O.P.Code: 18CS0501 | R18 | H.T.No.

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech I Year I Semester Supplementary Examinations November-2024
PROGRAMMING FOR PROBLEM SOLVING
(Common to CE, ME, AGE & EEE)

Time: 3 Hours **Max. Marks: 60**

PART-A
(Answer all the Questions **5 x 2 = 10** Marks)

1	a	Define keyword, constant and variable.	CO1	L1	2M
	b	Differentiate between break and continue.	CO2	L4	2M
	c	What is an array? Write the types of an array	CO3	L2	2M
	d	Define pointer. How can you declare it?	CO4	L1	2M
	e	Define Structure. How to Initialize a Structure?	CO5	L1	2M

PART-B
(Answer all Five Units 5 x 10 = 50 Marks)

UNIT-I

2		Write detailed notes on C data types.	CO1	L3	10M
		OR			
3	a	Define algorithm. Write algorithm for finding factorial of a number.	CO1	L1	5M
	b	What is flowchart? Explain different symbols used for flowchart.	CO1	L2	5M

UNIT-II

4		Explain various branching statements in C with examples.	CO2	L5	10M
		OR			
5	a	Write a program to find sum of the individual digits of a given number.	CO2	L3	5M
	b	Write a program to find the sum of even and odd numbers from 1 to n.	CO2	L3	5M

UNIT-III

6	a	Define an array. How to initialize one-dimensional array? Explain with suitable examples.	CO3	L1	5M
	b	Write a C program to sort the given array elements in Ascending order.	CO3	L3	5M
		OR			
7	a	What are the advantages of functions?	CO3	L2	6M
	b	Write a C program using function to exchange two numbers using pointers.	CO3	L3	4M

UNIT-IV

8	a	Explain the concept of array of pointers with examples.	CO4	L5	6M
	b	Write a C program to read and display multiple strings using pointers.	CO4	L3	4M
		OR			
9		Explain any 5 string handling functions with example:	CO4	L5	10M

UNIT-V

10	a	Define Structure and write the general syntax for declaring and accessing members.	CO5	L1	5M
	b	How to copy and compare structure variables? Illustrate with example.	CO5	L2	5M
		OR			
11	a	Write the syntax for opening a file with various modes and closing a file.	CO5	L3	5M
	b	Write a C program to copy the contents from one file to another file.	CO5	L3	5M

***** END *****

O.P.Code:18HS0849	R18	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech I Year I Semester Supplementary Examinations November-2024
PHYSICS
(Electrical and Electronics Engineering)

Time: 3 Hours **Max. Marks: 60**

PART-A
(Answer all the Questions **5 x 2 = 10** Marks)

1	a	What are forced oscillations?	CO1	L1	2M
	b	Write two differences between stimulated and spontaneous emission of radiations.	CO2	L1	2M
	c	Mention any two properties of matter waves.	CO3	L1	2M
	d	What are intrinsic semiconductors?	CO4	L1	2M
	e	Write allotropes of Carbon.	CO5	L1	2M

PART-B
(Answer all Five Units 5 x 10 = 50 Marks)

UNIT-I

2		Derive and solve differential equation of damped harmonic oscillator.	CO1	L2	10M

OR

3		Explain detailed mechanism and solution of equation in electrical oscillator.	CO1	L2	10M

UNIT-II

4	a	Describe the important characteristic of LASER beam.	CO2	L2	5M
	b	State population inversion and give its importance in the production of LASER.	CO2	L2	5M

OR

5	a	Explain the construction and working of Nd:YAG LASER with suitable energy level diagram.	CO2	L2	7M
	b	What are the advantages of Nd:YAG LASER?	CO2	L2	3M

UNIT-III

6	a	Derive Schrödinger's time independent wave equation.	CO3	L2	7M
	b	Explain the physical significance of wave function.	CO3	L2	3M

OR

7	a	Explain Heisenberg uncertainty principle.	CO3	L2	6M
	b	The position of electron in an atom is located within a distance of $0.1A^0$ using a microscope. What is the uncertainty in the momentum of the electron located in this way?	CO3	L3	4M

UNIT-IV

8	a	Explain quantum free electron theory.	CO4	L2	6M
	b	Write the advantages of quantum free electron theory over classical free electron theory.	CO4	L2	4M

OR

9	a	Describe the Hall effect in a semiconductor and derive Hall coefficient.	CO4	L2	7M
	b	Write the applications of Hall effect.	CO4	L2	3M

UNIT-V

10	a	Explain Sol-Gel technique for synthesis of nanomaterial.	CO5	L2	7M
	b	Write advantages of sol-gel process.	CO5	L2	3M

OR

11	a	What are carbon nanotubes? Mention its structures.	CO5	L2	5M
	b	Write brief note on applications of Carbon nanotubes.	CO5	L2	5M

***** END *****

Q.P.Code: 18HS0801	R18	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)

B.Tech. I Year I Semester Supplementary Examinations November-2024

CHEMISTRY

(Common to CSE, CSIT & ECE)

Time: 3 Hours **Max. Marks: 60**

PART-A

(Answer all the Questions 5 x 2 = 10 Marks)

1	a	Give any two difference between Bonding and anti bonding molecular orbitals.	CO1	L2	2M
	b	What is meant by corrosion.	CO2	L1	2M
	c	Define brakish water. What type of methods used in purification?	CO3	L1	2M
	d	Name the reactants used in the preparation of paracetamol and aspirin.	CO4	L1	2M
	e	What is finger print region? Mention its importance.	CO5	L1	2M

PART-B

(Answer all Five Units 5 x 10 = 50 Marks)

UNIT-I

2		Write down the Schrodinger wave equation for the wave mechanical model of an atom. Give the significance of wave function.	CO1	L1	10M
		OR			
3		Explain the energy level diagrams of oxygen and fluorine with magnetic behavior.	CO1	L2	10M

UNIT-II

4		Derive Nernst equation for the calculation of cell emf. What are its applications?	CO2	L3	10M
		OR			
5		Define corrosion. Discuss in detail about chemical or dry corrosion.	CO2	L2	10M

UNIT-III

6		Describe the estimation of hardness by EDTA method.	CO3	L1	10M
		OR			
7		Describe the Ion exchange process for demineralization of water. what are the advantages and disadvantages of ion exchange process ?	CO3	L1	10M

UNIT-IV

8	a	Write the preparation ,properties&uses of Bakelite.	CO4	L3	5M
	b	Write a note on thermosetting and thermoplastic resins.	CO4	L1	5M
		OR			
9	a	Explain the addition reaction with example.	CO4	L2	5M
	b	Explain oxidation and reduction reactions with examples.	CO4	L2	5M

UNIT-V

10		Explain principle and instrumentation of UV-visible spectroscopy.	CO5	L2	10M
		OR			
11		Explain principle, instrumentation and its applications of Scanning Electron microscopy (SEM).	CO5	L2	10M

***** END *****

O.P.Code: 18CS0506	R18	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech. II Year I Semester Supplementary Examinations November-2024
DATABASE MANAGEMENT SYSTEMS
(Coomon to CSE & CSIT)

Time: 3 Hours **Max. Marks: 60**

PART-A
(Answer all the Questions **5 x 2 = 10** Marks)

1	a	What is a data model? List the types of data models.	CO1	L2	2M
	b	Define Primary key and Candidate key.	CO2	L1	2M
	c	What is functional dependency?	CO3	L1	2M
	d	Define shadow paging.	CO4	L1	2M
	e	Draw the structure of B+ tree.	CO5	L2	2M

PART-B
(Answer all Five Units 5 x 10 = 50 Marks)

UNIT-I

2		Explain about Database languages with examples.	CO1	L2	10M

OR

3	a	Draw ER diagram for Ternary Relationship set with suitable example.	CO1	L3	5M
	b	Explain about integrity constraints over relations.	CO1	L2	5M

UNIT-II

4	a	Differentiate the relational algebra and calculus.	CO2	L2	5M
	b	Explain about aggregate operators.	CO2	L2	5M

OR

5	a	Explain in detail about nested queries.	CO2	L2	5M
	b	What is a join operator? Explain about conditional join and natural join with syntax and example.	CO2	L3	5M

UNIT-III

6		What are different types of normalization? Also explain the difference between BCNF and 3NF.	CO3	L2	10M

OR

7	a	What is meant by multivalued dependency? Explain with example.	CO3	L2	5M
	b	Write about loss -less join decomposition with an example.	CO3	L2	5M

UNIT-IV

8	a	Explain ACID properties of transaction management.	CO4	L3	5M
	b	Explain storage structures in transaction management.	CO4	L2	5M

OR

9		Explain concurrency control with lock based protocols.	CO4	L2	10M

UNIT-V

10	a	Briefly discuss different file organization techniques.	CO5	L2	5M
	b	Discuss about static hashing? With example.	CO5	L3	5M

OR

11	a	Explain about B+ Trees with suitable example.	CO5	L2	5M
	b	Define indexing. Discuss the significance of file indexing and how it is achieved.	CO5	L2	5M

*** END ***

O.P.Code:18EE0204	R18	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)

B.Tech II Year I Semester Supplementary Examinations November – 2024

ELECTRICAL MACHINES – I

(Electrical & Electronics Engineering)

Time: 3 Hours **Max. Marks: 60**

PART-A

(Answer all the Questions **5 x 2 = 10** Marks)

1	a	Write the purpose of the commutator.	CO1	L1	2M
	b	Define torque.	CO2	L1	2M
	c	Name the methods of direct and indirect testing.	CO3	L1	2M
	d	Write the Emf equation of a transformer and define each term.	CO4	L1	2M
	e	What are the limitations of Shaded Pole Induction Motor?	CO5	L1	2M

PART-B

(Answer all Five Units 5 x 10 = 50 Marks)

UNIT-I

2	Explain the basic principle of operation of a DC Generator with a simple loop generator.	CO1	L2	10M

OR

3	Draw and explain the characteristics of DC series and DC Shunt Generators.	CO1	L2	10M

UNIT-II

4	Explain the armature voltage and field flux control methods for the Speed control of a DC Motor.	CO2	L2	10M

OR

5	Why is a starter necessary for a DC motor? Explain the working of a three-point starter with the help of a neat diagram.	CO2	L1	10M

UNIT-III

6	Explain Swinburne's test on DC machines. What are its advantages and disadvantages?	CO3	L2	10M

OR

7	Explain about the Parallel operation of shunt generators.	CO3	L2	10M

UNIT-IV

8	In a transformer, derive the condition for maximum efficiency and thus find the load current at which the efficiency is maximum.	CO5	L3	10M

OR

9	What are the various losses taking place in transformer? How these losses can be minimized?	CO5	L2	10M

UNIT-V

10	Explain about principle of operation of single phase induction motor.	CO5	L2	10M

OR

11	Explain the operation of Split phase 1-Ø Induction Motor.	CO5	L2	10M

***** END *****

O.P.Code: 18CS0505	R18	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech II Year I Semester Supplementary Examinations November-2024
COMPUTER ORGANIZATION & ARCHITECTURE
(Common to CSE & CSIT)

Time: 3 Hours **Max. Marks: 60**

PART-A
(Answer all the Questions **5 x 2 = 10** Marks)

1	a	What is bus structure?	CO1	L1	2M
	b	What are the steps for Booth's Multiplication?	CO2	L1	2M
	c	Discuss logic micro operations.	CO3	L3	2M
	d	List out the classification of semiconductor memories.	CO4	L1	2M
	e	How parallel processing is achieved through pipelining?	CO5	L1	2M

PART-B
(Answer all Five Units 5 x 10 = 50 Marks)

UNIT-I

2		Write in detail about the Functional Units of Computer with neat diagram.	CO1	L3	10M
		OR			
3	a	Write in detail about Data Transfer Instructions.	CO1	L3	5M
	b	Write in detail about Program Control Instructions.	CO1	L3	5M

UNIT-II

4		Explain the logic behind carry look-ahead adder with its circuit diagram.	CO2	L2	10M
		OR			
5		Explain in detail about Floating point numbers, its operations and implementing it.	CO2	L5	10M

UNIT-III

6	a	Explain about three- state bus buffers with neat sketch.	CO3	L2	6M
	b	Write about binary increment with neat sketch.	CO3	L3	4M
		OR			
7		Write in detail about Logic Micro Operations with neat representations.	CO3	L3	10M

UNIT-IV

8	a	What is Cache Memory? Explain in detail mapping functions.	CO4	L1	7M
	b	List out some differences between RAM & ROM.	CO4	L4	3M
		OR			
9	a	What is Virtual Memory? Discuss how paging helps in implementing virtual memory.	CO4	L1	7M
	b	List out some differences between SRAM & DRAM.	CO4	L4	3M

UNIT-V

10	a	Explain about Parallel Processing and its Types.	CO5	L2	5M
	b	Explain the concept of Pipelining with clear example with neat sketch.	CO5	L5	5M
		OR			
11	a	Draw 8×8 omega switching network with explanation.	CO5	L3	6M
	b	Explain crossbar switch with neat sketch.	CO5	L2	4M

***** END *****

O.P.Code: 18EC0402	R18	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)

B.Tech II Year I Semester Supplementary Examinations November-2024

DIGITAL SYSTEM DESIGN

(Electronics & Communications Engineering)

Time: 3 Hours **Max. Marks: 60**

PART-A

(Answer all the Questions **5 x 2 = 10** Marks)

1	a	What are the signed binary number systems?	CO1	L1	2M
	b	Define Minterm and Maxterm.	CO2	L1	2M
	c	Briefly explain about D-FF	CO3	L1	2M
	d	Define Propagation delay and Fan-out.	CO4	L1	2M
	e	Define Behavioral model.	CO5	L1	2M

PART-B

(Answer all Five Units 5 x 10 = 50 Marks)

UNIT-I

2	a	Convert the given decimal number 234 to binary, octal, hexadecimal and BCD equivalent.	CO1	L1	6M
	b	Given that $(16)_{10} = (100)_b$, determine the value of b. Given that (292)10 = (1204)b, determine the value of b.	CO1	L1	4M

OR

3	a	Explain about the Binary Codes	CO1	L1	5M
	b	Simplify the following Boolean functions to minimum number of literals. i) F=xy+x'z+yz. ii) F=x'y'z+x'yz+xy' iii) F= (x+y)'(x'+y') iv) F=xy+xy'+x'y v) F= (BC'+A'D)(AB'+CD')	CO1	L1	5M

