Year – First Semester

Computer Science and Engineering

Paper V – OBJECT ORIENTED ANALYSIS AND DESIGN

(Regulation 2017-18)

Time : Three hours Maximum : 70 marks

Answer ONE question from each Unit.

UNIT I

1. (a) What is object orientation? Explain the basic concepts of object orientation in detail and also explain the origins of object orientation.

Or

(b) Explain the development process of software in detail.

UNIT II

2. (a) Draw and explain the class diagram for an ATM bank system.

(b) Explain the links and associations in detail.

Or

(c) What is sequence diagram? Explain with an example.

(d) Explain the component based development.

UNIT III

3. (a) Explain about role of operation specifications are describe operation logic.

(b) Distinguish between sequence and collaboration diagrams.

Or

(c) Explain how to create an operation specifications.

(d) What is a state chart diagram? Explain with example.

UNIT IV

4. (a) What is object design? Write criteria for good design.

(b) What are the major elements of system design?

Or

(c) Explain the architecture of presentation layer.

(d) What is interface design patterns? Explain.

UNIT V

5. (a) Explain the component diagram and deployment diagram with examples.

Or

(b) Explain in detail about persistence designing for relational database management system.

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B.Tech. DEGREE EXAMINATION, NOVEMBER 2018.

(Regular)

Second Year – First Semester

Computer Science and Engineering

Paper VI : DESIGN AND ANALYSIS OF ALGORITHMS

(Regulation 2017-18)

Time : Three hours Maximum : 70 marks

Answer ONE question from each unit.

All questions carry equal marks.

UNIT I

1. (a) Discuss about the characteristics of an algorithm.

(b) Briefly explain how to analyse algorithm.

Or

(c) Derive the number of comparison required for determining minimum and maximum using straight forward algorithm and recursive algorithm.

UNIT II

2. (a) Explain large integer multiplication using divide and conquer.

Or

(b) Sort the elements 310,285, 179, 652, 351, 423, 861, 254, 450, 520 using merge sort algorithm.

(c) Write the Krushkal's algorithm of minimum spanning line.

UNIT III

3. (a) Explain about all pairs shortest path problems.

(b) Design a three stage system with device types D_1, D_2 and D_3. the costs are 30, 15 and 20 respectively, the cost of the system in no more than 105. The reliability of each device type is 0.9, 0.8 and 0.5 respectively.

Or

(c) Consider the cost metric of the given graph is $\begin{bmatrix} 0 & 10 & 15 & 20 \\ 5 & 0 & 9 & 10 \\ 6 & 13 & 0 & 12 \\ 8 & 8 & 9 & 0 \end{bmatrix}$ find the minimum cost path for the travelling sales problem using dynamic programming.

UNIT IV

4. (a) What is graph coloring? White analgorithm for it and explain with an example.

Or

(b) Write an explain the procedure of bredth first search traversal with an example.

(c) Explain about bi-connected components with an example.

UNIT V

5. (a) Discuss NP- Hard and NP- complete problems with suitable examples.

Or

(b) State and prove Cook's theorem.

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B.Tech. DEGREE (Regular) EXAMINATION,
NOVEMBER 2018

Second Year — First Semester

Electronics and Communication Engineering

Paper II – ELECTRONIC DEVICES AND CIRCUITS

(Regulation 2017-2018)

Time : Three hours Maximum : 70 marks

Answer ONE question from each Unit.

UNIT I

1. (a) For an ideal diode find out the current in the series resistance of 0.5 kΩ if the forward bias voltage is 1.0 V.

(b) Explain about clipping and clamping operations with circuits.

Or

(c) Draw V-I characteristics of zener diode. Explain about zener break down and qualanche multiplication.

(d) Explain how transistor acts as an amplifier.

UNIT II

2. (a) Define peak inverse voltage. What is the peak inverse voltage for a full-wave rectificer using ideal diodes?

(b) Explain about the comparison of various filter.

Or

(c) Derive an expression for efficiency of half wave and full wave rectifier circuits.

(d) Explain about derivations characteristics of rectifiers.

UNIT III

3. (a) What is the gate-source resistance if a voltage of –5V is applied between gate and source? The gate current is –1.2 nA.

