(S) 25/11/2025 (AN) (BR23) (R)

Course Code: **23CE5T07**

BONAM VENKATA CHALAMAYYA ENGINEERING COLLEGE :: ODALAREVU
(AUTONOMOUS)

III B.Tech I Semester Regular/Supplementary Examinations (BR23), November- 2025

DESIGN AND DRAWING OF REINFORCED CONCRETE STRUCTURES (CE)

Time: 3 hours Max. Marks: 70

Question Paper consists of Part-A and Part-B
Answer One question of Part-A
*Answer any **THREE** Questions from Part-B*

Note: Use of IS 456-2000 Code Book and column charts are permitted

PART–A (28X1 = 28M)

		BTL	CO	**Marks**
1.	Design a rectangular beam of section 230X600 mm of effective span 6 m effective cover for reinforcement should be kept as 50 mm; Imposed load on the beam is 40 kN/m, use M20 concrete and Fe415 steel. Sketch the layout of the reinforcement.	BL6	2	(28M)
2.	Design a reinforced concrete slab of size 5m x 4m. All the four edges are discontinuous and corners are held down. The slab has to carry live load of 3 kN/m^2 and floor finish load of 1 kN/m^2. Use M20 concrete and Fe500 steel. Sketch the details showing the design.	BL6	5	(28M)

PART–B (3X14 = 42M)

		BTL	CO	**Marks**
3.a)	What are the striking differences between working stress method and limit state method?	BL2	1	(7M)
3. b)	Explain in detail about concepts of balanced, under- reinforced and over-reinforced sections.	BL2	1	(7M)
4.	A T beam effective flange width of 1200 mm thickness of slab is 100 mm width of web 300 mm effective depth 460 mm is reinforced with 4 bars of 12 mm dia. Calculate the moment of resistance of the section. Use M20 and Fe415 grades of concrete and steel respectively.	BL3	2	(14M)
5.	A simply supported beam (275mm x 575mm) of 6 m span (c/c), is to carry a uniform dead load of 20 kN/m (including beam weight) and a uniform live load of 30 kN/m. The width of the supporting wall is 230 mm. Assume M25 concrete and Fe415 steel. Determine the shear reinforcement for vertical stirrups arrangement.	BL3	3	(14M)
6.	Design the short axially loaded rectangular column to support a load of 1200 kN. One side of the column is restricted to 300 mm. Use M20 grade concrete and Fe415 steel.	BL6	4	(14M)
7.	Design a simply Supported RCC slab of an office floor having clear dimension of 4mx10m and it is supported by 250 mm wall Thickness. The live load on slab 3 kN/m^2 and finishing load is 1 kN/m^2. Use M20 concrete and Fe415 steel: Draw the Reinforcing details.	BL6	5	(14M)

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(5) 27/11/2025 (BR23) Reg

Course code:**23CE5T08**

BONAM VENKATA CHALAMAYYA ENGINEERING COLLEGE ODALAREVU
(AUTONOMOUS)

III B. Tech I-Semester Regular End Examinations (BR23), November - 2025

ENGINEERING HYDROLOGY (CE)

Time: 3 Hours Max. Marks: 70

Question Paper consists of Part-A and Part-B
Answer ALL the questions of Part-A
Part-B consists of 5 questions with either/or choice, answer any one from either/or choice

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PART–A (10X2 = 20M)

Q. No.	Questions	Marks	CO	BL
1.a)	Write a note on scope of Hydrology.	2	CO1	L1
b)	How to estimate the optimum number of rain gauges required in a basin?	2	CO1	L2
c)	Discuss the factors affecting evaporation.	2	CO2	L1
d)	Mention the factors responsible for reducing the evaporation process	2	CO2	L2
e)	Differentiate between total runoff and surface runoff.	2	CO3	L2
f)	Write a brief note on components of runoff.	2	CO3	L1
g)	What is Maximum probable flood and Standard project flood?	2	CO4	L1
h)	Define Design Flood.	2	CO4	L1
i)	Distinguish between specific yield and specific capacity of a well.	2	CO5	L2
j)	What is the importance of permeability and porosity in groundwater analysis?	2	CO5	L1

PART–B (5X10 = 50M)

Q. No	UNIT - I	Marks	CO	BL
2.	Discuss with a neat sketch the Hydrological cycle indicating different components and their significance.	10M	CO1	L2
	OR			
3.a)	The average annual rainfalls of 5 rain gauges in a basin are 89,54,45,41 and 55 cm. If the error in the estimation of basin mean rainfall should not exceed 10%, how many additional gauges should be installed in the basin?	5 M	CO1	L2
3.b)	By means of neat sketch, explain in detail about Float and Tipping type automatic rain gauge.	5 M	CO1	L3
	UNIT - II			
4.	Explain in detail about Evaporation and Evapo- transpiration.	10M	CO2	L2
	OR			
5.a)	The following are the rates of rainfall in cm/hr for successive 30 minutes period of a 4- hour storm: 2.5, 3.8, 7.0, 10.5, 6.3, 4.7, 3.0, and 2.8. Taking the value of Φ-index as 3.5 cm/hr, find the net runoff in mm, the total rainfall and the value of W-index.	7 M	CO2	L3
5.b)	How do you measure evapotranspiration using a Lysimeter?	3 M	CO2	L3

UNIT - III

6.	The six-hour unit hydrograph of a watershed having a drainage area equal to 490 km2 is as follows. For a storm over the watershed having excess rainfall of 10 cm for the first six hours and 20 cm for the second six hours, compute the stream flow hydrograph, assuming a constant base flow of 95 m^3/s.	10 M	CO3	L4

Time (Hr)	0	6	12	18	24	30	36	42	48
Unit Hydrograph (m^3/s)	0	2.8	45.9	105.6	51.8	35.8	24.6	10.5	1.9

OR

7.	Define Hydrograph. What are the components of Hydrograph? Explain any one method of base flow separation.	10 M	CO3	L2

UNIT - IV

8.a)	Discuss in detail the various causes and effects of Floods.	5M	CO4	L2
8.b)	Explain flood routing through reservoirs. Describe the stepwise procedure adopted for flood routing computations by trial and error method.	5M	CO4	L3

OR

9.	In a frequency analysis of rainfall based on the years of data 10 minutes storm, the following values were obtained: Arithmetic mean of the data = 1.85 cm, standard deviation = 0.55 cm. Find using Gumbel's extreme value distribution the recurrence interval of a storm of ten minutes and depth equal to 3 cm.	10 M	CO4	L4