UNIT-II

4		Obtain (i) Sum of products form and (ii) Product of sums form for F=x'z'+y'z'+yz'+xy	CO3	L2	10M

OR

5	a	Design & implement 4-bit Adder/subtractor.	CO4	L3	4M
	b	Explain about carry look ahead adder with suitable diagram.	CO4	L1	6M

UNIT-III

6	a	Explain the operation of an SR Flip Flop using excitation table. Give its Truth Table and Characteristic Equation.	CO3	L2	5M
	b	Give the characteristic table, Truth table, characteristic equation and excitation table for T and DFF.	CO3	L2	5M

OR

7	a	Design a Positive edge triggered Master-Slave D flip flop.	CO3	L2	4M
	b	Design and implement a BCD Ripple counter using JK Flip Flops.	CO3	L3	6M

UNIT-IV

8		Design a BCD to excess 3 code converter using suitable PLA.	CO4	L4	10M

OR

9	a	Explain the architecture of PLA	CO2	L2	5M
	b	Briefly introduce the content addressable memory.	CO2	L1	5M

UNIT-V

10	a	Explain various data objects in VHDL. Give necessary examples.	CO5	L2	5M
	b	Explain the structure of a VHDL program.	CO5	L2	5M

OR

11		Design the logic circuit and write a data-flow style VHDL program for the following function. $F(A,B,C,D) = \sum (1,5,6,7,9,13) + d(4,15)$.	CO5	L5	10M

***** END *****

O.P.Code: 18HS0803	R18	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech II Year I Semester Supplementary Examinations November-2024
BIOLOGY FOR ENGINEERS
(Common to EEE, CE, AGE & ME)

Time: 3 Hours **Max. Marks: 60**

PART-A
(Answer all the Questions **5 x 2 = 10** Marks)

1	a	What are the three domines (kingdoms) of life?	CO1	L1	2M
	b	Define allele in genetics.	CO2	L1	2M
	c	What are polysaccharides?	CO1	L1	2M
	d	Distinguish between DNA and RNA.	CO1	L1	2M
	e	What is aerobic respiration?	CO1	L1	2M

PART-B
(Answer all Five Units 5 x 10 = 50 Marks)

UNIT-I

2	a	Draw and explain the structure of a Prokaryotic cell.	CO1	L3	5M
	b	Compare Prokaryotic and Eukaryotic cells.	CO1	L3	5M
		OR			
3	a	Explain the classification of organisms based on carbon utilization	CO1	L2	5M
	b	Explain the concept of molecular taxonomy with examples.	CO1	L2	5M

UNIT-II

4		What are the three Laws of Inheritance proposed by Mendel? Explain Monohybrid cross.	CO2	L3	10M
		OR			
5	a	Define gene Interaction. Give brief account on Dominant Epistasis with suitable example	CO2	L2	5M
	b	Discuss on Gene Mapping and its significance.	CO2	L2	5M

UNIT-III

6	a	Describe the enzyme nature, properties and nomenclature	CO3	L2	5M
	b	Describe the properties and classification of enzymes.	CO3	L2	5M
		OR			
7		Describe the concept of enzyme kinetics with relevant examples.	CO3	L3	10M

UNIT-IV

8	a	Explain the structure of DNA and its role in genetic information transfer.	CO4	L3	6M
	b	What is genetic recombination? Explain its importance in genetic diversity.	CO4	L3	4M
		OR			
9		Describe the primary, secondary, tertiary, and quaternary structures of proteins.	CO4	L3	10M

UNIT-V

10	a	Discuss glycolysis and its importance in cellular respiration.	CO5	L3	5M
	b	Explain the Krebs cycle and its role in energy production.	CO5	L3	5M
		OR			
11	a	Define ATP and describe its role as an energy currency in cells.	CO5	L3	5M
	b	Explain the difference between exothermic and endothermic reactions with biological examples.	CO5	L3	5M

***** END *****

Q.P. Code: 18CE0117 **R18**

Reg. No: | | | | | | | | | | |

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech. III Year I Semester Supplementary Examinations November-2024

HYDROLOGY & WATER RESOURCES ENGINEERING

(Civil Engineering)

Time: 3 hours Max. Marks: 60

PART-A

(Answer all the Questions **5 x 2 = 10** Marks)

1	a	What is the mean by sub surface run-off?	L1	2M
	b	Write about an Aquifuge.	L2	2M
	c	Illustrate the terms crop overlapping allowance.	L2	2M
	d	What is flood routing?	L1	2M
	e	Write the modes of failure of gravity dam.	L2	2M

PART-B

(Answer all Five Units 5 x 10 = 50 Marks)

UNIT-I

2	a	Explain the water budget method and the energy balance method.	L2	8M
	b	What is the mean by surface run-off?	L1	2M
		OR		
3		Explain the factors, which affect the rate of evaporation.	L2	10M

UNIT-II

4	a	Explain the necessity and importance of Irrigation.	L2	8M
	b	Recall about an Aquifer.	L2	2M
		OR		
5		List out the advantages of Irrigation in detail	L1	10M

UNIT-III

6		Write the function of cross regulators and distributor head regulators.	L1	10M
		OR		
7		Demonstrate about consumptive use of water. Write in detail about factors affecting consumptive use of water.	L2	10M

UNIT-IV

8	a	Illustrative the criteria's to select the suitable type of cross drainage work.	L2	8M
	b	Write the three classifications of aqueducts.	L1	2M
		OR		
9		Explain various types of reservoirs.	L1	10M

UNIT-V

10	a	Explain with sketch about galleries in gravity dam.	L1	2M
	b	Write briefly on various forces that act on a gravity dam.	L2	8M
		OR		
11		Discuss about the limiting height of a gravity dam.	L1	10M

END

O.P.Code: 18CE0116	R18	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)

B.Tech III Year I Semester Supplementary Examinations November-2024

GEOTECHNICAL ENGINEERING
(Civil Engineering)

Time: 3 Hours **Max. Marks: 60**

PART-A
(Answer all the Questions **5 x 2 = 10** Marks)

1	a	Define (i) Discharge velocity (ii) Seepage velocity	CO1	L1	2M
	b	Write short notes on zero air void line.	CO2	L1	2M
	c	What are the constituents on which shear strength of soil depends upon?	CO3	L1	2M
	d	Mention various uses of Taylor's stability number.	CO4	L1	2M
	e	List out various types of borings for soil exploration.	CO5	L1	2M

PART-B
(Answer all Five Units 5 x 10 = 50 Marks)

UNIT-I

2		Explain in detail the Indian Standard classification System and list out group symbols in detail.	CO1	L2	10M

OR

3		Explain the coefficient of permeability in laboratory by constant head method with neat sketch.	CO1	L2	10M

UNIT-II

4		Explain the procedure of Sand replacement method with neat sketch.	CO2	L2	10M

OR

5		Explain the procedure of consolidation test with neat sketch.	CO2	L2	10M

UNIT-III

6	a	Explain the concept of 'Westergaards theory' in soils.	CO3	L2	5M
	b	What do you understand by 'Pressure bulb'? Illustrate with sketches.	CO3	L1	5M

OR

7	a	Explain types of soils based on total strength.	CO3	L2	6M
	b	Explain types of shear strength based on drainage conditions.	CO3	L1	4M

UNIT-IV

8	a	What are the factors causes the slope failures?	CO4	L1	6M
	b	Explain different types of slope failures with neat sketches.	CO4	L2	4M

OR

9	a	With the help of a neat sketch show various forces considered for the analysis of a finite slope using Bishop's simplified method. Mention the equation for factor of safety given by this method.	CO4	L2	10M

UNIT-V

10	a	How boring operations are carried out using rotary auger boring and percussion drilling?	CO5	L2	5M
	b	Describe the construct of a split spoon sampler. Explain how undisturbed soil sample is extracted using it.	CO5	L2	5M

OR

11	a	Describe in detail execution of soil exploration program.	CO5	L1	5M
	b	Explain various salient features of a soil exploration report.	CO5	L2	5M

***** END *****

O.P.Code: 18HS0803(SS)	R18	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech III Year I Semester Supplementary Examinations November-2024
BIOLOGY FOR ENGINEERS
(Civil Engineering)

Time: 3 Hours **Max. Marks: 60**

PART-A
(Answer all the Questions **5 x 2 = 10** Marks)

1	a	What are the three kingdoms of life according to molecular taxonomy?	CO1	L2	2M
	b	Define meiosis.	CO2	L1	2M
	c	How many types of nucleic acids are there? And write any two functions.	CO3	L1	2M
	d	What is complementation?	CO4	L1	2M
	e	Define stem cells & their functions.	CO5	L1	2M

PART-B
(Answer all Five Units 5 x 10 = 50 Marks)

UNIT-I

2	a	Draw the ultra structure of a Prokaryotic cell.	CO1	L3	5M
	b	Compare the characteristics of Prokaryotic and Eukaryotic cells.	CO1	L5	5M
		OR			
3	a	Classify Kingdom Protista and Kingdom Animalia.	CO1	L4	5M
	b	Write short notes on unicellular and multicellular organisms with examples.	CO1	L2	5M

UNIT-II

4		What are Model organisms? Give brief notes on any three model organisms.	CO2	L2	10M
		OR			
5	a	Explain the mode of excretion in Uriotelic organisms.	CO2	L5	5M
	b	Write about carbon and energy utilization in lithotrophs.	CO2	L3	5M

UNIT-III

6	a	Define habitat and explain terrestrial habitat.	CO3	L1	5M
	b	How do autotrophs utilize carbon and energy?	CO3	L3	5M
		OR			
7		Write the differences between plant and animal cells.	CO3	L3	10M

UNIT-IV

8	a	Define classification.	CO4	L1	6M
	b	What are the divisions in Kingdom Plantae?	CO4	L2	4M
		OR			
9	a	Describe Amminotelism and Uricotelism.	CO4	L2	5M
	b	Draw a labeled diagram of an animal cell as seen under an electron microscope and comment on its characteristics.	CO4	L3	5M

UNIT-V

10		Explain the classification of organisms based on carbon utilization.	CO5	L2	10M
		OR			
11		What is glycolysis? Explain the process in detail.	CO5	L3	10M

***** END *****

O.P.Code: 18CS0515	R18	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech III Year I Semester Supplementary Examinations November-2024
COMPUTER NETWORKS
(Common to CSE & CSIT)

Time: 3 Hours **Max. Marks: 60**

PART-A
(Answer all the Questions **5 x 2 = 10** Marks)

1	a	Define computer network.	CO1	L1	2M
	b	Define ARP.	CO2	L1	2M
	c	In routing what is meant by "FORWARDING"	CO3	L1	2M
	d	List any three differences between TCP & UDP.	CO4	L4	2M
	e	Sketch TCP segment header.	CO5	L3	2M

PART-B
(Answer all Five Units 5 x 10 = 50 Marks)

UNIT-I

2		Justify "Fiber optic cable is better than other guided media"	CO1	L6	10M

OR

3	a	Summarize various network types.	CO1	L5	5M
	b	Illustrate the architecture of Internet.	CO1	L4	5M

UNIT-II

4	a	Describe the process of U-Frame.	CO2	L5	5M
	b	Write about the services provided by the Data link layer.	CO2	L2	5M

OR

5		Generalize the Controlled access protocols which are used in MAC sublayer.	CO2	L2	10M

UNIT-III

6	a	List and explain out any five principles of network layer in the Internet.	CO3	L6	5M
	b	Demonstrate about IPv6 protocol.	CO3	L3	5M

OR

7		Illustrate Link State Routing algorithm to find the route and ages of routers.	CO3	L2	10M

UNIT-IV

8		Illustrate the different Primitives used for transport service. Elaborate them.	CO4	L2	10M

OR

9	a	Identify the problems occur during connection establishment.	CO4	L2	5M
	b	Summarize congestion control in TCP.	CO4	L6	5M

UNIT-V

10		Write in detail about DNS Name Space and Domain Resource records.	CO5	L5	10M

OR

11	a	Write about static web pages.	CO5	L3	5M
	b	Explain about dynamic web pages.	CO5	L2	5M

*** END ***

O.P.Code:18CS0542	R18	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech IV Year I Semester Supplementary Examinations November-2024

CYBER SECURITY

(Common to CSE & CSIT)

Time: 3 Hours **Max. Marks: 60**

PART-A

(Answer all the Questions **5 x 2 = 10** Marks)

1	a	List out few important laws related to Cyber Crime.	CO1	L1	2M
	b	Define Social Engineering and its type.	CO2	L1	2M
	c	What is Smishing and how it defers from Vishing.	CO3	L2	2M
	d	Define Steganography. How It Differs from Cryptography.	CO4	L1	2M
	e	What are the types of insiders.	CO5	L2	2M

PART-B

(Answer all Five Units 5 x 10 = 50 Marks)

UNIT-I

2	a	Analyze about the Global perspective of Cyber Crime.	CO1	L4	5M
	b	Summarize about cybercrime in "the Indian perspective"	CO1	L1	5M
		OR			
3	a	Inference Cybercrimes Cases of Various Categories under IPC Section.	CO1	L3	5M
	b	Dissect the Incidence of Cybercrimes in Cities in detail.	CO1	L3	5M

UNIT-II

4	a	What is Cloud Computing? Classify the types in it and list the advantages.	CO2	L2	5M
	b	Discuss the security challenges in Cloud Computing.	CO2	L3	5M
		OR			
5		What is Cybercrime? Explain the different types of cyber-attacks.	CO2	L3	10M

UNIT-III

6		Explain the types of mobile phone Attacks.	CO3	L3	10M
		OR			
7	a	Examine about the Mobility and its Trends.	CO3	L2	6M
	b	Discuss organizational measures for handling the mobile devices.	CO3	L4	4M

UNIT-IV

8	a	What is a key logger? How it creates harmful to the users and list out types in it.	CO4	L1	6M
	b	Elaborate about Spywares in details.	CO4	L6	4M
		OR			
9		Demonstrate buffer overflow. Identify the techniques in it.	CO4	L2	10M

UNIT-V

10	a	What are the types of cookies. Explain in detail.	CO5	L3	5M
	b	Discuss how to protect online protection.	CO5	L2	5M
		OR			
11		Explain social computing and associated challenges for organizations.	CO5	L3	10M

***** END *****

O.P.Code:18EC0434 | R18 | H.T.No.