(b) Distinguish between JFET and MOSFET.

Or

(c) Draw and explain the basic structure of an n channel field effect transistor. Also draw its VI characteristics.

(d) Why is FET known as unipolar devices? compare BJT with FET.

UNIT IV

4. (a) Explain thermal runaway and thermal stability.

(b) FET biasing and stabilization techniques.

Or

(c) BJT biasing methods.

(d) Explain about the need for biasing and operating point.

UNIT V

5. (a) Explain about small signal low frequency transistor amplifier model of BJT and two port network.

(b) Explain determination of h-parameters and conversion h-parameters.

Or

(c) Discuss about CB amplifier in detail.

(d) Discuss about comparison of transistor amplifier.

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B.Tech. DEGREE EXAMINATION, NOVEMBER 2018.

(Regular)

Second Year — First Semester

Electronics and Communication Engineering

Paper III — ENGINEERING DRAWING

(Regulation 2017–2018)

Time : Three hours | Maximum : 70 marks

Answer ONE question from each Unit.

UNIT I

1. (a) The major axis of an ellipse is 150 mm long and the minor axis is 100 mm long. Find the foci and draw the ellipse by 'arcs of circles' method. Draw a tangent to the ellipse at a point on it 25 mm above the major axis. (7)

   (b) Write free hand single – stroke vertical capital letters of 10 mm height. (7)

ENGINEERING DRAWING IS LANGUAGE OF ENGINEERS

Or

2. (a) The distance between Delhi and Agra is 200 km. En a railway map it is represented by a line 5 cm long. Find its R.F. Draw a diagonal scale to show single km. And maximum 400 km. Indicate on it following distances. (i) 202 km (ii) 356 km. (7)

   (b) Draw Involute of a circle diameter 40 mm. String length is equal to the circumference of circle. (7)

UNIT II

3. (a) Draw the projections of the following points on the same ground line, keeping the projectors 20 mm apart,

   (i) Point B, 20 mm above the H.P. 25 mm in front of V.P.

   (ii) Point C, in the V.P. and 40 mm above the H.P.

   (iii) Point D, 25 mm below the H.P. and 25 mm behind the V.P.

   (iv) Point E, 15 mm above the H.P. and 50 mm behind the V.P. (7)

   (b) A line AB 70 mm long is inclined at an angle of 45° the H.P. and 30° to V.P. The point C is 10 mm above H.P. and 20 mm in front of V.P. Draw the projections of the straight line. (7)

Or

4. (a) A circle of 50 mm diameter is resting on HP on end A of its diameter AC which is 30° inclined to HP while its Top view is 45° inclined to VP. Draw it's projections. (7)

   (b) A regular pentagon of 30 mm sides is resting on HP on one of its sides with its surface 45° inclined to HP. Draw its projections when the side in HP makes 30° angle with VP. (7)

UNIT III

5. A cone 40 mm diameter and 50 mm axis is resting on one generator on HP which makes 30° inclination with VP. Draw its projections. (14)

Or

6. A cube of 50 mm long edges is so placed on HP on one corner that a body diagonal is parallel to HP and perpendicular to VP. Draw it's projections. (14)

UNIT IV

7. A pentagonal pyramid, 30 mm base side and 50 mm axis is standing on HP on its base whose one side is perpendicular to VP. It is cut by a section plane 45° inclined to HP. through mid-point of axis. Draw Development of surface of remaining solid. (14)

Or

8. A cylinder, 50 mm base diameter and 70 mm axis is standing on its base on Hp. It cut by a section plane 45° inclined to HP through mid-point of axis. Draw development of surfaces of remaining solid. (14)

UNIT V

9. Draw

(a) Front view

(b) Top view

(c) Side view of Fig. 1 (14)