UNIT - V

10.a)	Discuss different types of aquifers.	5 M	CO5	L3
10.b)	A well penetrates into an unconfined aquifer having a saturated depth of 15 m. The discharge is 8000 l/hour at 6m drawdown. Assuming equilibrium flow conditions and a homogenous aquifer, compute the discharge at 9 m drawdown. The radius of influence may be taken as equal in both the cases. Deduce the formula that can be used and calculate the discharge.	5 M	CO5	L4

OR

11.a)	Write a short note on Recuperation test and aquifer parameters.	5 M	CO5	L3
11.b)	A well penetrate into an unconfined aquifer having a saturated depth of 100 m. The discharge is 250 lpm at 12 m drawdown. Assuming equilibrium flow conditions and a homogeneous aquifer, estimate the discharge at 18 m drawdown. The radius of influence may be taken as equal in both the cases. Derive the formula used.	5 M	CO5	L4

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Course code: 23CE5T09

BONAM VENKATA CHALAMAYYA ENGINEERING COLLEGE ODALAREVU
(AUTONOMOUS)

III-B.Tech I-Semester Regular End Examinations (BR23),
GEO TECHNICAL ENGINEERING-I (CE)

Time: 3 Hours | Max. Marks: 70

Question Paper consists of Part-A and Part-B
Answer ALL the questions of Part-A
Part-B consists of 5 questions with either/or choice, answer any one from either/or choice

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PART–A (10X2 = 20M)

		Marks	CO	BL
1.a)	Differentiate between residual and transported soils	2	CO1	L2
b)	What are the corrections used in hydrometer analysis?	2	CO1	L2
c)	What is capillary rise in soil?	2	CO2	L2
d)	What is Darcy's law?	2	CO2	L2
e)	What is quick sand condition in soils?	2	CO3	L2
f)	What do you understand by pressure bulb?	2	CO3	L2
g)	List the factors affecting compaction.	2	CO4	L1
h)	Differentiate between normally consolidated and over consolidated clays	2	CO4	L2
i)	What is Mohr's strength theory for soils?	2	CO5	L2
j)	What is critical void ratio?	2	CO5	L2

PART–B (5X10 = 50M)

	UNIT-I	Marks	CO	BL
2.a)	Explain different types of soil structures which can occur in nature.	5M	CO1	L2
b)	Derive the following expression $\gamma_d = \frac{(1-n_a)G\,\gamma_w}{1+wG}$	5M	CO1	L2
	OR			
3.a)	Describe the Unified soil classification system.	5M	CO1	L2
b)	An earth embankment is compacted at a water content of 18% to a bulk density of 1.92 g/cm^3, if the specific gravity of the soil is 2.70. Find the void ratio and degree of saturation of the compacted embankment	5M	CO1	L2
	UNIT-II			
4.	A sand stratum is 10m thick. The water table is 2.5m below the ground level. The bulk and saturated unit weights of sand are 17kN/m^3 and 19kN/m^3 respectively. The capillary rise is 1m. Draw the effective stress, neutral stress and total stress diagrams for the sand stratum.	10M	CO2	L3
	OR			

5. In falling head permeability test the length and area of cross section of soil specimen are 0.17m and $21.8 \times 10^{-4} m^2$ respectively. Calculate the time required for the head to drop from 0.25 m to 0.10 m. The area of cross section of stand pipe is 2×10^{-4} m^2. The sample has three layers with permeabilities 3×10^{-5} m/sec for first 0.06 m, 4×10^{-5} m/sec for second 0.06 m and 6×10^{-5} m/sec for the third 0.05 m thickness. Assume the flow taking place perpendicular to the bedding plane. 10M CO2 L3

UNIT-III

6.a) Explain the characteristics of flow net. 5M CO3 L2

b) A deposit of fine sand has a void ratio of 0.54 and the specific gravity of solid particles is 2.67. Compute the safe exit gradient, with a factor of safety of 4. 5M CO3 L3

OR

7. a) Describe the construction procedure of Newmark's Influence chart. What is its significance? 5M CO3 L2

b) A concentrated load 10kN acts on the ground surface of a soil mass. Using Boussinesq analysis find the vertical stress at points i) 3m below the surface on the axis of loading and (ii) at radial distance of 2m from axis of loading and at same depth of 3m. 5M CO3 L3

UNIT-IV

8. Explain the difference between the proctor compaction test and modified compaction test. 10M CO4 L3

OR

9. A 3m thick clay layer beneath a building is overlain by a permeable stratum and is underlain by an impervious rock. The coefficient of consolidation of the clay was found to be $0.025 cm^2$/minute. The final expected settlement for the layer is 8cm. i) How much time will it take for 80% of the total settlement to take place? ii) Determine the time required for a settlement of 2.5 cm to occur. 10M CO4 L3

UNIT-V

10. A direct shear test on a soil sample gave the following results? 10M CO5 L3

Trial	1	2
Normal stress at failure (kg/cm^2)	0.8	1.5
Shear stress at failure (kg/cm^2)	0.7	1.1

Determine the (i) shear strength parameters. (ii) Shear strength of the soil at a depth of 6m below the ground level. Given G=2.67, e=0.8

OR

11. Explain briefly about shear distribution in drainage condition. 10M CO5 L3

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(5) (BR23) 02/12/2025

Course code: **23AD5E02**

BONAM VENKATA CHALAMAYYA ENGINEERING COLLEGE ODALAREVU
(AUTONOMOUS)

III B. Tech I-Semester Regular End Examinations (BR23), NOV-2025

OBJECT ORIENTED PROGRAMMING THROUGH JAVA (CE &EEE)

Time: 3 Hours Max. Marks: 70

Question Paper consists of Part-A and Part-B
Answer ALL the questions of Part-A
Part-B consists of 5 questions with either/or choice, answer any one from either/or choice

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PART–A (10X2 = 20M)

Q.No.	Questions	Marks	CO	BL
1.a)	List the differences between primitive and reference data types in Java.	2	CO1	L1
b)	Write Java programming structure.	2	CO1	L2
c)	Differentiate Class and Object.	2	CO2	L3
d)	Illustrate garbage collection with an example.	2	CO2	L1
e)	Define Inheritance. Give an example.	2	CO3	L2
f)	Illustrate the purpose of a *try-catch* block with an example.	2	CO3	L2
g)	What are the two ways to create a thread in Java?	2	CO4	L3
h)	Differentiate between byte stream and character stream.	2	CO4	L3
i)	What is the function of the Button class in AWT?	2	CO5	L2
j)	Explain about the JAVA FX.	2	CO5	L2