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech IV Year I Semester Supplementary Examinations November-2024
DIGITAL IMAGE PROCESSING
(Electronics & Communications Engineering)

Time: 3 Hours **Max. Marks: 60**

PART-A
(Answer all the Questions **5 x 2 = 10** Marks)

1	a	Define image resolution.	CO1	L1	2M
	b	What do you mean by fast transforms?	CO2	L1	2M
	c	Compare Pseudo color image processing and full color image processing.	CO3	L1	2M
	d	What do you mean by image enhancement and image restoration?	CO4	L1	2M
	e	List the significant advantages of image wavelet transforms.	CO5	L1	2M

PART-B
(Answer all Five Units 5 x 10 = 50 Marks)

UNIT-I

2	a	List out the various applications of digital image processing.	CO1	L1	5M
	b	Discuss about any one of the real time applications of DIP with suitable diagram.	CO1	L2	5M
		OR			
3		Discuss about the spatial operations and Geometric spatial transforms related to image processing.	CO1	L2	10M

UNIT-II

4	a	Illustrate that DFT matrix satisfies the unitary property with necessary expressions.	CO2	L2	5M
	b	Show that Discrete Fourier Transform has property of periodicity.	CO2	L2	5M
		OR			
5	a	Discuss about 2D – Discrete Cosine Transform with relevant mathematical functions.	CO2	L2	5M
	b	Predict the 2D – Discrete Cosine Transform matrix for N =4.	CO2	L3	5M

UNIT-III

6	a	Explain the histogram equalization operation in image enhancement with necessary expressions.	CO3	L2	5M
	b	Explain the procedure for histogram matching process.	CO3	L2	5M
		OR			
7	a	Summarize the concept of frequency domain filtering with necessary steps.	CO3	L2	5M
	b	Discuss about the types of smoothing filters in frequency domain with the required expressions.	CO3	L2	5M

UNIT-IV

8		Discuss the algebraic approach of constrained Least Square filter restoration.	CO4	L2	10M
		OR			
9	a	Explain the role of thresholding in segmentation.	CO4	L2	5M
	b	Summarize the steps in Otsu's algorithm for global thresholding.	CO4	L2	5M

UNIT-V

10	a	Explain about image pyramids in multi-resolution processing.	CO5	L2	5M
	b	Summarize the concept of sub band coding with respect to image processing.	CO5	L2	5M
		OR			
11		Explain the following with respect to image compression a) Run Length Coding b) Bit Plane coding	CO6	L2	10M

*** END ***

O.P.Code: 18EC0431	R18	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech IV Year I Semester Supplementary Examinations November-2024
VLSI DESIGN
(Electronics & Communication Engineering)

Time: 3 Hours **Max. Marks: 60**

PART-A
(Answer all the Questions **5 x 2 = 10** Marks)

1	a	Define Threshold Voltage of the MOS transistor.	CO1	L2	2M
	b	Illustrate nMOS transistor in λ-based design rule.	CO3	L2	2M
	c	List the Complex gates circuits.	CO5	L1	2M
	d	Define Comparator logic circuit.	CO4	L1	2M
	e	Differentiate FPGA and CPLD.	CO6	L2	2M

PART-B
(Answer all Five Units 5 x 10 = 50 Marks)

UNIT-I

2	a	Determine the relationship between Ids & Vds in non-saturated and saturated region.	CO2	L3	5M
	b	Explain the steps involved in Bi-CMOS fabrication process.	CO1	L2	5M
		OR			
3	a	Explain working of the NMOS Transistor.	CO2	L2	5M
	b	Summarize the evolution of microelectronics.	CO1	L2	5M

UNIT-II

4	a	What is lambda-based design rules? Explain.	CO3	L1	5M
	b	Illustrate design rules for wires and MOS transistors.	CO3	L2	5M
		OR			
5	a	Explain about Stick diagram with one example.	CO3	L2	5M
	b	Sketch the layout diagram for 2-input CMOS NAND gate.	CO3	L3	5M

UNIT-III

6	a	Sketch 2 x 1 mux using transmission gates.	CO4	L3	5M
	b	Explain the implementation of AOI using CMOS design style with neat sketches.	CO4	L2	5M
		OR			
7	a	What is pseudo NMOS logic? Explain with an example.	CO4	L1	6M
	b	Construct 2-input NAND gate by using pseudo NMOS logic.	CO4	L3	4M

UNIT-IV

8	a	What is shifter? List the types of shift registers and explain.	CO4	L1	6M
	b	Construct and explain the operation of shifter implemented by full adder.	CO4	L3	4M
		OR			
9	a	Compare different types of memory elements.	CO4	L2	5M
	b	Develop the 4x4 array multiplier.	CO4	L3	5M

UNIT-V

10	a	Illustrate the architecture of FPGA with neat sketch.	CO6	L2	5M
	b	Describe about CPLD structure in detail and explain each block.	CO6	L1	5M
		OR			
11	a	Explain in detail about standard cell design with suitable diagrams.	CO6	L2	5M
	b	Give examples of various fault models available for VLSI testing.	CO6	L2	5M

***** END *****

O.P.Code: 18HS0815	R18	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech IV Year I Semester Supplementary Examinations, November-2024
ENTREPRENEURSHIP DEVELOPMENT
(Open Elective-III)

Time: 3 Hours **Max. Marks: 60**

PART-A
(Answer all the Questions **5 x 2 = 10** Marks)

1	a	Differentiate between entrepreneur and manager.	CO1	L5	2M
	b	Explain the concept of small business.	CO2	L2	2M
	c	Outline the methods of generating ideas and opportunities.	CO3	L3	2M
	d	List out Maslow's classification of needs.	CO4	L2	2M
	e	What are the sources of business ideas?	CO5	L1	2M

PART-B
(Answer all Five Units 5 x 10 = 50 Marks)

UNIT-I

2		What are the Challenges faced by entrepreneurs in India.	CO1	L3	5M
		OR			
3	a	Do you think that entrepreneurs are supporting and developing the economy of a country.	CO1	L5	5M
	b	Justify that entrepreneurs are born not made.	CO1	L4	5M

UNIT-II

4		Construct the selection Steps for Starting MSMEs.	CO2	L6	10M
		OR			
5	a	Explain the various motivational initiatives of the central and state governments to promote entrepreneurship in India.	CO2	L5	5M
	b	Write a short note on the form of business organization.	CO2	L2	5M

UNIT-III

6	a	Creativity and Innovation are interrelated or different. Comment.	CO3	L3	5M
	b	Justify the concept of Innovation.	CO3	L3	5M
		OR			
7	a	List out the problems faced by start-ups without IPRs.	CO3	L3	5M
	b	What are the difficulties faced by start-ups without the IPRs?	CO3	L2	5M

UNIT-IV

8	a	Outline the EDP and discuss its advantages.	CO4	L2	5M
	b	Extend EDP and write about its disadvantages.	CO4	L2	5M
		OR			
9	a	Write a short note on Debt capital.	CO4	L2	5M
	b	Make a note of Seed capital.	CO4	L3	5M

UNIT-V

10	a	Define project Management. Determine the stages of the project management process.	CO5	L2	5M
	b	Make note of the features of the Project.	CO5	L3	5M
		OR			
11	a	Justify the stages of the planning process.	CO5	L3	5M
	b	Examine the results of a technical feasibility study.	CO5	L4	5M

*** END ***

O.P.Code: 18CE0101 | R18 | H.T.No.

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech I Year I Semester Supplementary Examinations November-2024
ENGINEERING MECHANICS
(Common to CE, ME & AGE)

Time: 3 Hours **Max. Marks: 60**

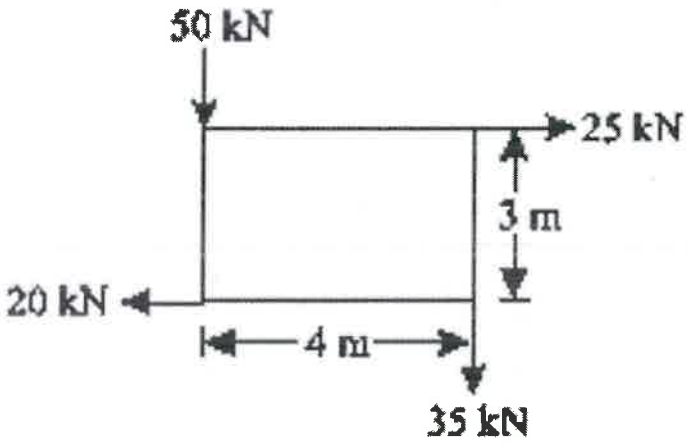
PART-A
(Answer all the Questions **5 x 2 = 10** Marks)

1	a	Classify different types of Force Systems.	CO1	L2	2M
	b	Define Limiting Force of Friction.	CO2	L1	2M
	c	Define centre of gravity.	CO3	L1	2M
	d	Define Parallel Axis Theorem.	CO4	L1	2M
	e	What is a cantilever truss? How will you find out its reactions?	CO5	L1	2M

PART-B
(Answer all Five Units 5 x 10 = 50 Marks)

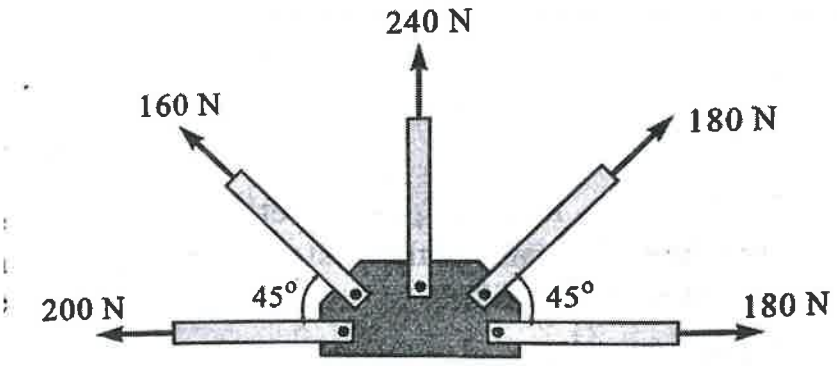
UNIT-I

2	a	State and prove parallelogram law of forces	CO1	L1	5M
	b	A system of forces are acting at the corners of a rectangular block as shown in Fig. Determine the magnitude and direction of the resultant force	CO1	L2	5M



OR

3		A gusset plate of roof truss is subjected to forces as shown in Fig. Determine the magnitude of the resultant force and its orientation measured counter clockwise from the positive x-axis.	CO1	L3	10M

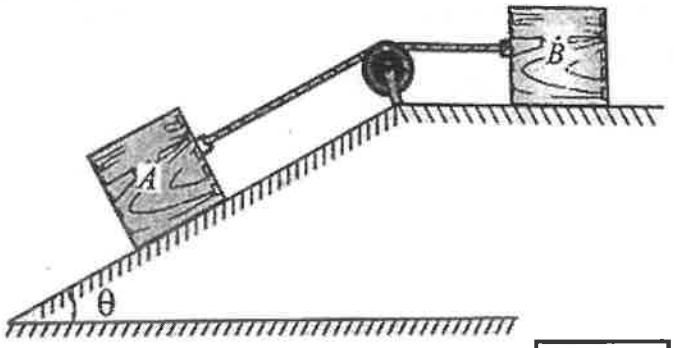


UNIT-II

4	a	State laws of friction.	CO2	L1	6M
	b	Explain *Cone of Friction* with a neat sketch.	CO2	L2	4M

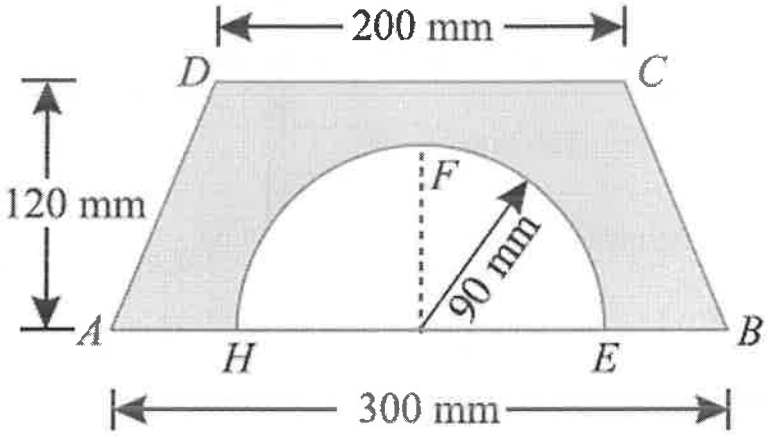
OR

5	Find the value of 'Θ' if the block 'A' and 'B' shown in Fig. have impending motion. Given block A = 20 kg, block B = 20 kg, μA = μB = 0.25.	CO2	L3	10M



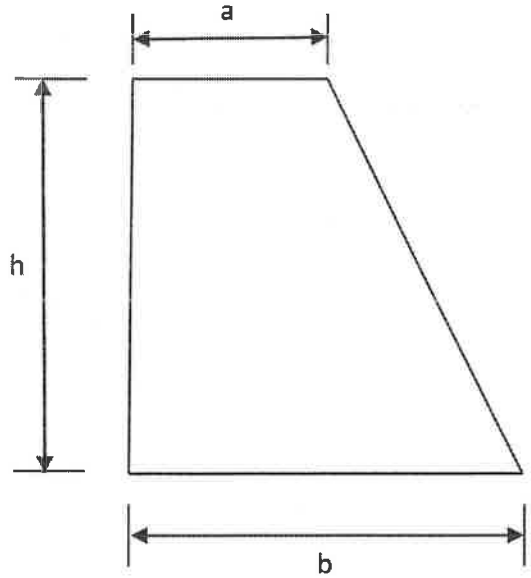
UNIT-III

6	A semicircle of 90 mm radius is cut out from a trapezium as shown in Fig. Find the position of the Centre of gravity of the figure.	CO3	L3	10M



OR

7	Find the centroid of the section of a masonry dam as shown in the Fig.	CO3	L3	10M

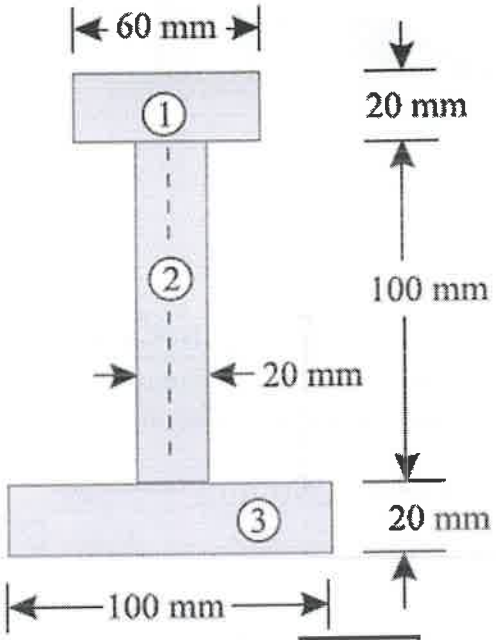


UNIT-IV

8	Derive an equation for moment of inertia of the following sections about centroidal axis: i) A rectangular section ii) A triangular section from its base	CO4	L2	10M