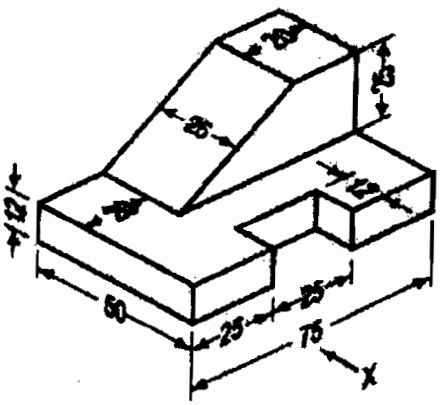

Fig. 1

Or

10. Draw Isometric view for Fig.2. (14)

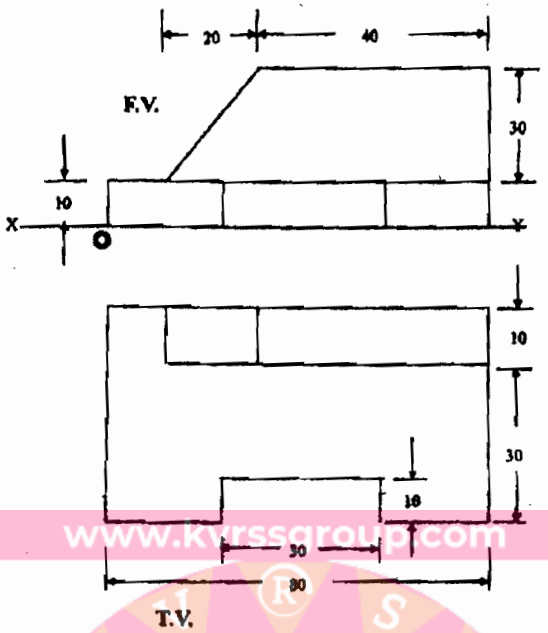

Fig. 2

(c) Obtain the relation between auto correlation function and energy power spectral density function

(d) What are the characteristics of ideal LPF and HPF?

UNIT V

5. (a) Determine the inverse Laplace transform of the following function

(i) $\dfrac{5s+4}{(s-1)(s^2+2s+5)}$

(ii) $\dfrac{3s^2+8s+3}{s^2+6s+1}$.

Discuss their pole-zero location and the ROC.

(b) Find the relation between Laplace transforms and Fourier transform.

Or

(c) Determine the inverse transform of

$$y(z)=\frac{1+2z^{-1}+z^{-3}}{(1-z^{-1})(1-0.5z^{-1})}.$$

(d) Find $x(0)$ and $x(\infty)$ for the sequence whose z-transform in $x(z)=\dfrac{z}{z-3}$.

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(EC30417)

B.Tech. DEGREE (Regular) EXAMINATION, NOVEMBER 2018.

Second Year – First Semester

Electronics and Communication Engineering

Paper IV — SIGNALS AND SYSTEMS

(Regulation 2017-2018)

Time : Three hours Maximum : 70 marks

Answer ONE question from each Unit.

All questions carry equal marks.

UNIT I

1. (a) Explain the classification of signals and classification of system.

(b) Determine the impulsive response $h(x)$ of the system described by the second order difference equation

$$y(n)-3y(n-1)-4y(n-2)=x(n)+2x(n-1).$$

Or

(c) Determine the average power for the following signals

(i) $x(t)=5\ e^{-10t}$

(ii) $x(t)=100\cos(100t+50^\circ)$

(d) Sketch the following signal :

(i) $x(t) = u(n+4) - u(n-2)$

(ii) $y(t) = r(t-3) - r(t+2)$

(iii) $x(t) = u(t+1) + u(t-1) - 2u(t)$

(iv) $y(t) = r(t+1) - r(t) + r(t-2)$.

UNIT II

2. (a) For a periodic signal, with fundamental period T_0 and Fourier series coefficients 'a_k' express the following signals in terms of a_k.

(i) $x(t-t_0)$

(ii) $x^*(t)$

(iii) $\int_{-\infty}^{t} x(\tau)\, d\tau$

(iv) $\frac{dx(t)}{dt}$

(b) What is the significance of Hilbert transform and find Hilbert transform of triangular function

$$x(t) = \begin{cases} t+1 \text{ for } -1 \le t \le 0 \\ -t+1 \text{ for } 0 \le t \le 1 \end{cases}$$

Or

(c) Expand following function $f(t)$ by trigonometric Fourier series are the interval $(0, 1)$. In this interval $f(t) = At$.

(d) State and prove differential and integration properties of Fourier transform.

UNIT III

3. (a) State the sampling theorem and explain how a low pass filter can retrieve information from the sample data.