PART–B (5X10 = 50M)

Q. No	Questions	Marks	CO	BL
2.	Discuss JAVA data types and their memory size in detail.	10M	CO1	L2
	OR			
3(a)	Write a JAVA program to print the first 'n' Fibonacci numbers, where n is supplied by the user.	6M	CO1	L2
(b)	Explain Arithmetic and Logical Operators with examples.	4M	CO1	L2
4.	Define Class and Object with syntax and example program.	10M	CO2	L3
	OR			
5(a)	Compare the working of constructor overloading with method overloading.	6M	CO2	L3
(b)	Explain method overloading with examples.	4M	CO2	L2
6(a)	Explain the flow control in exception handling.	4M	CO3	L2
(b)	State the advantages of using the packages.	6M	CO3	L1
	OR			
7.	Explain all types of Inheritance in JAVA providing suitable diagrams and examples.	10M	CO3	L2

8.	Discuss thread synchronization mechanisms in Java with examples.	10M	CO4	L3
	OR			
9 (a)	Explain how deadlocks can occur in Java threads.	6M	CO4	L2
b)	Write a Java program to read and display contents of a text file.	4M	CO4	L2
10	What is Layout manager? Explain in detail about various layout managers supported by JAVA.	10M	CO5	L3
	OR			
11.	Write a program to demonstrate List Box and Choice Box in JavaFX.	10M	CO5	L2

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Course code: **23CE5D03**

BONAM VENKATA CHALAMAYYA ENGINEERING COLLEGE ODALAREVU
(AUTONOMOUS)

III B. Tech I-Semester Regular End Examinations (BR23), Nov-2025

CONSTRUCTION TECHNOLOGY AND MANAGEMENT (CE)

Time: 3 Hours Max. Marks: 70

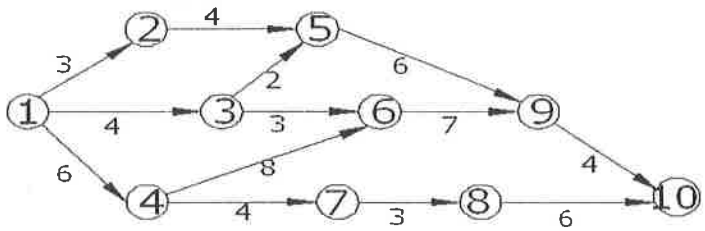
Question Paper consists of Part-A and Part-B
Answer ALL the questions of Part-A
Part-B consists of 5 questions with either/or choice, answer any one from either/or choice

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PART–A (10X2 = 20M)

Q.No.	Questions	Marks	CO	BL
1.a)	What are the limitations of bar charts?	2M	CO1	L2
b)	Write any two qualities of project manager.	2M	CO1	L2
c)	What is earliest event time and latest start time?	2M	CO2	L2
d)	What is crashing in project management?	2M	CO2	L2
e)	Name any two earthwork equipments used for construction.	2M	CO3	L2
f)	What is down time cost?	2M	CO3	L2
g)	Name the equipment's used for volume batching.	2M	CO4	L2
h)	Discuss about the finishing of concrete.	2M	CO4	L2
i)	What is the reason to follow safety in construction?	2M	CO5	L2
j)	List two factors which affect the quality of work in industry.	2M	CO5	L2

PART–B (5X10 = 50M)

Q. No		Marks	CO	BL
2. a)	Explain the role of project manager in construction management.	5M	CO1	L2
b)	What are the principles of planning?	5M	CO1	L2
	OR			
3.	Determine the Critical path for the network given below. 	10M	CO1	L3
4. a)	What do you mean by PERT? What are the time estimates used in PERT and explain their significance.	5M	CO2	L2
b)	How do you evaluate the probability of completion time for a project?	5M	CO2	L2
	OR			
5.	Explain the process of optimisation of cost and time using networks.	10 M	CO2	L2
6.	List out the various construction equipment and explain how you select the same for different works.	10M	CO3	L2
	OR			
7.	Describe various types of excavation and hauling equipment.	10M	CO3	L2

8.	Write a note on consolidation and finishing of concrete.	10M	CO4	L2
	OR			
9.	Explain in brief various methods of mixing of concrete along with their types and applications.	10M	CO4	L2
10.	Explain the different approaches for the improvement of safety in construction industries.	10M	CO5	L2
	OR			
11.	Discuss various quality assurance techniques adopted in the construction industry.	10M	CO5	L2

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BONAM VENKATA CHALAMAYYA ENGINEERING COLLEGE :: ODALAREVU
(AUTONOMOUS)

III-B.Tech I-Semester Regular End Examinations (BR23), Nov-2025

POWER ELECTRONICS (EEE)

Time: 3 hours Max. Marks: 70

Question Paper consists of Part-A and Part-B
Answer ALL the questions of Part-A
Part-B consists of 5questions with either/or choice, answer any one fromeither/or choice

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PART–A (10X2 = 20M)

		BTL	CO	Marks
1.a)	Define holding and latching currents of SCR.	1	1	(2M)
b)	What is the importance of freewheeling diode?	1	1	(2M)
c)	Explain about Buck- Boost Converter operating modes with respect to duty ratio.	1	2	(2M)
d)	Draw the step-up DC-DC Converter.	1	2	(2M)
e)	What is the range of firing angle to control the output voltage of ACVR.	1	3	(2M)
f)	Write the advantages of DC- DC Converters.	1	3	(2M)
g)	Draw the 1-ph to 1-ph bridge type cyclo-converter.	1	4	(2M)
h)	Write the disadvantages of DC- AC Converters.	1	4	(2M)
i)	Write the differences between 180^0 and 120^0 mode of operation of 3-ph inverters.	1	5	(2M)
j)	Write the applications of AC Voltage Controllers.	1	5	(2M)

PART–B(5X10=50M)

UNIT-I

2.(a)	Explain the static characteristics of SCR with neat diagram.	2	1	(5M)
2.(b)	Compare the MSFET&IGBTs.	2	1	(5M)
	(OR)			
3.	Describe the static output and transfer characteristics of an IGBT.	4	1	(10M)