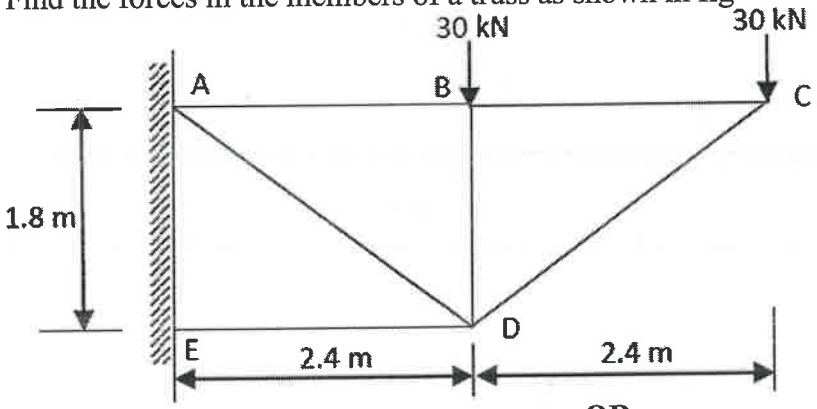
OR

9 An I-section is made up of three rectangles as shown in Fig. Find the Moment of inertia of the section about the horizontal axis passing through the center of gravity of the section. **CO4 L4 10M**



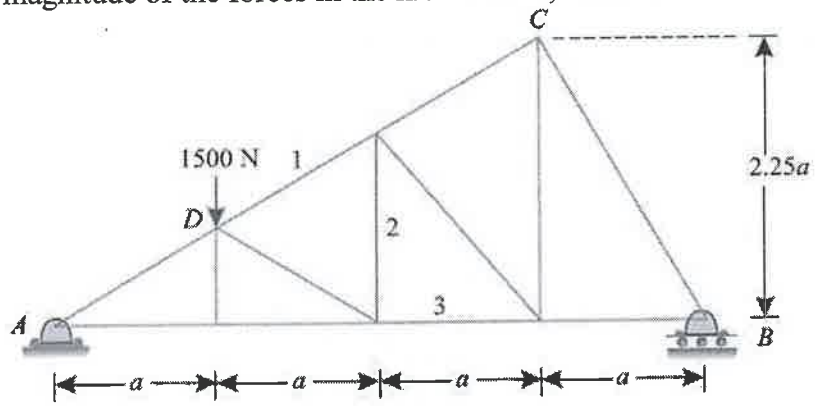
UNIT-V

10 Find the forces in the members of a truss as shown in fig **CO5 L4 10M**



OR

11 A plane is loaded & supported as shown in fig. Determine the nature and magnitude of the forces in the members' 1,2 and 3. **CO5 L4 10M**



*** END ***

O.P.Code: 18ME0302	R18	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech I Year I Semester Supplementary Examinations November-2024
ENGINEERING GRAPHICS & DESIGN
(Common to ECE, CSIT & CSE)

Time: 3 Hours **Max. Marks: 60**

(Answer all Five Units 5 x 12 = 60 Marks)

UNIT-I

1	Draw an epi-cycloid of rolling circle of diameter 40 mm which rolls outside another circle (base circle) of 150 mm diameter for one revolution. Draw a tangent and normal at any point on the curve.	CO1	L6	12M
	OR			
2	Inscribe an ellipse in a parallelogram having sides 150 mm and 100 mm long and an included angle of 120°.	CO1	L3	12M

UNIT-II

3	Draw the projections of the following points, keeping the distance between the projectors as 25mm on the same reference lines. A – 20mm above HP and 30mm in front of VP B – 20mm above HP and 30mm behind VP C – 20mm below HP and 30mm behind VP D – 20mm below HP and 30mm in front of VP E – On HP and 30mm in front of VP F – On VP and 20mm above HP G – Lying on both HP and VP	CO2	L1	12M
	OR			
4	A point A is 20mm above the HP and 50mm in front of the VP. Another point B is 40mm below the HP and 15mm behind the VP. The distance between the projectors of the points, measured parallel to xy, is 75mm. Draw the projections of the points. Draw lines joining their FVs and TVs.	CO2	L1	12M

UNIT-III

5	An equilateral triangular plane ABC of side 40mm, has its plane parallel to VP and 20mm away from it. Draw the projections of the plane when one of its sides is (i) perpendicular to HP (ii) parallel to HP and (iii) inclined to HP at an angle of 45°.	CO3	L2	12M
	OR			
6	A regular hexagonal plane of 45 mm side has a corner on HP, and its surface is inclined at 450 to HP. Draw the projections, when the diagonal through the corner, which is on HP makes 30° with VP.	CO3	L6	12M

UNIT-IV

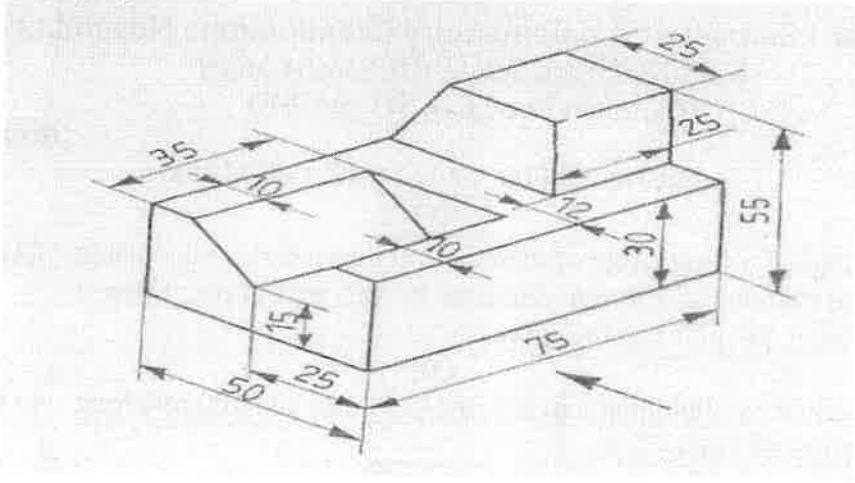
7	A cube of side 40 mm, is resting on HP on one of its faces, with a vertical face inclined at 30 degree to VP. It is cut by a section plane inclined at 45 degree to HP and passing through the axis at 8 mm from the top surface. Draw the projections of the solid and also show the true shape of the section.	CO4	L6	12M
	OR			
8	A square pyramid of base 40 mm and axis 60 mm long, Its base lies on VP , with its axis parallel to HP. A cut sectional plane, 60 degree to VP and it pass 10mm away from the axis. Draw the projections sectional front view.	CO4	L6	12M

UNIT-V

9	Draw the isometric projection of a pentagonal prism of base side 35 mm and axis 60mm. The prism rests on its base on the HP with an edge of the base parallel to the VP.	CO5	L1	12M

OR

10 Draw three views of the blocks shown pictorially in figure according to first angle projection. **CO5 L6 12M**



***** END *****

O.P.Code: 18HS0830	R18	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech. I Year I Semester Supplementary Examinations November-2024

MATHEMATICS-I

(Common to All)

Time: 3 Hours **Max. Marks: 60**

PART-A

(Answer all the Questions **5 x 2 = 10** Marks)

1	a	Find the Rank of $A=\begin{bmatrix}1 & 2 & 1\\ -1 & 0 & 2\\ 2 & 1 & -3\end{bmatrix}$.	CO1	L2	2M
	b	Define gamma and beta function.	CO2	L1	2M
	c	Find the stationary points of $f(x,y)=x^3+y^3-3axy$.	CO3	L2	2M
	d	Define Power Series.	CO4	L1	2M
	e	Find the half-range sine series for $f(x)=1$ in $[0,\pi]$.	CO5	L2	2M

PART-B

(Answer all Five Units 5 x 10 = 50 Marks)

UNIT-I

2	a	Show that the matrix $A=\begin{bmatrix}\cos\theta & \sin\theta\\ -\sin\theta & \cos\theta\end{bmatrix}$ is a orthogonal matrix.	CO1	L2	5M
	b	Express the matrix $A=\begin{bmatrix}3 & -2 & -6\\ 2 & 7 & -1\\ 5 & 4 & 0\end{bmatrix}$ as a sum of symmetric and skew-symmetric matrix.	CO1	L2	5M

OR

3		Find the Eigen values and corresponding Eigen vectors of the matrix $A=\begin{bmatrix}-2 & 2 & -3\\ 2 & 1 & -6\\ -1 & -2 & 0\end{bmatrix}$.	CO1	L2	10M

UNIT-II

4	a	Find the surface area of the sphere of radius 'a'.	CO2	L2	5M
	b	Find the volume of the reel-shaped solid formed by the revolution about the y- axis, of the part of the parabola $y^2=4ax$ cut off by the latus- rectum.	CO2	L2	5M

OR

5	a	Prove that $\int_0^\infty e^{-x^2}dx=\frac{\sqrt{\pi}}{2}$.	CO2	L3	5M
	b	Evaluate $\int_0^\infty \sqrt{x}\,e^{-x^2}dx$.	CO2	L3	5M

UNIT-III

6	a	Discuss the continuity of the function $f(x,y)=\begin{cases}\dfrac{x^2-y^2}{x^2+y^2}, (x,y)\neq(0,0)\\ 0 \qquad at\ (0,0)\end{cases}$	CO3	L2	5M
	b	If $U=\dfrac{1}{\sqrt{x^2+y^2+z^2}}$; $x^2+y^2+z^2\neq 0$ then prove that $\dfrac{\partial^2 U}{\partial x^2}+\dfrac{\partial^2 U}{\partial y^2}+\dfrac{\partial^2 U}{\partial z^2}=0$.	CO3	L2	5M

OR

7	a	Find the shortest distance from origin to the surface $xyz^2=2$.	CO3	L2	5M
	b	Find the minimum value of $x^2+y^2+z^2$ given $x+y+z=3a$.	CO3	L2	5M

UNIT-IV

8		Examine the following sequences for convergence: $i)\ a_n=\dfrac{n^2-2n}{3n^2+n}$ $\quad ii)\ a_n=3+(-1)^n$.	CO4	L2	10M

OR

9		Discuss the convergence of the series $i)\ \sum\left(\dfrac{n!}{(n^n)^2}\right)$ $\quad ii)\ 1+\dfrac{2!}{2^2}+\dfrac{3!}{3^2}+\dfrac{4!}{4^2}+----\infty$.	CO4	L2	10M

UNIT-V

10	a	Obtain the Fourier series expansion of $f(x)=(\pi-x)^2$ in $0<x<2\pi$ and deduce the value of $\dfrac{1}{1^2}+\dfrac{1}{2^2}+\dfrac{1}{3^2}+\dfrac{1}{4^2}+---=\dfrac{\pi^2}{6}$.	CO5	L3	5M
	b	Find the Fourier series for the function $f(x)=x$; in $-\pi<x<\pi$.	CO5	L3	5M

OR

11		Expand the function $f(x)=\lvert x\rvert$ in $-\pi<x<\pi$ as a Fourier series and Deduce that $\dfrac{1}{1^2}+\dfrac{1}{3^2}+\dfrac{1}{5^2}+\dfrac{1}{7^2}+----=\dfrac{\pi^2}{8}$.	CO5	L3	10M

***** END *****

O.P.Code: 18HS0835	R18	H.T.No.										

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech II Year I Semester Supplementary Examinations November-2024
PROBABILITY & STATISTICS
(Common to ME, CSE & CSIT)

Time: 3 Hours **Max. Marks: 60**

PART-A
(Answer all the Questions **5 x 2 = 10** Marks)

1	a	If $P(A)=\frac{1}{2}$, $P(B)=\frac{1}{4}$ and $P(A\cap B)=\frac{1}{8}$ then find $P(A\cup B)$	CO1	L2	2M
	b	The mean and variance of a binomial distribution are 4 and $\frac{4}{3}$. Find $P(X\geq 1)$.	CO2	L1	2M
	c	The weights of 6 competitors in a game are given below 58, 62, 56, 63, 55, and 61 kgs. Find the arithmetic mean of the weight of competitors.	CO3	L2	2M
	d	Define normal equations for $y=ax^2+bx+c$.	CO4	L1	2M
	e	Define the formula for Student's t-test for the difference of means.	CO5	L1	2M

PART-B
(Answer all Five Units 5 x 10 = 50 Marks)

UNIT-I

2	a	Two cards are randomly selected from 10 cards numbered 1 to 10. Find the probability that the sum is even if (i) The two cards are drawn together. (ii)The two cards are drawn one after the other with replacement.	CO1	L2	5M
	b	If a random variable has a Probability density $f(x)=\begin{cases}2e^{-2x}, & for\ x>0\\ 0, & for\ x\leq 0\end{cases}$ Find the Probabilities that it will take on a value (i) Between 1 & 3 (ii) Greater than 0.5.	CO1	L2	5M

OR

3		A random variable X has the following probability function	CO1	L1	10M

X	0	1	2	3	4	5	6	7
$P(X)$	0	K	$2K$	$2K$	$3K$	K^2	$2K^2$	$7K^2+K^2$

Determine (i) K (ii) Evaluate $P(X\geq 6)$ and $P(0<X<5)$

(iii) If so $P(X\leq K)>\frac{1}{2}$, find the minimum value of K (iv) variance.