(b) Analyze the effect of under sampling aliasing in communication.

Or

(c) Explain about the reconstruction of signal from its samples.

(d) Explain zero pulse width sampling (ideal impulse sampling).

UNIT IV

4. (a) Discuss about the relation between correlation and convolution.

(b) Compute the convolution of the following two discrete -time signals.

$$x[n] = \left\{0, \frac{1}{3}, \frac{2}{3}, 1, \frac{4}{3}, \frac{5}{3}, 2\right\}$$

$$h[n] = \{1, 1, 1, 1, 1\}$$

$y[n] = x[n] \uparrow h[n]$.

Or

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B.Tech. DEGREE EXAMINATION, NOVEMBER 2018.

(Regular)

Second Year — First Semester

Electronics and Communication Engineering

Paper V — NETWORK ANALYSIS

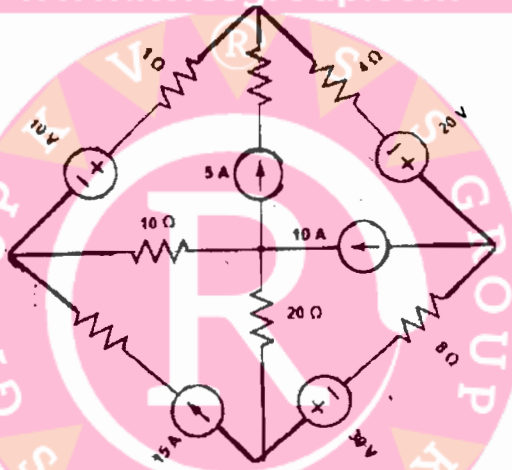
(Regulation 2017–2018)

Time : Three hours . Maximum : 70 marks

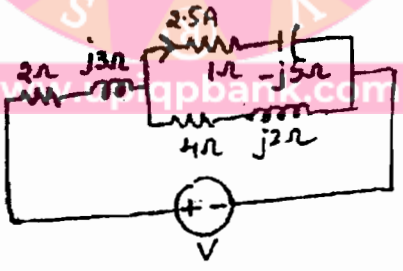
Answer ONE question from each Unit.

UNIT I

1. (a) Using Mesh analysis, find mesh currents in the circuit shown.

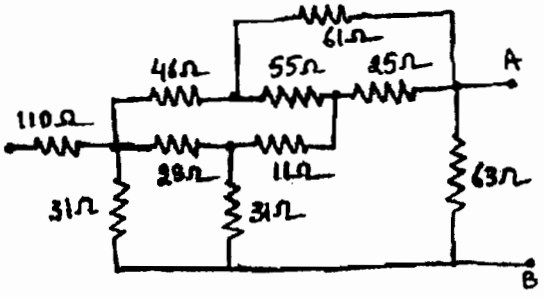


(b) Find V, Active and Reactive powers for the circuit shown.

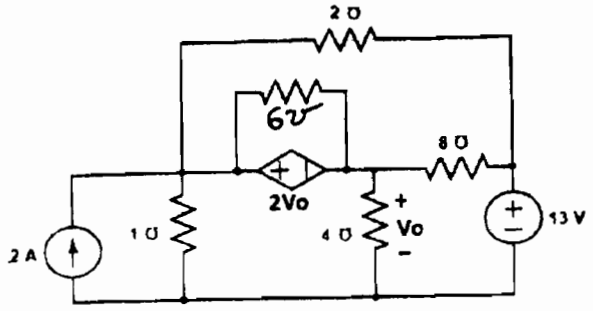


Or

(c) Find equivalent resistance across A and B terminals.

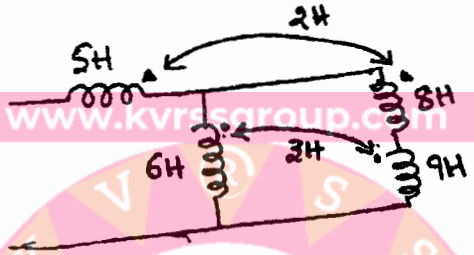


(d) Find Vo using nodal analysis in the circuit shown.



UNIT II

2. (a) Find equivalent inductance for the given coupled circuit.