UNIT-II

4.	Describe clearly the effect of source inductance in single-phase full controlled bridge rectifier with continuous conduction with neat waveforms?	3	2	(10M)
	(OR)			
5.	Describe the working of a single-phase full-converter with R load with neat wave forms.	2	2	(10M)

UNIT-III

6.	Evaluate the operation of 3-phase full wave controlled converter feeding R load and draw the waveforms of output voltage and derive equations for average output voltage and current .	2	3	(10M)
	(OR)			

7.(a)	Explain the principle of operation of three-phase half-wave converters.	3	3	(5M)
7.(b)	What is the relationship between output and input frequencies in step-down vs. step-up cyclo-converters?	2	3	(5M)

UNIT-IV

8.(a)	Explain the operation of boost converter and derive the expression for average output voltage?	2	4	(5M)
8.(b)	A boost converter has an input voltage of 10 V and the required output voltage is 25 V at R = 20Ω and the peak to peak output ripple voltage is 0.2 V. If it is operating at 20 kHz and peak to peak ripple current of inductor is 0.8 A, determine (i) duty cycle ratio (ii) filter inductance and (iii)capacitance.	3	4	(5M)

(OR)

9.	With help of neat circuit diagram and associated waveforms discuss the operation of a Buck converter in continuous conduction mode and discontinuous conduction mode.	3	4	(10M)

UNIT-V

10.(a)	Show the working of a 1-phase full bridge Inverter with R load and draw the relevant waveforms.	1	5	(5M)
10.(b)	With neat waveforms explain three-phase 120^0 mode voltage source inverter feeding R-load?	1	5	(5M)

(OR)

11.	A single-phase PWM inverter is fed from a 220 V dc supply and it is connected to a RL load with R=10 ohms and L=10 mH. Determine the total harmonic distortion in the load current .Assume width of each pulse is $\pi/2$ and the output frequency is 50 Hz.	3	5	(10M)

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Course code: 23EE5T09

BONAM VENKATA CHALAMAYYA ENGINEERING COLLEGE::ODALAREVU (Autonomous)

III B.Tech. I Semester Regular End Examination (BR23)

Digital Circuits (EEE)

Times: 3 hours **Max. Marks: 70**

PART - A

Answer **ALL** the following questions.

a.	Define Combinational logic circuit. Give an example.	2M	CO1	BTL1
b.	Draw the three variable K-map	2M	CO1	BTL2
c.	Draw 4x1 multiplexer and write its truth table.	2M	CO2	BTL2
d.	Define Decoder and Encoder.	2M	CO2	BTL1
e.	Give any two differences between Latch and flipflop.	2M	CO3	BTL2
f.	Explain race around condition?	2M	CO3	BTL2
g.	Define Mealy and Moore machine.	2M	CO4	BTL2
h.	Define state diagram and state reduction.	2M	CO4	BTL1
i.	Define fan-out and fan out?	2M	CO5	BTL1
j.	Define transmission gate.	2M	CO5	BTL1

PART - B

1.a)	What are the limitations of K-maps? K-map method of minimization procedure.	5M	CO1	BTL2
1.b)	Design a 4- bit magnitude comparator	5M	CO1	BTL3
	OR			
1.c)	Why is a four bit adder circuit implemented with full adders? Explain the designing procedure.	10M	CO1	BTL3
2.a)	Design 4x16 decoder using 2x4 decoders.	5M	CO2	BTL2
2.b)	Implement the following logic function using 8×1 multiplexer $F(A,B,C,D)= \sum (1, 3,4,11, 12, 13, 14, 15)$	5M	CO2	BTL3
	OR			
2.c)	Design 3-bit binary number generate output square of the number using PROMs.	10M	CO2	BTL3
3.a)	What is the drawback of JK flip flop? How is it recovered. Explain.	5M	CO3	BTL2
3.b)	Differentiate combinational and sequential logic circuits.	5M	CO3	BTL2
	OR			
3.c)	Design a 3-bit ripple counter using J-K flip-flops and write the count sequence.	10M	CO3	BTL3
4.a)	Explain the capabilities and design of finite state machines	10M	CO4	BTL2
	OR			
4.b)	Design a 5 state sequential machine whose sequential states are; 000, 001, 010, 110, 111, 000..... Assume initial state is 000.	10M	CO4	BTL3
5.a)	Design of CMOS logic families.	10M	CO5	BTL3
	OR			
5.c)	Draw and explain 2-input ECL NAND / NOR gate.	10M	CO5	BTL3

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Course code: 23EE5T10

BONAM VENKATA CHALAMAYYA ENGINEERING COLLEGE:: ODALAREVU
(AUTONOMOUS)
III B.Tech I Semester Regular End Examinations (BR23), NOV-2025
Power Systems-II (EEE)

Times: 3 hours **Max. Marks: 70**

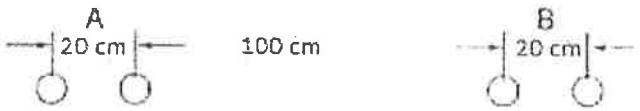
PART - A

Answer **ALL** the following questions.

1a.)	Define skin effect.	2M	CO1	BTL1
b.	What are the types of conductors used in transmission system?	2M	CO1	BTL1
c.	Define surge impedance loading.	2M	CO2	BTL1
d.	Define transmission efficiency.	2M	CO2	BTL1
e.	Write about refracted wave.	2M	CO3	BTL1
f.	What are the types of system transients?	2M	CO3	BTL1
g.	List the factors affecting corona loss.	2M	CO4	BTL1
h.	Write critical disruptive voltage formula.	2M	CO4	BTL1
i.	Define sag.	2M	CO5	BTL1
j.	Write the types of insulators used in transmission lines.	2M	CO5	BTL1

PART - B

2.a)	Derive the expression for inductance of a single-phase line.	5M	CO1	BTL2
2.b)	Below figure shows an arrangement of conductors for a 1-ϕ supply, the current being equally divided between conductors a and a' and between conductors b and b'. If the diameter of each conductor is 8mm. Determine the inductance per km of the line.	5M	CO1	BTL3



OR

3.a)	Determine the expression for Inductance of three phase transmission line: Unsymmetrically spaced line, Symmetrically spaced line	10M	CO1	BTL3
4.a)	Derive the ABCD parameters of a nominal-T represented medium transmission lines	5M	CO2	BTL2
4.b)	A short three-phase transmission line of parameters R=0.4Ω and X=0.4Ω is delivering 2000KVA to a load at a power factor of 0.8 lagging at the receiving end of the line. If the load voltage is 3000V, determine the voltage regulation and efficiency of the line.	5M	CO2	BTL3