UNIT-II

4	a	If X is a Poisson variate such that $3P(X=4)=\frac{1}{2}P(X=2)+P(X=0)$, find (i) the mean (ii) $P(X\leq 2)$.	CO2	L2	5M
	b	Fit a Binomial distribution to the following frequency distribution:	CO2	L3	5M

x	0	1	2	3	4	5
f	2	14	20	34	22	8

OR

5		Evaluate the mean and variance of a Normal distribution in which 7% of items are under 35 and 89% are under 63.	CO2	L5	10M

UNIT-III

6 **a** Find the arithmetic mean to the following data using the step deviation method **CO3 L3 5M**

Marks	10-20	20-30	30-40	40-50	50-60
Frequency	5	8	25	22	10

b Find the median to the following data **CO3 L1 5M**

Marks	40-50	50-60	60-70	70-80	80-90
Frequency	5	12	23	8	2

OR

7 **a** Obtain the rank correlation coefficient for the following data : **CO3 L3 5M**

X	48	60	72	62	56	40	39	52	30
Y	62	78	65	70	38	54	60	32	31

b Obtain two regression equations from the following data Y= 56, 64, 63, 58, 73, 75, 82, and 77 Corresponding to X= 10, 25, 34, 42, 37, 36, and 45. **CO3 L3 5M**

X	10	25	34	42	37	35	36	45
Y	56	64	63	58	73	75	82	77

UNIT-IV

8 **a** Construct the appropriate second-degree polynomial to the following data by the method of least square $y(0)=1,\ y(1)=5,\ y(2)=10,\ y(3)=22,$ and $y(4)=38$ **CO4 L5 5M**

b Construct the appropriate relation of the form $y=ab^x$ for the following data by the method of least squares $y(2)=8.3, y(3)=15.4,\ y(4)=33.1,$ $y(5)=65.2,$ and $y(6)=127.4$ **CO4 L5 5M**

OR

9 **a** In a random sample of **125** cool drinkers **68** said they prefer Thums up to Pepsi. The test thus null hypothesis $P=0.5$ against the alternative hypothesis is $P>0.5$ **CO4 L4 5M**

b The means of two large samples of sizes 1000 and 2000 members are 67.5 inches and 68.0 inches respectively. Can the samples be regarded as drawn from the same population with a standard deviation of 2.5 inches? **CO4 L4 5M**

UNIT-V

10 **a** The blood pressure of 5 women before and after intake of a certain drug is given below **CO5 L4 5M**

Before	110	120	125	132	125
After	120	118	125	136	121

Test whether the a significant change in blood pressure at a **1%** level of significance.

b A pair of dice are thrown **360** times and the frequency of each sum is indicated below: **CO5 L2 5M**

Sum	2	3	4	5	6	7	8	9	10	11	12
Frequency	8	24	35	37	44	65	51	42	26	14	14

Would you say that the dice are fair based on the chi-square test at 0.05 level of significance?

OR

11 **a** A die is thrown **264** times with the following results. Show that the die is biased. ($\psi^2 = 11.07$ at **5** d.f & **5%** L.S). **CO5 L2 5M**

Number on the die	1	2	3	4	5	6
Frequency	40	32	28	58	54	52

b Samples of two types of electrical light blubs were tested for length of life and the following data were obtained. **CO5 L4 5M**

	Type I	Type II
Sample numbers	8	7
Sample mean	1234 hrs	1036 hrs
Sample S.D	36 hrs	40 hrs

Is the difference in the means sufficient to warrant that type I is superior to type II regarding length of life.

***** END *****

O.P.Code:18CE0152	R18	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech. II Year I Semester Supplementary Examinations November-2024

FLUID MECHANICS & FLUID MACHINES

(Mechanical Engineering)

Time: 3 Hours **Max. Marks: 60**

PART-A

(Answer all the Questions **5 x 2 = 10** Marks)

1	a	What is surface tension?	CO1	L1	2M
	b	Write Bernoulli's equation.	CO2	L1	2M
	c	What is the expression for head loss due to friction in Darcy formula?	CO3	L1	2M
	d	State the Bucking ham's pi-theorem.	CO4	L1	2M
	e	Define volumetric efficiency.	CO5	L1	2M

PART-B

(Answer all Five Units 5 x 10 = 50 Marks)

UNIT-I

2	a	Differentiate kinematic viscosity and dynamic viscosity. Give their dimensions.	CO1	L2	5M
	b	A plate 0.025mm at a distance froma fixed plate moves at 60 cm/sec and requires a force of2 N/m^2. Determine the dynamic and kinematic viscosity between the plates.	CO1	L3	5M

OR

3	a	State Pascal's law. What do you understand the terms Absolute, Gauge, atmospheric & vacuum pressure?	CO1	L2	5M
	b	What is the gauge pressure at apoint 3m below the free surface of a liquid having a density 1.53 x 10^3 kg/m^3, if the atmospheric pressure is equivalent to 750 mm of mercury, the Specific gravity of mercury is 13.6 and density of water= 1000kg/m^3?	CO1	L3	5M

UNIT-II

4	a	Obtain an expression for continuity equation for three-dimensional flow.	CO2	L2	5M
	b	A 30 cm diameter pipe, conveying water, branches into two pipes of diameters 20 cm and 15 cm respectively. If the average velocity in the 30cm diameter pipe is 2.5 m/s. Find the discharge in the pipe. Also determine the velocity in15cm pipe if the average velocity in 20cm diameter pipe is 2m/s?	CO2	L3	5M

OR

5	a	Define free vortex flow and forced vortex flow.	CO2	L2	5M
	b	Derive equation of motion for forced vortex flow.	CO2	L2	5M

UNIT-III

6		Derive the expression for head loss in pipes due to friction by using Darcy- Weisbach equation?	CO3	L2	10M

OR

7		The difference in water surface levels in two tanks,which are connected by three pipes in series of lengths 300 m, 170 m, 210 m and of diameters 300 mm, 200mm, 400 mm respectively, is 12 m. Determine the rate of flow of water if co-efficient of friction are 0.005, 0.0052 and 0.0048 respectively, considering: (i) minor losses also (ii) neglecting minor losses?	**CO3**	**L3**	**10M**

UNIT-IV

8		What is similitude and describe the types of similarities.	**CO4**	**L2**	**10M**

OR

9		Describe Froude model law and scale ratios briefly.	**CO4**	**L2**	**10M**

UNIT-V

10	**a**	What is Pelton turbine? Discuss the parts of Pelton turbine.	**CO5**	**L2**	**5M**
	b	Derive the expression for velocity triangles and workdone for Pelton wheel.	**CO5**	**L2**	**5M**

OR

11	**a**	Write a note on workdone by the centrifugal pump (impeller) on water?	**CO5**	**L2**	**5M**
	b	Describe briefly definition of heads and efficiencies of a centrifugal pump.	**CO5**	**L2**	**5M**

***** END *****

O.P.Code: 18CE0104	R18	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech II Year I Semester Supplementary Examinations November-2024

INTRODUCTION TO FLUID MECHANICS

(Common to AGE & CE)

Time: 3 Hours **Max. Marks: 60**

PART-A

(Answer all the Questions **5 x 2 = 10** Marks)

1	a	State Pascal's law.	CO1	L1	2M
	b	Define Stream Line.	CO2	L1	2M
	c	Define discharge of a fluid..	CO3	L1	2M
	d	Write the expression for flow through pipes in series.	CO4	L1	2M
	e	Define Renolds number.	CO5	L1	2M

PART-B

(Answer all Five Units 5 x 10 = 50 Marks)

UNIT-I

2		Define Manometer. Briefly explain the types of manometers in detail.	CO1	L3	10M

OR

3	a	A simple U – tube manometer containing mercury is connected to a pipe in which a fluid of specific gravity 0.8 and having vacuum pressure is flowing. The other end of the manometer is open to atmosphere. Find the pressure of fluid in the pipe if the difference of mercury level in the two limbs is 20 cm.	CO1	L3	5M
	b	A hydraulic pipe has a ram of 30 cm diameter and a plunger of 4.5 cm diameter. Find the weight lifted by the hydraulic press when the force applied at the plunger is 500N?	CO1	L3	5M

UNIT-II

4		Obtain an expression for continuity equation for a three - dimensional flow.	CO2	L3	10M

OR

5		The velocity vector in a fluid flow is given by V=4x+10xy+2k find the velocity and acceleration at fluid particle (2,1,3) & t=1.	CO2	L3	10M

UNIT-III

6		Derive the expression for actual discharge in venturimeter.	CO3	L3	10M

OR

7`		A horizontal venture meter with 30cm diameter inlet and 10cm throat is used for measuring the flow of water through a pipeline. If pressure in pipe is 1.5kpa and the vacuum pressure at the throat is 40cm of mercury, calculate the rate of flow. It may be presumed that 5% of differential head is lost between the pipe main and the throat section. Also make calculations for the discharge co-efficient take specific weight of water = $10kN/m^3$	CO3	L3	10M

UNIT-IV

8		Derive the expression for head loss in pipes due to friction by Darcy - Weisbach equation and chezy's formula.	CO4	L3	10M

OR

9	A horizontal pipe of diameter 500mm is suddenly contracted to a diameter of 250mm. The pressure intensity in the larger and smaller pipe is given as 13.734 N/cm^2 and 11.772 N/cm^2 respectively. Find the head lost due to contraction if CC is 0.63. Determine the rate of flow of water?	**CO4**	**L3**	**10M**

UNIT-V

10	Derive the Expression for maximum velocity for a Laminar flow through circular pipes.	**CO5**	**L3**	**10M**

OR

11	An oil of viscosity 0.1 Pa.s and relative density 0.9 is flowing through a horizontal pipe of diameter 50mm. if the pressure drop per meter length od pipe is 12 Kpa, determine a) Rate of flow in N/minute b) Shear stress at pipe wall c) Reynolds number of flow d) Power required in W Per 50m length to maintain the flow	**CO5**	**L3**	**10M**

***** END *****

O.P.Code: 18EC403	R18	H.T.No.										

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech II Year I Semester Supplementary Examinations November-2024

SIGNALS & SYSTEMS

(Electronics & Communications Engineering)

Time: 3 Hours **Max. Marks: 60**

PART-A

(Answer all the Questions **5 x 2 = 10** Marks)

1	a	Define Unit impulse and Unit step Signals.	CO1	L1	2M
	b	How do you obtain Cosine Fourier series from exponential Fourier series?	CO1	L1	2M
	c	What is a filter? How are filters classified?	CO1	L1	2M
	d	What is the relation between convolution and correlation?	CO1	L1	2M
	e	What is the relation between Laplace transform and Fourier transform?	CO1	L1	2M

PART-B

(Answer all Five Units 5 x 10 = 50 Marks)

UNIT-I

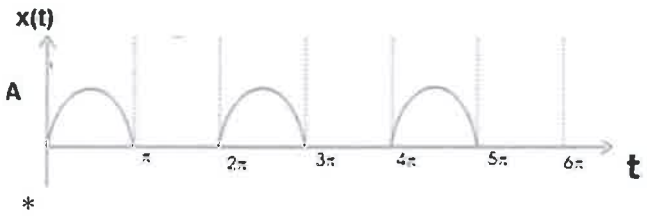
2		Explain the classification of signals in both continuous time and discrete time with suitable examples.	CO2	L2	10M

OR

3	a	Check whether the following systems are causal or not? (i)$y(t)=x^2(t)+x(t-4)$ (ii) $y(t)=x(t/2)$ (iii)$y(n)=x(2n)$	CO2	L3	5M
	b	Find whether the following systems are stable or not (i) $y(t)=(t+5)\,u(t)$ (ii) $y(t)=(2+e^{-3t})\,u(t)$ (iii) $h(n)=a^n$ for $0<n<11$	CO2	L3	5M

UNIT-II

4		Find the Fourier series expansion of the half wave rectified sine wave shown in figure.	CO3	L3	10M



OR

5	a	Find the Fourier transform of the following signals (i) $x(t)=e^{-3t}u(t)$ (ii) $x(t)=te^{-at}u(t)$ (iii) $x(t)=e^{-t}\sin 5t\,u(t)$ (iv) $x(t)=e^{-t}\cos 5t\,u(t)$	CO3	L3	8M
	b	Find the Fourier transform of (i)$\sin \omega_0 t$ (ii) $\cos \omega_0 t$	CO3	L3	2M

UNIT-III

6		Discuss the properties of linear time invariant systems.	CO4	L2	10M

OR

7	a	Discuss about Effects of the under sampling.	CO4	L2	5M
	b	A system produces an output of $y(t)=e^{-3t}u(t)$ for an input of $x(t)=e^{-5t}u(t)$. Determine the impulse response and frequency response of the system	CO4	L3	5M

UNIT-IV

8	a	State and prove the Parseval's theorem for energy signals.	CO5	L3	5M
	b	Derive and Define the properties of Energy Spectral Density.	CO5	L3	5M

OR

9	a	Explain the detection of periodic signals in the presence of noise by auto correlation.	CO5	L2	5M
	b	Explain the detection of periodic signals in the presence of noise by auto correlation.	CO5	L2	5M

UNIT-V

10		Find the Laplace transform of the following signals using properties of Laplace transform (i) $x(t)=t\,e^{-t}\,u(t)$ (ii) $x(t)=t\,e^{-2t}\sin 2t\,u(t)$ (iii) $x(t)=\sin at/t$ (iv) $x(t)=1-e^{t}/t$	CO6	L3	10M

OR

11	a	State and prove initial and final value theorems of Z-transform?	CO6	L3	5M
	b	Using the Properties of Z-transform. Find the Z-transform of following signals.	CO6	L3	5M

***** END *****

O.P.Code:18EC0443	R18	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.TechII Year I Semester Supplementary Examinations November-2024

ANALOG ELECTRONICS CIRCUITS

(Common to EEE, CSIT & CSE)

Time: 3 Hours **Max. Marks: 60**

PART-A

(Answer all the Questions **5 x 2 = 10** Marks)

1	a	What are the applications of Zener Diode?	CO1	L1	2M
	b	What is stability factor?	CO2	L1	2M
	c	what is ment by pinchoff voltage.	CO3	L1	2M
	d	Define Virtual ground property of an OP-AMP.	CO4	L1	2M
	e	What are the types of ADC and DAC.	CO5	L1	2M

PART-B

(Answer all Five Units 5 x 10 = 50 Marks)

UNIT-I

2	a	Draw the circuit diagram of Full wave rectifier and explain its operation with the help of waveforms.	CO1	L1	5M
	b	Derive the expressions for Ripple Factor and Efficiency of Full Wave Rectifier.	CO1	L2	5M

OR

3	a	Draw and discuss the VI characteristics of a Zener Diode.	CO1	L2	5M
	b	Write notes on Diode Clippers and Clampers with diagram.	CO1	L1	5M

UNIT-II

4	a	Discuss the operation of NPN transistor with diagram.	CO2	L2	5M
	b	If the base current in a transistor is 20μA when the emitter current is 6.4mA, what are the values of α and β? Also calculate the collector current.	CO2	L3	5M

OR

5	a	Define Transistor Biasing and explain the need for Biasing.	CO2	L1	5M
	b	Explain the concept of Load line and Q-point in BJT.	CO2	L2	5M

UNIT-III

6	a	With diagram explain Common Gate Amplifier of JFET	CO3	L1	5M
	b	Compare CG, CS and CD configurations of JFET.	CO3	L4	5M