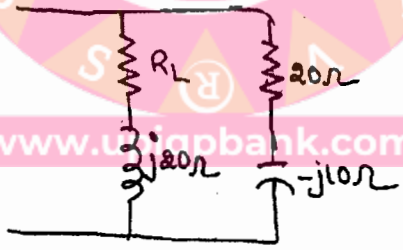


(b) Derive the expression for the Half power frequencies and Quality factor in series resonance.

Or

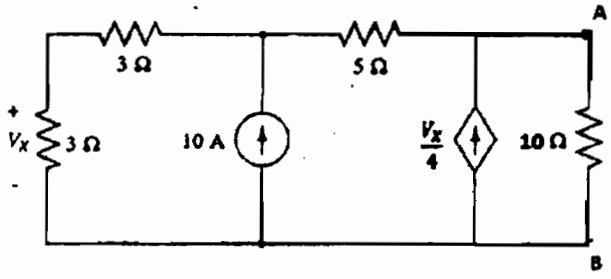
(c) Two coils connected in series have an equivalent inductance of 0.8 H when connected in aiding and an equivalent inductance of 0.4 H when connected in opposing. Assume K = 0.55, determine self-inductance of coils and mutual inductance.

(d) Find the value of R_L at resonance.



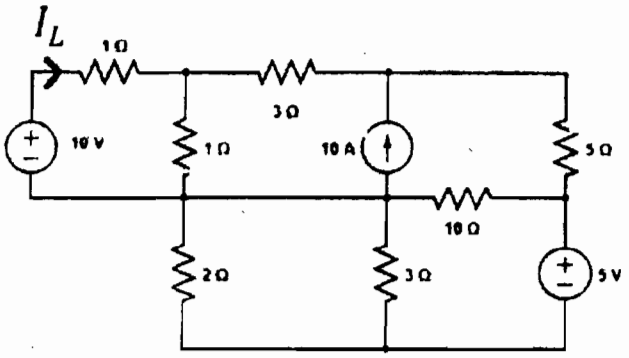
UNIT III

(a) Find current through 10 ohm resistor using Thevenin's and Norton's theorem for the circuit shown across A and B terminals.



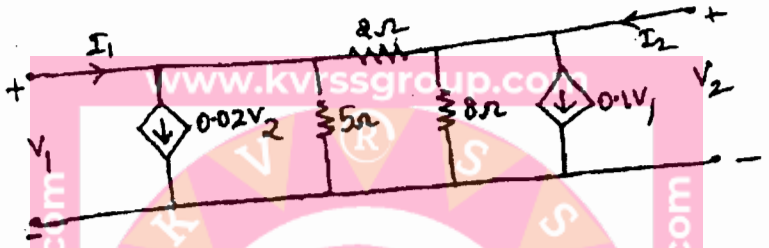
Or

(b) Find I_L using Super position theorem in the given circuit.



UNIT IV

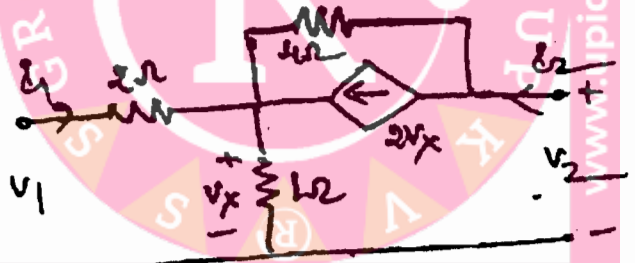
3. (a) Find Z-parameters for the given network.



(b) Derive reciprocal and symmetry conditions for h parameters.

Or

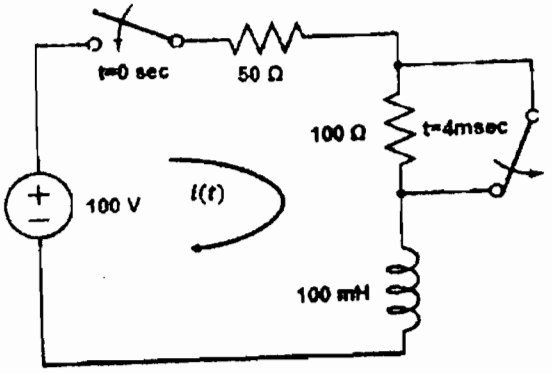
(c) Find Y-parameters for the given network.