OR

5.a)	Determine the rigorous solution for long transmission lines.	10M	CO2	BTL3
6.a)	Calculate reflection and refraction coefficients at a T-junction.	10M	CO3	BTL3

OR

7.a)	Explain the Phenomena of wave reflection and wave refraction. Determine the expressions for reflection and refraction coefficients.	10M	CO3	BTL3

8.a)	Calculate the critical disruptive voltage and visual critical voltages for local and general corona on a 3-Φ overhead transmission line, consisting of three stranded copper conductors spaced 2.5m apart at the corners of an equilateral triangle. Air temperature and pressure are 21°C and 73.6 cm Hg respectively. The conductor diameter, irregularity factor and surface factors are 10.4 mm, 0.85 and 0.7,0.8 respectively.	10M	CO4	BTL3

OR

9.a)	Explain the different methods of reducing Corona Losses	5M	CO4	BTL2
9.b)	Derive expression for critical disruptive voltage.	5M	CO4	BTL2
10.a)	Determine an expression for sag in overhead lines when supports are equal & unequal levels.	10M	CO5	BTL3

OR

11.a)	Explain about string efficiency and its improvement methods.	5M	CO5	BTL2
11.b)	A transmission line conductor having diameter of 19.5mm weighs 0.85kg/m. The span is 275m, wind pressure is 39kg/m^2 of a projected area with ice coating of 13mm. The ultimate strength of the conductor is 8000kg. Calculate the maximum sag if the factor of safety is 2 and ice weighs 910 kg/m^3.	5M	CO5	BTL3

BONAM VENKATA CHALAMAYYA ENGINEERING COLLEGE::ODALAREVU
(AUTONOMOUS)

III-B.Tech I-Semester Regular End Examinations (BR23), Nov-2025

RENEWABLE AND DISTRIBUTED ENERGY TECHNOLOGIES (EEE)

Time: 3 hours Max. Marks: 70

Question Paper consists of Part-A and Part-B
*Answer **ALL** the question in **Part-A***
Part-B consists of 5 questions with either/or choice, answer any one from either/or choice

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PART–A (10X2 = 20M)

		BTL	CO	Marks
1. a)	How does Geometry affect the amount of solar radiation received by a surface?	1	1	(2M)
b)	What is Total Radiation?	2	1	(2M)
c)	What are the basic principles of PV effectss?	2	2	(2M)
d)	Draw and label the I-V characteristic curve for a basic solar cell.	1	2	(2M)
e)	What are the sources of wind energy?	2	3	(2M)
f)	Define the Betz Limit and explain its physical significance.	2	3	(2M)
g)	What are the Tidal Energy Conversion Systems?	2	4	(2M)
h)	List two advantages of Tidal-based power generation over conventional hydroelectric power generation?	1	4	(2M)
i)	State the main function of Power Electronics Interfaces in a grid-connected hybrid system	1	5	(2M)
j)	What is a Hybrid Renewable System?	1	5	(2M)

PART–B (5X10 = 50M)

		BTL	CO	Marks
	UNIT-I			
2.	Derive an expression for total radiation on an inclined surface.	3	1	(10M)
	(OR)			
3.	Explain the solar radiation, beam, diffuse radiation, zenith angle, solar azimuth angle.	1	1	(10M)
	UNIT-II			
4.	Briefly explain the concept of Maximum Power Point Tracking (MPPT). And also describe the operating principle of the P&O technique for MPPT.	2	2	(10M)
	(OR)			
5.	Explain briefly about the Electrical Characteristics (I-V&P-V) of silicon PV cells?	2	2	(10M)
	UNIT-III			
6.	Explain about the wind energy conversion system with neat diagram and its components.	2	3	(10M)
	(OR)			
7.	Derive maximum power equation for wind energy (Betz Co-Efficient)?	2	3	(10M)

8.	Explain the working principle of a Tidal Power Plant. Give the major advantages and disadvantages of tidal power generation as a renewable energy source.	2	4	(10M)
	(OR)			
9.	Describe the Plant Layouts for Small-Mini-Medium hydel power projects.	3	4	(10M)
	UNIT-V			
10.	Explain briefly control of frequency and voltage of distributed generation in stand-alone and grid connected mode?	2	5	(10M)
	(OR)			
11.	Elaborate on the fundamental requirements for the hybrid use of different renewable and distributed energy sources, and discuss the primary challenges faced during the interconnection of DG units with the utility grid.	3	5	(10M)

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Course Code: **23ME5T06**

BONAM VENKATA CHALAMAYYA ENGINEERING COLLEGE::ODALAREVU
(AUTONOMOUS)

III B.Tech I Semester Regular End Examinations (BR23), November 2025

MACHINE TOOLS & METROLOGY (ME)

Time: 3 hours Max. Marks: 70

Question Paper consists of Part-A and Part-B
Answer ALL the questions of Part-A
Part-B consists of 5 questions with either/or choice, answer any one from either/or choice

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PART–A (10X2 = 20M)

		BTL	CO	Marks
1.a)	What is the condition for chip formation in metal cutting?	BTL1	1	(2M)
b)	What is tool signature?	BTL1	1	(2M)
c)	What are the specifications of lathe machine?	BTL1	2	(2M)
d)	Explain the thread cutting operation.	BTL1	2	(2M)
e)	Define counter sinking and spot facing with neat diagram.	BTL1	3	(2M)
f)	List the various types of Milling Cutters?	BTL1	3	(2M)
g)	How do you classify the grinding Machine?	BTL1	4	(2M)
h)	Explain Unilateral and Bi-Lateral Tolerance system?	BTL1	4	(2M)
i)	Explain the terms(i)Surface Roughness and (ii) sampling Length	BTL1	5	(2M)
j)	List out the uses of Tool makers Microscope?	BTL1	5	(2M)

PART–B (5X10 = 50M)