OR

7	a	With the help of neat diagram, explain the operation and characteristics of n-channel enhancement type MOSFET.	CO3	L2	8M
	b	Mention the differences between depletion and enhancement MOSFET.	CO3	L3	2M

UNIT-IV

8	a	Draw the various functional blocks of an operational amplifier IC. Explain each block.	CO4	L1	5M
	b	Draw the equivalent circuit diagram of Op amp and derive the expression for gain of inverting amplifier.	CO4	L1	5M

OR

9	a	The op-amp non-inverting amplifier and derive the voltage gain.	CO4	L2	5M
	b	Explain ac characteristics of op-amp.	CO4	L1	5M

UNIT-V

10	a	Draw the circuit of a difference amplifier with one op-amp and derive the expression for voltage gain.	CO5	L1	5M
	b	Draw a neat circuit of an integrator circuit. Explain the functioning with the input-output waveforms.	CO5	L1	5M

OR

11	a	Draw and explain successive approximation type ADC.	CO5	L1	5M
	b	The basic step of a 9 bit DAC is 10.3 mV. If "000000000" represents 0 V. What output is Produced if the input is "101101111"?	CO5	L3	5M

***** END *****

O.P.Code: 18EE0202	R18	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech. II Year I Semester Supplementary Examinations November-2024
ELECTRICAL CIRCUITS–II
(Electrical and Electronics Engineering)

Time: 3 Hours **Max. Marks: 60**

PART-A
(Answer all the Questions **5 x 2 = 10** Marks)

1	**a**	What are the different methods are used to solve the unbalanced systems?	**CO1**	**L2**	**2M**
	b	Define transient state.	**CO2**	**L1**	**2M**
	c	Define tieset.	**CO3**	**L1**	**2M**
	d	Define Two Port network.	**CO4**	**L1**	**2M**
	e	What is poles and zeros.	**CO5**	**L1**	**2M**

PART-B
(Answer all Five Units 5 x 10 = 50 Marks)

UNIT-I

2	Derive the relationship between Phase and Line voltages, currents in star connected load.	**CO1**	**L3**	**10M**

OR

3	A balanced delta connected load of (4+j3) Ω per phase is connected to a balanced 3 phase, 440v supply. Find i) active power ii) reactive power iii) Apparent power.	**CO1**	**L4**	**10M**

UNIT-II

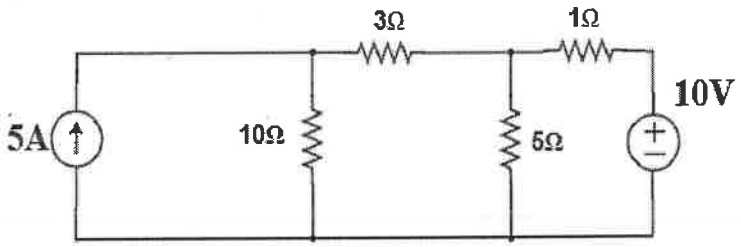
4	Derive the transient response of an RLC circuit with AC excitation.	**CO2**	**L3**	**10M**

OR

5	A series RC circuit consists of resistor of 10Ω and capacitor of 0.1F has a constant voltage of 20V is applied to the circuit at t=0. Obtain the current equation. Determine the voltage across the resistor and the capacitor.	**CO2**	**L3**	**10M**

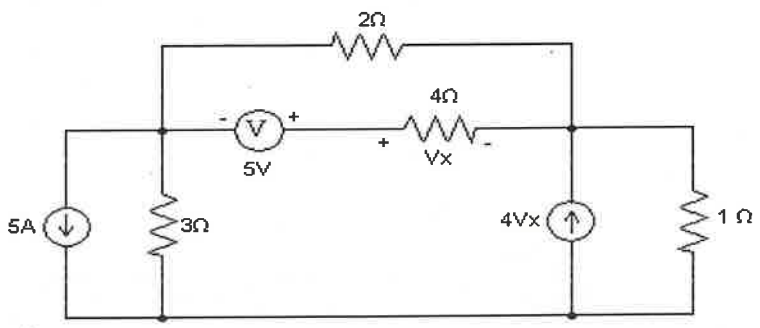
UNIT-III

6	Determine current in 10Ω resistor for the following network by using using network topology.	**CO3**	**L3**	**10M**



OR

7	For the circuit shown in figure. Find the voltage across 4Ω resistor using network topology.	**CO3**	**L4**	**10M**

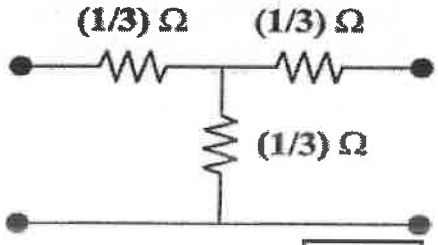


UNIT-IV

8	Derive the expressions for Z-parameters in terms of ABCD parameters.	CO4	L3	10M

OR

9	Determine Y parameters of the following network	CO4	L3	10M



UNIT-V

10	Find the inverse Laplace transform of $F(S) = \frac{1}{(S+2)^2}$	CO5	L3	10M

OR

11	A 1kΩ resistor is in series with a 500mH inductor. This series combination is in parallel with a 0.4μF capacitor. Express the equivalent s-domain impedance of these parallel branches as a rational functional.	CO5	L4	10M

***** END *****

O.P.Code: 18HS0834	R18	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech II Year I Semester Supplementary Examinations November-2024
MATHEMATICS-III
(Electronics & Communication Engineering)

Time: 3 Hours **Max. Marks: 60**

PART-A
(Answer all the Questions **5 x 2 = 10** Marks)

1	a	Write the formula to find a cube root of a number by Newton Raphson's method.	CO1	L2	2M
	b	Write R-K method of 4^{th} order formula.	CO2	L1	2M
	c	Find the Laplace transform of $e^{at}\cosh bt$.	CO3	L1	2M
	d	Find the finite fourier sine transform of $f(x) = 2x, 0 < x < 4$.	CO4	L2	2M
	e	Find the particular integral of the equation $4r+12s+9t=e^{3x-2y}$.	CO5	L2	2M

PART-B
(Answer all Five Units 5 x 10 = 50 Marks)

UNIT-I

2		Find out the root of the equation $x \log_{10}(x) = 1.2$ using False position method.	CO1	L1	10M

OR

3	a	Evaluate $\int_0^1 \frac{1}{1+x}dx$ **(i)** By trapezoidal rule and Simpson's $\frac{1}{3}$ rule.	CO1	L2	5M
	b	Using Simpson's $\frac{3}{8}$ rule and compare the result with actual value.	CO1	L2	5M

UNIT-II

4	a	Tabulate y (0.1), y (0.2), and y (0.3) using Taylor's series method given that $y^1 = y^2 + x$ and y(0) = 1.	CO2	L1	5M
	b	Using Euler's method, find an approximate value of y corresponding to $x = 1$ given that $\frac{dy}{dx} = x + y$ and $y = 1$ when $x = 0$.	CO2	L1	5M

OR

5		Using R-K method of 4^{th} order find y(0.1),y(0.2) and y(0.3) given that $\frac{dy}{dx} = 1 + xy, y(0) = 2$.	CO2	L3	10M

UNIT-III

6	a	Find the Laplace transform of $e^{-3t}(2\cos 5t - 3\sin 5t)$.	CO3	L2	5M
	b	Find the Laplace transform of $f(t) = \int_0^t e^{-t}\cos t\,dt$.	CO3	L2	5M

OR

7		Using Laplace transform method to solve $y''-3y'+2y=4t+e^{3t}$ where $y(0)=1, y'(0)=1$.	CO3	L3	10M

UNIT-IV

8	a	Find the Fourier transform of f(x) =. $e^{\frac{x^2}{2}}$,$-\infty < x < \infty$.	CO4	L2	5M
	b	If F(p) is the complex Fourier transform of f(x) , then prove that the complex Fourier transform of f(x) cos ax is $\frac{1}{2}[F(p+a)+F(p-a)]$.	CO4	L2	5M

OR

9		Find the Fourier sine and cosine transforms of f(x)=$\frac{e^{-ax}}{x}$ and deduce that $\int_0^\infty \frac{e^{-ax}-e^{-bx}}{x}\sin sx\,dx = \tan^{-1}\left(\frac{s}{a}\right) - \tan^{-1}\left(\frac{s}{b}\right)$.	CO4	L3	10M

UNIT-V

10	a	Solve $x(y-z)p+y(z-x)q=z(x-y)$.	CO5	L1	5M
	b	Solve $x^2(y-z)p+y^2(z-x)q=z^2(x-y)$.	CO5	L1	5M

OR

11		A tightly stretched string of length l with fixed ends is initially in equilibrium position. It is set vibrating by giving each point a velocity $bsin^3\left(\frac{\pi x}{l}\right)$. Find the displacement $y(x, t)$.	CO5	L2	10M

***** END *****

O.P.Code: 18CS0504	R18	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech II Year I Semester Supplementary Examinations November-2024

DATA STRUCTURES & ALGORITHMS

(Common to CSE & CSIT)

Time: 3 Hours **Max. Marks: 60**

PART-A

(Answer all the Questions **5 x 2 = 10** Marks)

1	a	Define data structure. Mention any two applications of data structures.	CO1	L2	2M
	b	List out the applications of stack and Queue.	CO2	L1	2M
	c	What do you mean by level of the tree and height of Tree?	CO3	L1	2M
	d	What is hashing? What do you mean by hash function?	CO4	L4	2M
	e	What is the best case and worst case time complexity of Quick sort and insertion sort.	CO5	L4	2M

PART-B

(Answer all Five Units 5 x 10 = 50 Marks)

UNIT-I

2	a	Difference between the single linked list and double linked list, circular linked list.	CO1	L3	5M
	b	What is array? Explain different types of arrays.	CO1	L2	5M
		OR			
3	a	Explain how to create circular linked list and insert nodes at end.	CO1	L4	5M
	b	Difference between the arrays and linked list	CO1	L3	5M

UNIT-II

4		State any two applications of stacks and queues? With an example, explain infix to postfix conversion and infix to prefix conversion algorithms.	CO2	L4	10M
		OR			
5	a	Explain how queues can be implemented using arrays.	CO2	L3	5M
	b	Write an algorithm to insert and delete a key in a circular queue.	CO2	L2	5M

UNIT-III

6	a	Explain the various operations on a Binary tree with an example.	CO3	L4	5M
	b	Construct Binary Search Tree by inserting the following key elements: 10, 12, 5, 4, 20, 8, 7, 6, 15.	CO3	L2	5M
		OR			
7		What is an AVL tree? Explain various rotations of AVL trees maintaining balance factor while insertion and deletion takes place.	CO3	L2	10M

UNIT-IV

8	a	Explain the various representation of graph with example in detail.	CO4	L3	6M
	b	Write and explain Dijkstra algorithm for finding shortest path.	CO4	L2	4M
		OR			
9	a	Explain topological sorting algorithm for finding shortest path. Give an example.	CO4	L4	5M
	b	Write and explain linear search procedure or algorithm with a suitable example.	CO4	L2	5M

UNIT-V

10	a	Sort the following numbers using merge sort: 45, 34, 12, 46, 27, 56, 11, 87, 6, 33, and 28.	CO5	L4	5M
	b	State and explain algorithm to perform Heap sort? Sort the following numbers using heap sort 47, 32, 15, 38, 55, 17, 25, 45, 42 and 50.	CO5	L2	5M

OR

11	a	What is meant by sorting? Write an algorithm for Selection sort and illustrate with an example.	CO5	L3	5M
	b	Explain about shell sort with example.	CO5	L2	5M

***** END *****

O.P.Code: 18CE0114	R18	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech III Year I Semester Supplementary Examinations November-2024
HYDRAULIC ENGINEERING
(Civil Engineering)

Time: 3 Hours **Max. Marks: 60**

PART-A
(Answer all the Questions **5 x 2 = 10** Marks)

1	a	Give any on empirical formula for the chezy's constant	CO1	L1	2M
	b	Define Hydraulic jump.	CO2	L1	2M
	c	State the expression for maximum efficiency of jet striking moving curved vane at centre.	CO3	L2	2M
	d	What is meant by dimensional homogeneity?	CO4	L2	2M
	e	What is cavitation in case of turbines?	CO5	L2	2M

PART-B
(Answer all Five Units 5 x 10 = 50 Marks)

UNIT-I

2	a	Write a brief note on channel transition with reduction in width of a rectangular channel with neat sketch.	CO1	L1	5M
	b	Write a brief note on channel transition with raise in bottom in a rectangular channel with neat sketch.	CO1	L1	5M

OR

3		A concrete lined circular channel of diameter 3m has abed slope of 1 in 500. Find out velocity and flow rate for conditions of a) Maximum Velocity b) Maximum Discharge. Assume chezy's constant C=50.	CO1	L3	10M

UNIT-II

4		What are the classifications of channel bottom slopes and briefly explain characteristics of surface profiles.	CO2	L1	10M

OR

5	a	Derive an expression for hydraulic jump in rectangular channel.	CO2	L3	5M
	b	What are the applications of hydraulic jump?	CO2	L1	5M

UNIT-III

6		Obtain the condition for the jet when it strikes the curved plate at one end tangentially when the plate is symmetrical.	CO3	L3	10M

OR

7		A 7.5 cm diameter jet having a velocity of 30 m/s strikes a flat plate, the normal of which is inclined at 45 degrees to the axis of the jet. Calculate the normal pressure on the plate. (i) When the plate is stationary and (ii) When the plate is moving with a velocity of 15 m/s and away from the jet. Also determine the power and efficiency of the jet when the plate is moving.	CO3	L3	10M

UNIT-IV

8	A centrifugal pump delivers water against a net head of 14.5 meters and a design speed of 1000 r.p.m . The vanes are curved back to an angle of 30 degrees with the periphery. The impeller diameter is 300mm and outlet width is 50mm. Determine the discharge of the pump if manometric efficiency is 95%.	**CO5**	**L3**	**10M**

OR

9	A centrifugal pump discharges 0.15 m3/sec of water against a head of 12.5 m, the speed of impeller being 600 r.p.m. The outer and inner diameter of impeller are 500 mm and 250 mm respectively and the vanes are bent back at 350 to the tangent at exist. If the area of flow remains 0.07 m2 from inlet to outlet, calculate (i) Manometric efficiency of pump (ii) Vane angle at inlet (iii) Loss of head at inlet to impeller when the discharge is reduced by 40% without changing the speed.	**CO5**	**L3**	**10M**