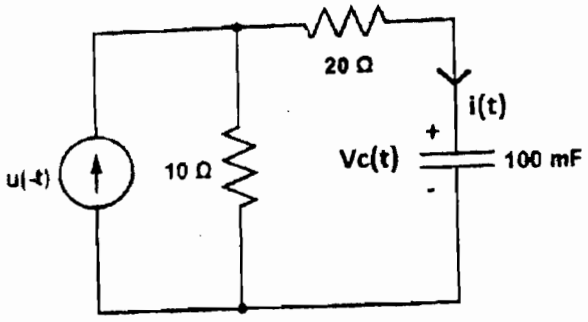
(d) Derive the relationship between Y and ABCD parameters.

UNIT V

4. (a) Find the current i(t) for t>0 for the circuit shown.

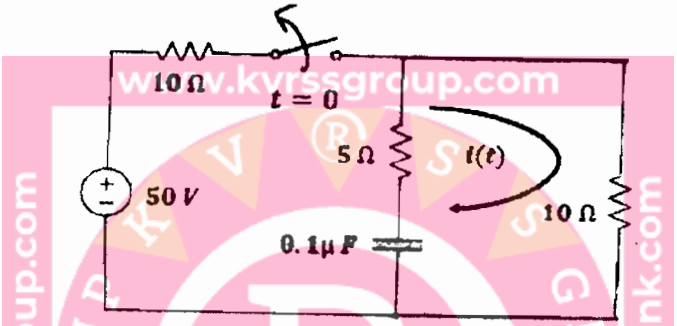


(b) Find the expression for current i(t) and $V_c(t)$.

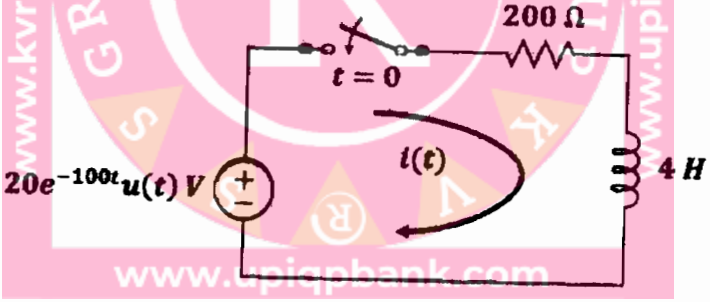


Or

(c) Find the current equation when switch is opened at t=0.



(d) Find expression of inductor current for t>0.



(EC30617)

B.Tech. DEGREE EXAMINATION, NOVEMBER 2018

(Regular)

Second Year — First Semester

Electronics and Communication Engineering

Paper VI — INTRODUCTION TO INFORMATION TECHNOLOGY

(Reglation 2017-18)

Time : Three hours Maximum : 70 marks

Answer ONE question from each Unit.

All questions carry equal marks.

UNIT I

1. (a) What are the different methods of acquiring textual data?

(b) What is JPEG compression? What is it used? What is the advantage of JPEG compression?

Or

(c) Explain information retrieval from the World Wide Web.

(d) Discuss about the page description language and markup language.

UNIT II

2. (a) Explain how a flip flop memory cell is used. How is it different from a capacitor memory cell?

(b) Explain the difference between acquiring mono-chrome video and colour video.

Or

(c) Explain the structure of a central processing circuit.

(d) Discuss about interconnection of CPU with memory and I/O units.

UNIT III

3. (a) What is LAN? How are computers connected to a LAN? What are applications of LAN?

(b) Explain in detail about the packet switching.

Or

(c) Explain briefly about digital signature and Firewall.

(d) Explain the future of Internet technology.

UNIT IV

4. (a) What is speed sheet? What are its applications?

(b) What is URL? What are different parts of URL? Explain the purpose of each part.

Or

(c) Explain the Internet, Pictures, Animation and Video via Internet.

(d) What are different types of graphics data processing? Distinguish between them.

UNIT V

5. (a) Explain business to customer E-commerce.

(b) What is E-Commerce? Explain management structure and their information needs.

Or

(c) Explain intellectual property rights in detail.

(d) Explain briefly about E-commerce system architecture.