		BTL	CO	Marks
	UNIT-I			
2.(a)	Draw the geometry of single point cutting tool and indicate various angles on it. Also explain the influence of rake angle and clearance angle on the machining performance.	BTL2	**1**	(5M)
2.(b)	Explain the Merchants circle diagram with neat sketch.	BTL2	**1**	(5M)
	(OR)			
2.(c)	Explain the mechanism of chip formation and various types of chips with neat sketches	BTL2	1	(10M)
	UNIT-II			
3.(a)	Explain the working principle of lathe machine with neat sketch. Also discuss the function of major parts of the lathe machine	BTL2	2	(10M)
	(OR)			
3.(c)	List out the various operations can be performed on lathe machine and explain them in detail with neat sketches.	BTL2	2	(5M)
3.(d)	What are the different types of lathe machines? Explain them briefly.	BTL2	2	(5M)
	UNIT-III			
4.(a)	Explain various types of drilling machines with neat sketches.	BTL2	3	(10M)
	(OR)			
4.(c)	Explain the working of Jig Boring Machine with a neat sketch?	BTL2	3	(10M)

	UNIT-IV			
5.(a)	Explain the working of cylindrical grinder (Centre type-Plain) with a neat sketch?	BTL2	4	(5M)
5.(b)	Discuss the lapping, honing and broaching operations.	BTL2	4	(5M)
	(OR)			
5.(c)	Describe various types of fits in Limit system?	BTL2	4	(5M)
5.(d)	Explain the following Terms with a neat sketch (i)Lower deviation (ii)Tolerance and (iii)Fundamental deviation	BTL2	4	(5M)
	UNIT-V			
6.(a)	Explain Evaluation of Surface roughness using CLA and RMS Methods?	BTL2	5	(5M)
6.(b)	Explain with a neat sketch the working of profile graph in measurement of surface roughness?	BTL2	5	(5M)
	(OR)			
6.(c)	Explain with a neat sketch the working of Optical Projector with a neat sketch?	BTL2	5	(5M)
6.(d)	Describe the working of optical flat in measurement of flatness?	BTL2	5	(5M)

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Course Code: 23ME5T07

BONAM VENKATA CHALAMAYYA ENGINEERING COLLEGE::ODALAREVU
(AUTONOMOUS)

III B.Tech I Semester Regular End Examinations (BR23), November 2025

THERMAL ENGINEERING (ME)

Time: 3 hours Max. Marks: 70

Question Paper consists of Part-A and Part-B
Answer ALL the questions of Part-A
Part-B consists of 5 questions with either/or choice, answer any one from either/or choice

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PART–A (10X2 = 20M)

		BTL	CO	Marks
1.a)	What is the difference between Otto and Diesel cycles.	BTL2	1	(2M)
b)	Define mean effective pressure.	BTL2	1	(2M)
c)	What is the function of a carburetor in a petrol engine.	BTL2	2	(2M)
d)	Define volumetric efficiency of an engine.	BTL2	2	(2M)
e)	What is critical pressure ratio in a nozzle.	BTL2	3	(2M)
f)	Differentiate between impulse and reaction turbines.	BTL2	3	(2M)
g)	Why is inter cooling used in multi-stage compressors.	BTL2	4	(2M)
h)	Mention any two methods to improve gas turbine efficiency.	BTL2	4	(2M)
i)	Define solar constant and beam radiation.	BTL2	5	(2M)
j)	Mention any two differences between turbojet and turbofan engines.	BTL2	5	(2M)

PART–B (5X10 = 50M)

	UNIT-I			
2.	Derive the expression for the air standard efficiency of an Otto cycle and discuss the effect of compression ratio on its efficiency.	BTL2	1	(10M)
	(OR)			
3.(a)	An air-standard **Otto cycle** has a compression ratio of 8. The air at the beginning of compression is at 1 bar and 27°C. The heat supplied per kg of air is 1800 kJ. Find: (i) The maximum pressure and temperature of the cycle (ii) The thermal efficiency of the cycle Take $\gamma = 1.4$ and $Cp = 1.005$ kJ/kg·K.	BTL2	1	(5M)
3.(b)	An air-standard Diesel cycle has a compression ratio of 16 and cut-off ratio of 2. Calculate: (i) Air standard efficiency (ii) Mean effective pressure if the maximum pressure is 60 bar and minimum pressure is 1 bar. Take $\gamma = 1.4$ and $R = 0.287$ kJ/kg·K.	BTL3	1	(5M)
	UNIT-II			
4.	Describe the working principles of SI and CI engines with suitable diagrams and list their differences.	BTL2	2	(10M)

	(OR)			
5.	A four-cylinder, four-stroke petrol engine of 100 mm bore and 120 mm stroke runs at 2000 rpm. During a Morse test, brake power readings are as follows: All cylinders working = 75 kW Cylinder 1 cut-off = 60 kW Cylinder 2 cut-off = 61 kW Cylinder 3 cut-off = 60.5 kW Cylinder 4 cut-off = 61 kW Find: (i) Indicated power of each cylinder (ii) Mechanical efficiency of the engine (iii) Frictional power.	BTL3	2	(10M)
	UNIT-III			
6.	Derive an expression for the condition of the maximum efficiency and equation for maximum efficiency for simple impulse turbine.	BTL3	3	(10M)
	(OR)			
7.	A two-stage air compressor with perfect inter cooling compresses air from 1 bar and 27 °C to 16 bar. The clearance volume for each stage is 5% of the stroke volume. The index of compression and expansion is 1.3. The compressor runs at 400 rpm, with a low-pressure cylinder bore of 30 cm and stroke equal to 1.2 × bore. Find: (i) The indicated power (ii) The volumetric efficiency of each stage and overall (iii) The mass flow rate of air handled.	BTL3	3	(10M)
	UNIT-IV			
8.(a)	What are the methods used to improve the efficiency of gas turbines? Explain with suitable diagrams.	BTL3	4	(5M)
8.(b)	Explain the working of an open cycle gas turbine with a neat diagram.	BTL2	4	(5M)
	(OR)			
9.(a)	Classify the Rotary compressors and give the salient features.	BTL3	4	(5M)
9.(b)	With neat sketch explain the working of Centrifugal compressor.	BTL2	4	(5M)
	UNIT-V			
10.(a)	Describe the working of liquid propellant rocket engines with neat sketches.	BTL2	5	(5M)
10.(b)	A turbojet engine propels an aircraft at a speed of 250 m/s. The air enters the compressor at 1 bar and 300 K and leaves at 4 bar. The maximum cycle temperature is 1000 K. The mass flow rate of air is 50 kg/s. Find: (i) The thrust developed (ii) The specific fuel consumption (Assume Cp = 1.005 kJ/kg·K, $\gamma = 1.4$).	BTL2	5	(5M)
	(OR)			
11.	Explain with neat sketches the working principle of a flat-plate solar collector along with its applications and derive the collector efficiency equation.	BTL2	5	(10M)