UNIT-V

10	**a** Explain Radial flow reaction turbine with a neat diagram.	**CO4**	**L2**	**5M**
	b A jet strikes the buckets of Pelton wheel, which is having shaft power as 15450kW. The diameter of each jet is given as 200mm.If the net head on the turbine is 400m.Find the overall efficiency of the turbine, take Cv=1.0.	**CO4**	**L3**	**5M**

OR

11	A Kaplan turbine runner is to be designed to develop9100KW.Th net available head is5.6 m, If the speed ratio =2.09, Flow ratio =0.68, overall efficiency=86%& diameter of th boss is1/3 the diameter of the runner. Find the diameter of the runner and its speed and the specific speed of the turbine.	**CO4**	**L3**	**10M**

***** END *****

Q.P. Code: 18EE0212

R18

Reg. No: | | | | | | | | | | |

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech III Year I Semester Supplementary Examinations November-2024

ELECTRICAL MEASUREMENTS

(Electrical & Electronics Engineering)

Time: 3 hours Max. Marks: 60

PART-A

(Answer all the Questions 5 x 2 = 10 Marks)

1	a	Write short notes on: Ammeter range extension.	L1	2M
	b	Write about Sensitivity of Wheatstone bridge.	L2	2M
	c	Write advantages of Two-element wattmeter.	L1	2M
	d	What is meant by Standardization" of Potentiometer?	L1	2M
	e	Write a short note on Ballistic galvanometer.	L1	2M

PART-B

(Answer all Five Units 5 x 10 = 50 Marks)

UNIT-I

2	a	Derive an expression for the Deflecting torque in MI type instruments.	L4	5M
	b	Explain the construction and working of PMMC type instruments.	L2	5M
		OR		
3	a	Define the terms "Indicating instruments", "Recording instruments" and integrating Instruments". Give examples of each case.	L1	5M
	b	A moving coil instrument has a resistance of 10 ohm and gives a full-scale deflection When carrying 50mA. Show how it can be adopted to measure voltage upto 750 V and current of 100 A.	L4	5M

UNIT-II

4	a	Draw the circuit of a Kelvin's double bridge used for measurement of low resistances. Derive the condition for balance.	L1, L4	5M
	b	The four arms of Wheatstone bridge as follows: AB = 5KΩ; BC =? ; CD = 10Ω; DA = 2KΩ .What should be the resistance in the arm for no current through the Galvanometer?	L4	5M
		OR		
5	a	List the advantages and disadvantages of Maxwell's Bridge.	L1	5M
	b	Explain the features of De-Sauty's Bridge with a neat sketch	L2	5M

UNIT-III

6	a	Explain driving system, moving system and braking system in a single-phase induction type energy meter.	L2	5M
	b	Explain stray magnetic field errors in electro dynamometer type wattmeter.	L2	5M
		OR		
7	a	Explain the advantages and disadvantages of single-phase Induction type Energy meter.	L2	6M
	b	Explain the measurement of LPF and UPF.	L2	4M

UNIT-IV

8	a	With neat figure explain the working of an AC Potentiometer.	L2	6M
	b	Discuss the significance of standardization	L3	4M
		OR		
9	a	Explain construction and working principle of Crompton's DC potentiometer.	L2	5M
	b	List the applications of AC potentiometers.	L1	5M

UNIT-V

10	a	Describe the method for determination of B.H curve of a magnetic material using: (i) Method of Reversals (ii) Six point method	L2	5M
	b	Compare flux meter and Ballistic Galvanometer.	L2	5M
		OR		
11	a	List the advantages & applications of C R O.	L1	5M
	b	Prove that in a Ballistic Galvanometer, the charge is proportional to first swing of the moving coil.	L4	5M

END

O.P.Code:18EE0210	R18	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech III Year I Semester Supplementary Examinations November – 2024

POWER SYSTEMS – I

(Electrical & Electronics Engineering)

Time: 3 Hours **Max. Marks: 60**

PART-A

(Answer all the Questions **5 x 2 = 10** Marks)

1	a	Describe the significance of surge tank in hydro power plant.	CO1	L1	2M
	b	Define demand factor and load factor.	CO2	L1	2M
	c	Discuss transmission lines classification.	CO4	L1	2M
	d	Define string efficiency.	CO5	L1	2M
	e	Classify the cables based on voltage and type of insulating materials used in them.	CO6	L1	2M

PART-B

(Answer all Five Units 5 x 10 = 50 Marks)

UNIT-I

2		Draw the block diagram of thermal power station (TPS) showing paths of coal,steam,water,air,ash and flue gases and explain principle of operation briefly.	CO1	L3	10M

OR

3		Discuss the following components in nuclear power station briefly. (i) Moderator (ii) Control rods (iii) Reflector (iv) Coolant (v) Nuclear reactor.	CO1	L2	10M

UNIT-II

4		Explain the following w.r.t. wind power (i) Horizontal axis wind mills (ii) Vertical axis wind mills.	CO2	L2	10M

OR

5		Explain the following tariff methods briefly. (i)Flat rate (ii) Block-rate (iii) Two-part (iv) Three-part (v) Power factor.	CO3	L2	10M

UNIT-III

6		Derive expression for voltage regulation of medium transmission lines using nominal - T method with equivalent circuit and necessary phasor diagram	CO4	L2	10M

OR

7		A single phase overhead transmission line delivers 1100kW at 33kV at 0.8 p.f. lagging. The total resistance and inductive reactance of the line are 10 ohm and 15 ohm respectively. Determine (i) Sending end Voltage (ii) Transmission Efficiency.	CO4	L2	10M

UNIT-IV

8	a	A three phase overhead line is suspended by a suspension type insulator, which Consists of three units. The potential across top unit and middle unit are 12 kv and 18 kv Respectively. Calculate: (i) the ratio of capacitance between pin and earth to the self Capacitance of each unit (ii).The line voltage and (iii) String efficiency.	CO5	L2	10M

OR

9	a	Explain the concept and phenomenon of corona.	CO5	L2	5M
	b	Each conductor of a three phase over head line is suspended from a cross arm of a steel tower by a string of 4 suspension insulators. The voltage across the second unit is 14.2kv and across the third 20kv. Find the voltage between the conductors and the string efficiency.	CO5	L2	5M

UNIT-V

10	a	Distinguish between Underground cables and overhead lines.	CO6	L2	5M
	b	The maximum and minimum stresses in the dielectric of a single core cable are 40kv/cm (r.m.s) and 10kv/cm (r.m.s) respectively. If the conductor diameter is 1cm, find: (i) Thickness of insulation & (ii) Operating voltage.	CO6	L3	5M

OR

11		Write short notes on: (i) Intersheath grading (ii) capacitance grading.	CO6	L1	10M

***** END *****

O.P.Code: 18EC0415	R18	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech III Year I Semester Supplementary Examinations November-2024

DIGITAL COMMUNICATIONS

(Electronics & Communications Engineering)

Time: 3 Hours **Max. Marks: 60**

PART-A

(Answer all the Questions **5 x 2 = 10** Marks)

1	**a**	State Sampling Theorem.	**CO1**	**L1**	**2M**
	b	Define Matched Filter.	**CO2**	**L1**	**2M**
	c	What is orthogonal basis function?	**CO3**	**L1**	**2M**
	d	Define digital modulation techniques.	**CO4**	**L1**	**2M**
	e	Explain parity check matrix.	**CO5**	**L2**	**2M**

PART-B

(Answer all Five Units 5 x 10 = 50 Marks)

UNIT-I

2	**a**	Draw the block diagram of digital communication system. Explain each block.	**CO1**	**L4**	**5M**
	b	Write the differences between PCM, DPCM, and DM.	**CO1**	**L4**	**5M**
		OR			
3	**a**	With a neat block diagram explain PCM transmitter and receiver.	**CO1**	**L2**	**5M**
	b	Explain the delta modulation system with suitable diagrams.	**CO1**	**L3**	**5M**

UNIT-II

4	**a**	Derive the expression for impulse response of a matched filter.	**CO2**	**L4**	**5M**
	b	Write a brief note on Eye pattern and construct the diagram.	**CO2**	**L2**	**5M**
		OR			
5		Explain in detail about Inter symbol interference and its effects.	**CO2**	**L3**	**10M**

UNIT-III

6		Describe the concept of continuous AWGN channel into a vector channel.	**CO3**	**L3**	**10M**
		OR			
7	**a**	Explain the geometrical representation of signals.	**CO3**	**L2**	**5M**
	b	Explain the the concept of Schwarz Inequality.	**CO3**	**L2**	**5M**

UNIT-IV

8	**a**	Derive an expression for probability of error in BFSK.	**CO4**	**L4**	**5M**
	b	Compare all the digital modulation techniques.	**CO4**	**L4**	**5M**
		OR			
9	**a**	Draw the block diagram of ASK transmitter and receiver and explain the operation.	**CO4**	**L4**	**5M**
	b	Describe the generation and detection of DPSK.	**CO4**	**L2**	**5M**

UNIT-V

10	**a**	Draw and explain the block diagram of ARQ system in detail.	**CO5**	**L4**	**5M**
	b	Discuss in brief about sequential decoding of convolutional codes.	**CO5**	**L2**	**5M**

OR

11	**a**	Explain the Convolutional Encoding and Decoding methods.	**CO5**	**L2**	**5M**
	b	The Generator matrix(G) for a (7, 4) block code is given below	**CO5**	**L4**	**5M**

$$\begin{bmatrix} 1 & 0 & 0 & 0 & 1 & 0 & 1 \\ 0 & 1 & 0 & 0 & 1 & 1 & 1 \\ 0 & 0 & 1 & 0 & 1 & 1 & 0 \\ 0 & 0 & 0 & 1 & 0 & 1 & 1 \end{bmatrix}$$

Find the Parity check matrix (G).

*** END ***

O.P.Code: 18CE0118	R18	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech III Year I Semester Supplementary Examinations November-2024
ESTIMATION, COSTING AND VALUATION
(Civil Engineering)

Time: 3 Hours **Max. Marks: 60**

PART-A
(Answer all the Questions **5 x 2 = 10** Marks)

1	a	What are differences between revised and supplementary estimate?	CO1	L2	2M
	b	List different items of estimation in metalled road construction.	CO2	L1	2M
	c	What are different types of reinforcement bars used in RCC members?	CO3	L2	2M
	d	Define rate analysis. What is the purpose of rate analysis?	CO4	L1	2M
	e	What are principles adopted while writing specifications?	CO5	L1	2M

PART-B
(Answer all Five Units 5 x 10 = 50 Marks)
UNIT-I

2		Write brief note on following main items of work (a) Earthwork (b) Concrete in foundation (c) Damp proof course (d) Masonry (e) Plastering	CO1	L2	10M

OR

3		Estimate the cost of an under ground masonry water tank from the given drawing and specifications. Take local market rates. Genera specifications: Foundation – CC (1:2:4). Masonry – 1 st class brickwork in CM (1:4). Flooring – 2.5 cm thick artificial floor and wall finishing. Inside – 20 mm cement plaster (1:3) finished with neat cement. Top and outside up to 20 cm below GL – 12 mm cement plaster (1:4). (Ref. Fig.1)	CO1	L3	10M

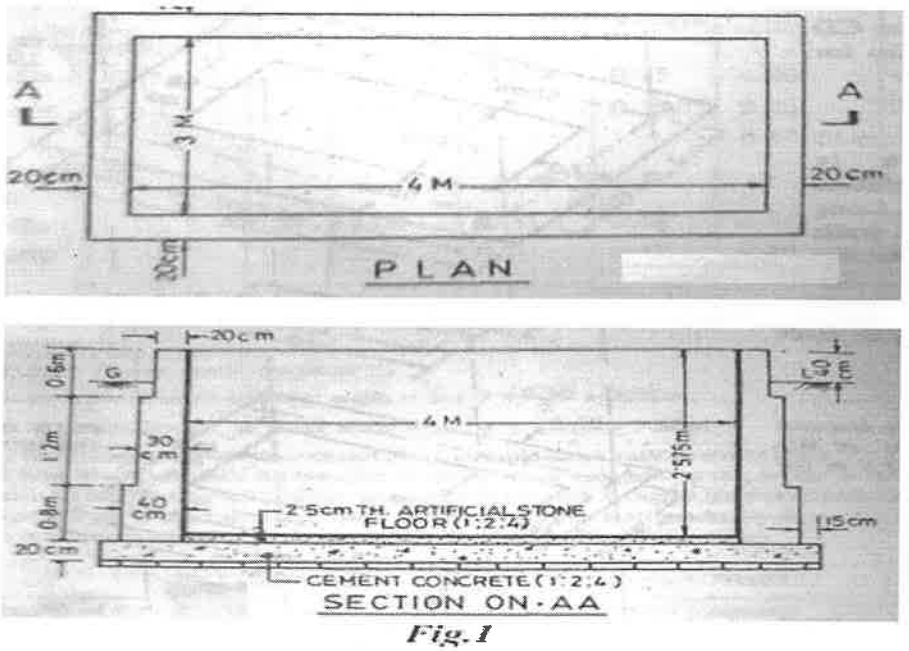


Fig.1

UNIT-II

4	Reduced level (R.L.) of ground along the centre line of a proposed road from chainage 10 to chainage 20 are given below. The formation level at the 10th chainage is 107 and road is in downward gradient of 1 in 150 up to the chainage 14 and then the gradient changes to 1 in 100 downward. Formation width of road is 10 m and side slopes of banking are 2:1 (H:V). Length of the chain is 30 m. Prepare an estimate of earth at the rate of Rs.275% cu.m.	CO2	L3	10M

Chainage	RL of ground (m)
10	105.00
11	105.60
12	105.44
13	105.90
14	105.42
15	104.30
16	105.00
17	104.10
18	104.62
19	104.00
20	103.30