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Course Code: 23ME5T08

BONAM VENKATA CHALAMAYYA ENGINEERING COLLEGE::ODALAREVU
(AUTONOMOUS)

III B.Tech I Semester Regular End Examinations (BR23), NOV 2025

DESIGN OF MACHINE ELEMENTS (ME)

Time: 3 hours Max. Marks: 70

Question Paper consists of Part-A and Part-B
Answer ALL the questions of Part-A
Part-B consists of 5 questions with either/or choice, answer any one from either/or choice

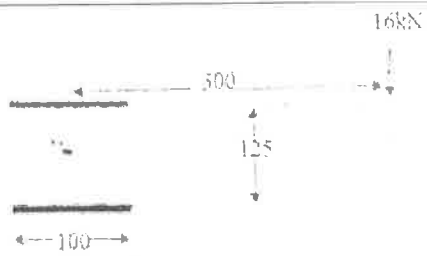
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PART–A (10X2 = 20M)

		BTL	CO	Marks
1.a)	Define factor of safety?	BTL1	1	(2M)
b)	What are different modes of failure?	BTL1	1	(2M)
c)	Why is preload important in bolted joints?	BTL2	2	(2M)
d)	What are four basic elements of weld symbols?	BTL1	2	(2M)
e)	What is a transmission shaft?	BTL1	3	(2M)
f)	Why is a key used in flange couplings?	BTL2	3	(2M)
g)	What is Wahl's factor?	BTL1	4	(2M)
h)	Why are disc brakes preferred in automobiles?	BTL2	4	(2M)
i)	Distinguish between sliding contact and rolling contact bearings?	BTL2	5	(2M)
j)	State any two advantages of hydrodynamic bearing over hydrostatic bearing?	BTL1	5	(2M)

PART–B (5X10 = 50M)

		BTL	CO	Marks
	UNIT-I			
2.	Enumerate the most commonly used engineering materials and state five important mechanical properties. What are the factors to be considered for the selection of materials for the design of machine elements?	BTL3	1	(10M)
	(OR)			
3.	A mild steel shaft of 50 mm diameter is subjected to a bending moment of 2000 Nm and a torque T. If the yield point of the steel in tension is 200 MPa, find the maximum value of this torque without causing yielding of the shaft according to a) The maximum principal stress b) The maximum shear stress and c) The maximum distortion strain energy theory of yielding.	BTL3	1	(10M)
	UNIT-II			
4.	A 125 x 95 x10 mm angle is welded to a frame by two 10 mm fillet welds, as shown in fig. A load of 16kN is applied normal to the gravity axis at a distance of 300 mm from the centre of gravity of welds. Find maximum shear stress in the welds, assuming each weld to be 100 mm long parallel to the axis of the angle. All dimensions are in mm.	BTL4	2	(10M)

				
	(OR)			
5.	What are the advantages and disadvantages of welded joints over bolted joints? Write the different types of welded joints.	BTL4	2	(10M)
	UNIT-III			
6.	A steel solid shaft transmitting 15 kW at 200 rpm is supported on two bearings 750 mm apart and has two gears keyed to it. The pinion having 30 teeth of 5 mm module is located 100 mm to the left of the right hand bearing and delivers power horizontally to the right. The gear having 100 teeth of 5 mm module is located 150 mm to the right of the left hand bearing and receiver power in a vertical direction from below. Using an allowable stress of 55 MN/m^2 in shear, determine the diameter of the shaft.	BTL3	3	(10M)
	(OR)			
7.	Design a cast iron flange coupling for a mild steel shaft transmitting 90 kW at 250 rpm. The allowable shear stress in the shaft is 40 MPa and the angle of twist is not to exceed 1° in a length of 20 m. The allowable shear stress in the coupling bolts is 30 MPa.	BTL3	3	(10M)
	UNIT-IV			
8.	Classify clutches based on their construction and operation. Explain each category with a suitable practical example.	BTL3	4	(10M)
	(OR)			
9.	Design a helical spring for a spring loaded safety valve for the following conditions Operating pressure $1N/mm^2$ Maximum pressure when the valve blows off freely=$1.075N/mm^2$ Maximum lift of the valve when the pressure is $1.075N/mm^2$, Diameter of the valve seat =100mm, Maximum shear stress =400Mpa, Modulus of rigidity =$86KN/mm^2$, Spring index=5.5.	BTL3	4	(10M)
	UNIT-V			
10.	The load on the journal bearing is 150 kN due to turbine shaft of 300 mm diameter running at 1800 rpm. Determine the following: (i) Length of the bearing if the allowable bearing pressure is 1.6 N/mm^2 , and (ii) Amount of heat to be removed by the lubricant per minute if the bearing temperature is 60°C and viscosity of the oil at 60°C is 0.02 kg/m-s and the bearing clearance is 0.25 mm.	BTL3	5	(10M)
	(OR)			
11.	A bearing for an axial flow compressor is to carry a radial load of 2500 N and thrust of 1500 N. The service imposes light shock and the bearing will be in use for 40 hours/week in 5 years. The speed of the shaft is 1000 rpm. Select suitable ball bearing for the purpose and give the required tolerances on the shaft and the housing. Diameter of the shaft is 50 mm.	BTL4	5	(10M)

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BONAM VENKATA CHALAMAYYA ENGINEERING COLLEGE: ODALAREVU
(AUTONOMOUS)
III-B.TECH I-SEMESTER REGULAR EXAMINATIONS (BR23), November-2025
RENEWABLE ENERGY SOURCES
(MEC, CSE,CSE(AI&DS),AI&ML,CSE(AI&ML))

Time: 3 hours **Max.Marks:70**

Question Paper consist of two parts viz., Part-A& Part-B
Answer all Questions in Part-A. Each question carries2 Marks.
Answer any five Questions one Question from Each Unit .Each question carries10Marks

PART-A(10×2=10M)

Q.NO		BL	CO	M
1.a)	Distinguish between Renewable and Non renewable resources.	BL1	CO1	[2M]
b)	Need to have solar energy storage system	BL2	CO1	[2M]
c)	Various components of wind energy conversion systems	BL2	CO2	[2M]
d)	Basic principle of wind energy conversion	BL2	CO2	[2M]
e)	List out various types of Bio waste	BL2	CO3	[2M]
f)	Factors in site selection of a Hydroelectric Power plant	BL2	CO3	[2M]
g)	Basic principle of OTEC	BL1	CO4	[2M]
h)	List out various components of Tidal power plant.	BL1	CO4	[2M]
i)	List out various types of FUEL Cells.	BL1	CO5	[2M]
j)	Methods of Hydrogen production	BL2	CO5	[2M]