OR

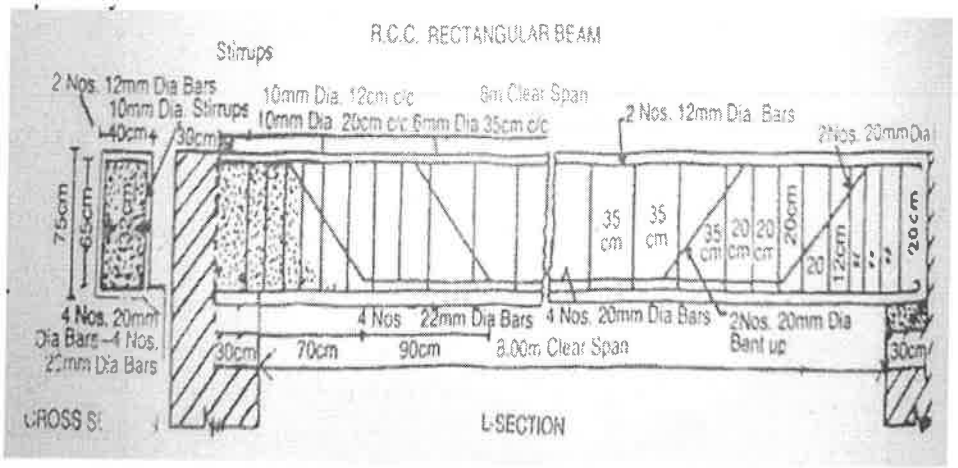
5	With neat sketches explain the irrigation canal section which may be generally encountered in estimate.	CO2	L2	10M

UNIT-III

6	**a** Explain the purpose of preparing schedule of bars.	CO3	L2	3M
	b With a neat sketches explain how the measurement of bending dimension of bars for reinforced concrete is estimated.	CO3	L2	7M

OR

7	Prepare a detailed estimate of a RCC beam of 8 m clear span and 75 cm x 40 cm in section from the given drawings. Steel in detail and RCC work shall be calculated separately.	CO3	L3	10M



UNIT-IV

8		Mention the labour requirements for the following works as recommended by National Building Organization: (a) Earthwork per 28.3 cu.m (b) Cement concrete work per 2.83 cu.m (c) R.C.C work (d) Brickwork per 2.83 cu.m (e) Flooring	CO4	L1	10M
		OR			
9	a	Prepare rate per cu.m for exaction over are for a basement in hard soil, depth 1.5 m and removing the material through a distance of 50 m.	CO4	L3	5M
	b	Prepare rate per sq.m for laying Mosic or Terrazo title floor.	CO4	L3	5M

UNIT-V

10		List and explain general specifications of a first class building.	CO5	L2	10M
		OR			
11	a	Write detailed specifications for white washing and colour washing.	CO5	L2	5M
	b	Mention detail specifications for doors and windows.	CO5	L2	5M

***** END *****

O.P.Code: 18EC0414	R18	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech III Year I Semester Supplementary Examinations November-2024

DIGITAL SIGNAL PROCESSING

(Common to ECE & EEE)

Time: 3 Hours **Max. Marks: 60**

PART-A

(Answer all the Questions **5 x 2 = 10** Marks)

1	a	Draw the basic butterfly structure for DIT-FFT & DIF-FFT algorithms.	CO1	L2	2M
	b	What are the advantage and disadvantage of bilinear transformation?	CO2	L1	2M
	c	State and explain the properties of FIR filters.	CO2	L1	2M
	d	What is meant by input quantization error?	CO5	L1	2M
	e	Define Pipelining.	CO6	L1	2M

PART-B

(Answer all Five Units 5 x 10 = 50 Marks)

UNIT-I

2		Compute 8-point DFT of the sequence x(n)= {1,2,3,4,4,3,2,1} using radix-2 DIT-FFT Algorithm.	CO1	L1	10M

OR

3	a	Explain decimation in frequency FFT algorithm with necessary expressions.	CO1	L5	7M
	b	Summarize the differences and similarities between DIF & DIT FFT algorithms.	CO1	L5	3M

UNIT-II

4	a	For the analog transfer function $H(s) = \frac{2}{(s+1)(s+2)}$, determine H(z) using impulse invariance method. Assume T=1 Sec.	CO2	L6	5M
	b	Apply Bilinear transformation to $H(s) = \frac{2}{(s+1)(s+2)}$, with T=1 Sec and find H(z).	CO2	L3	5M

OR

5	a	Describe impulse invariant method of designing IIR filter.	CO2	L3	5M
	b	Explain the different types of IIR filter realization with suitable example.	CO3	L5	5M

UNIT-III

6	a	Explain the Fourier Series method of Designing FIR Filters.	CO3	L5	5M
	b	Distinguish between FIR and IIR Filter.	CO3	L5	5M

OR

7	a	Determine the Direct form realization of system function.	CO3	L5	5M
	b	What is linear phase filter? What are the conditions to be satisfied by the impulse response of an FIR system in order to have a linear phase?	CO3	L1	5M

UNIT-IV

8	a	Discuss the various common methods of quantization.	CO5	L2	5M
	b	Represent the following numbers in floating point format with five bits for and three bits for exponent i) 7_{10} ii) 0.25_{10} iii) -7_{10} iv) -0.25_{10}	CO5	L3	5M

OR

9	a	Discuss in detail the errors resulting from rounding and truncation.	CO5	L2	5M
	b	Discuss about the steady state output noise power.	CO5	L2	5M

UNIT-V

10		With a neat sketch explain the architecture of TMS 320C50 processor.	CO6	L5	10M

OR

11	a	Explain in detail the application of PDSP's in the field of communication systems..	CO6	L5	5M
	b	Discuss the role of PDSP in multimedia applications.	CO6	L6	5M

***** END *****

O.P.Code: 18EE0211	R18	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech III Year I Semester Supplementary Examinations November-2024
CONTROL SYSTEMS
(Common to EEE & ECE)

Time: 3 Hours **Max. Marks: 60**

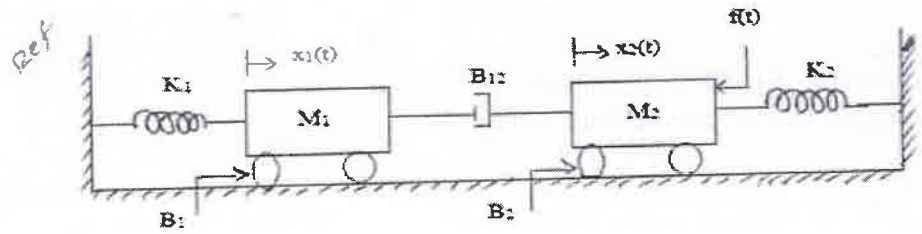
PART-A
(Answer all the Questions **5 x 2 = 10** Marks)

1	a	Define control systems.	CO1	L2	2M
	b	How the system is classified depending on the value of damping ratio?	CO2	L1	2M
	c	What is the necessary condition for stability?	CO3	L2	2M
	d	Write the expression for resonant peak and resonant frequency.	CO4	L2	2M
	e	What is Diagonalize matrix?	CO5	L1	2M

PART-B
(Answer all Five Units 5 x 10 = 50 Marks)

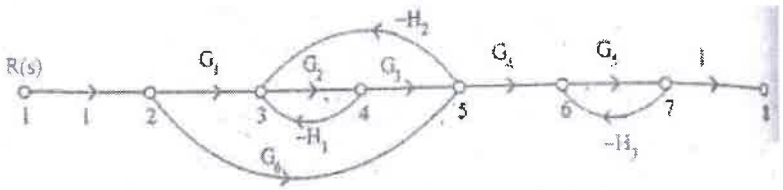
UNIT-I

2		Write the differential equations governing the mechanical rotational system shown in the figure and find transfer function.	CO1	L4	10M



OR

3		Find the overall transfer function of the system whose signal flow graph is shown below.	CO1	L4	10M

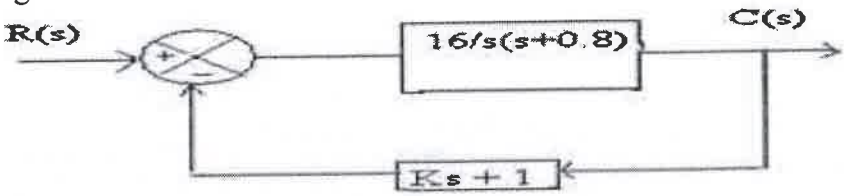


UNIT-II

4		List out the time domain specifications and derive the expressions for Rise time, Peak time and Peak overshoot.	CO2	L3	10M

OR

5		A positional control system with velocity feedback shown in figure. What is the response c(t) to the unit step input. Given that damping ratio=0.5.Also determine rise time, peak time, maximum overshoot and settling time.	CO2	L4	10M



UNIT-III

6		With help of Routh's stability criterion find the stability of the following systems represented by the characteristic equations: (a) $s^4 + 8s^3 + 18s^2 + 16s + 5 = 0$. (b) $s^6 + 2s^5 + 8s^4 + 12s^3 + 20s^2 + 16s + 16 = 0$.	CO3	L3	10M

OR

7		Explain the procedure for constructing root locus.	CO3	L3	10M

UNIT-IV

8		Derive the expressions for resonant peak and resonant frequency and hence establish the correlation between time response and frequency response.	CO4	L4	10M

OR

9		Obtain the transfer function of Lag Compensator, draw pole-zero plot and write the procedure for design of Lag Compensator using Bode plot.	CO4	L3	10M

UNIT-V

10		Determine the Solution for Homogeneous and Non homogeneous State Equations.	CO5	L3	10M

OR

11	a	State the properties of State Transition Matrix.	CO5	L3	5M
	b	Diagonalize the following system matrix $A = \begin{pmatrix} 0 & 6 & -5 \\ 1 & 0 & 2 \\ 3 & 2 & 4 \end{pmatrix}$	CO5	L4	5M

*** END ***

O.P.Code: 18HS0812	R18	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech IV Year I Semester Supplementary Examinations November-2024
MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS
(Civil Engineering)

Time: 3 Hours **Max. Marks: 60**

PART-A
(Answer all the Questions **5 x 2 = 10** Marks)

1	a	Describe the exception to the Law of Demand.	CO1	L1	2M
	b	Describe marginal rate of technical substitution (MRTS).	CO2	L1	2M
	c	Write a short note on market skimming.	CO3	L1	2M
	d	Define methods and sources of finance.	CO4	L1	2M
	e	write a short note on Gross Profit ratio.	CO5	L1	2M

PART-B
(Answer all Five Units 5 x 10 = 50 Marks)

UNIT-I

2	a	What is Managerial Economics? Define the scope of Managerial Economics.	CO1	L1	5M
	b	Define managerial economics. Illustrate how it helps in solving managerial problems and explain the nature.	CO1	L2	5M
		OR			
3		What do you mean by demand forecasting? Evaluate various demand forecasting techniques.	CO1	L5	10M

UNIT-II

4		A high-tech rail can carry a maximum of 36,000 passengers per annum at a fare of Rs.400. The variable cost per passenger is Rs.150 while the fixed costs are 25,00,000 per year.Find the break even point in terms of number of passengers and also in terms of fare collections.	CO2	L6	10M
		OR			
5		Analyze economics of scales and diseconomies of scales.	CO2	L4	10M

UNIT-III

6	a	Explain perfect competition in market structure and appraise its features of perfect competition.	CO3	L5	5M
	b	Distinguish between monopoly and perfect competition.	CO3	L4	5M
		OR			
7	a	Define Oligopoly and state the features.	CO3	L2	5M
	b	What is pricing? Explain different methods of pricing.	CO3	L5	5M

UNIT-IV

8		The cost of a project is Rs.50,000 which has an expected life of 5 years. The cash inflows for next 5 years are Rs.20,000; Rs.,14,000; Rs.16,000; Rs.17000 and Rs.16,000 respectively.Determine the Payback period.	CO4	L6	10M
		OR			
9	a	Elucidate capital budgeting? Its significance.	CO4	L5	5M
	b	Summarize briefly Net Present Value technique of capital budgeting.	CO4	L2	5M

UNIT-V

10	Write short notes on Inventory turnover ratio. A firm sold good worth Rs.5,00,000 and its gross profit is 20% of sales value. The inventory at the beginning of the year was Rs. 16,000 and at the end of the year were 14,000.Compute inventory turnover ratio and the inventory holding period.	CO5	L5	10M
	OR			
11	A firm's sales during the year were Rs.4,00,000 of which 60 percent were on credit Basis. The balance of debtors at the beginning and at the end of the year were Rs.25,000 and Rs.15,000 respectively.Calculate debtor's turnover ratio of the firm. And also find out debt collection period	CO5	L6	10M

***** END *****

O.P.Code:18CE0136	R18	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech IV Year I Semester Supplementary Examinations November-2024
CONCRETE TECHNOLOGY
(Civil Engineering)

Time: 3 Hours **Max. Marks: 60**

PART-A

(Answer all the Questions **5 x 2 = 10** Marks)

1	a	What do you mean by hydration?	CO1	L1	2M
	b	Define curing.	CO3	L1	2M
	c	Differentiate destructive testing and Non-destructive testing.	CO4	L1	2M
	d	Define permeability of concrete.	CO5	L1	2M
	e	What is nominal mix and design mix?	CO6	L1	2M

PART-B

(Answer all Five Units 5 x 10 = 50 Marks)

UNIT-I

2		What are Bouge's compounds? Explain in detail how each one of these compounds influences the strength and setting properties of cement.	CO1	L1	10M

OR

3	a	What do you mean by soundness of aggregate? Explain.	CO2	L1	5M
	b	What is alkali-aggregate reaction? And how will it affect the concrete properties.	CO2	L1	5M

UNIT-II

4		Explain the phenomenon of gain of strength of concrete with age.	CO3	L1	10M

OR

5		What is curing? What are the different methods of curing?	CO3	L1	10M

UNIT-III

6		Explain Schmidt's Rebound Hammer test and the limitations and applications of the same.	CO4	L2	10M

OR

7	a	What are the various factors affecting the compressive strength of concrete?	CO4	L1	5M
	b	Explain in detail about the rebound hammer test (NDT) that is conducted on existing structure to assess its strength with a neat diagram.	CO4	L2	5M

UNIT-IV

8	How the performance of concrete is affected by acid attack. Write briefly.	CO5	L2	10M

OR

9	Which are all the effects of Sulphate attack on concrete? Explain briefly.	CO5	L2	10M

UNIT-V

10	Explain the mix design procedure of concrete as per ACI code Method.	CO6	L2	10M

OR

11	Design a M30 concrete mix using IS method of Mix Design for the following data: i) Maximum size of aggregate - 20mm (Angular). ii) Degree of workability - 0.90 compaction factor. iii) Quality control - good iv) Type of exposure - severe v) Specific Gravity: A. Cement - 3.10 B. Sand - 2.68 C. Coarse aggregate - 2.69 vi) Water absorption: A. Coarse aggregate -1.0% B. Fine aggregate - 2.0% vii) Free surface moisture: A. Coarse aggregate- Nil B. Fine aggregate- 2.0% viii) Sand confirms to zone III grading.	CO6	L3	10M

Assume any other data required suitably

***** END *****