PART-B(5×10=50M)

	UNIT-I			
2.	Enumerate the principle and working of Photovoltaic cell (PV cell) with neat diagrams.	BL4	CO1	[10M]
	(OR)			
3	Explain the following in brief with a neat sketch (A)Flat plate collector (B) Concentrating collector.	BL2	CO1	[10M]
	UNIT-II			
4.	Enumerate the process parameters to be considered while selecting a site for wind energy conversion.	BL2	CO2	[10M]
	(OR)			
5.	Explain the working of (WECS) wind energy conversion systems and their application in brief	BL2	CO2	[10M]
	UNIT-III			
6.	Explain in detail about the Biomass Conversion technologies.	BL2	CO3	[10M]
	(OR)			
7.	Explain with a neat sketch the working principle of a hydel power plant	BL2	CO3	[10M]

	UNIT-IV			
8.	Explain the working of closed cycle ocean Thermal energy conversion in India.	BL2	CO4	[10M]
	(OR)			
9.	Explain the principle and working of, any one wave energy conversion device	BL2	CO4	[10M]
	UNIT-V			
10.	Explain the principle and working of fuel cell with a neat sketch and its present applications	BL2	CO5	[10M]
	(OR)			
11	Enumerate various types of MHD Magneto Hydro dynamic power generation.	BL2	CO5	[10M]

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Course Code: 23ME5D04

BONAM VENKATA CHALAMAYYA ENGINEERING COLLEGE::ODALAREVU
(AUTONOMOUS)

III B.Tech I Semester Regular End Examinations (BR23), NOV 2025

NON- DESTRUCTIVE EVALUATION (ME)

Time: 3 hours Max. Marks: 70

Question Paper consists of Part-A and Part-B
Answer ALL the questions of Part-A
Part-B consists of 5 questions with either/or choice, answer any one from either/or choice

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PART–A (10X2 = 20M)

		BTL	CO	Marks
1.a)	List any two NDE applications in the aerospace industry.	BTL1	1	(2M)
b)	What is the use of radiography test?	BTL2	1	(2M)
c)	What are A-scan and B-scan in ultrasonic testing?	BTL1	2	(2M)
d)	Define mode conversion in wave propagation.	BTL1	2	(2M)
e)	List the steps involved in liquid penetrant testing.	BTL1	3	(2M)
f)	What are the main components of an eddy current test system?	BTL1	3	(2M)
g)	What is demagnetization? Why is it needed?	BTL1	4	(2M)
h)	Mention any two types of magnetic particle test equipment.	BTL1	4	(2M)
i)	Differentiate between active and passive thermography.	BTL2	5	(2M)
j)	What are heat-sensitive paints? Mention any one use.	BTL1	5	(2M)

PART–B (5X10 = 50M)

		BTL	CO	Marks
	UNIT-I			
2.(a)	Describe the film processing, interpretation and evaluation of test results in Radiography testing method.	BTL3	1	(10M)
	(OR)			
3.(a)	What is the role of NDE in Aircraft and Aerospace Industries?	BTL2	1	(10M)
	UNIT-II			
4.(a)	What are the different types of ultrasonic transducers? Explain them with neat sketch.	BTL2	2	(10M)

5.(a)	Discuss the ultrasonic testing equipment setup and explain the testing procedure for detecting internal flaws.	BTL4	2	(10M)
	UNIT-III			
6.(a)	What are the basic processing steps of a liquid penetrant inspection?	BTL2	3	(10M)
	(OR)			
7.(a)	What is the Skin effect phenomenon and how can find the depth of penetration in ECT method?	BTL2	3	(10M)
	UNIT-IV			
8.(a)	Explain magnetic particle test with a flow chart.	BTL3	4	(10M)
	(OR)			
9.(a)	Explain the interpretation of magnetic particle indications and discuss common defects identified through MPT.	BTL3	4	(10M)
	UNIT-V			
10.(a)	Discuss heat-sensitive coatings (liquid crystals, phosphors, paints) and explain their application methods in thermal inspection.	BTL4	5	(10M)
	(OR)			
11.(a)	What is the difference between contact and non-contact thermal inspection methods?	BTL2	5	(10M)

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Course Code: **23EC5T06**

BONAMVENKATACHALAMAYYAENGINEERINGCOLLEGE::ODALAREVU
(AUTONOMOUS)
III B.Tech I Semester Regular End Examinations (BR23), NOV-2025
Analog and Digital IC Applications (ECE)

Time: 3hours Max. Marks: 70

Question Paper consists of Part-A and Part-B
Answer ALL the questions of Part-A
Part-Bconsistsof5 questions with either/or choice, answer any one from either/or choice

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PART–A (10X2 = 20M)

		BTL	CO	Marks
1.a)	Define slew rate and PSRR	BL2	1	(2M)
b)	Define Drift and give its ideal and practical values.	BL1	1	(2M)
c)	Draw the pin diagram of 555 timer.	BL2	2	(2M)
d)	List the applications of PLL.	BL1	2	(2M)
e)	List the ADC Specifications.	BL2	3	(2M)
f)	Draw the circuit of R-2R ladder DAC.	BL1	3	(2M)
g)	Write Boolean equations for a 4-to-2 priority encoder.	BL1	4	(2M)
h)	What is the truth table for a 1-bit comparator?	BL1	4	(2M)
i)	List the different types of ROM.	BL2	5	(2M)
j)	What are the basic components of RAM architecture?	BL2	5	(2M)

PART–B(5X10=50M)

UNIT-I

2.(a)	Define the terms: SVRR, Input bias current, Input offset voltage, Gain bandwidth product.	BL4	1	(5M)
2.(b)	Design a differentiator using op-amp to differentiate an input signal with 1 kHz. Draw the equivalent circuit.	BL3	1	(5M)
	(OR)			
2.(c)	Explain the operation of Schmitt trigger circuit with input and output waveforms.	BL2	1	(5M)
2.(d)	For the non-inverting a.c amplifier R_{in} = 50 Ω, C_i = 0.1 μF, R_l =100 Ω, R_F = 1kΩ and R_O = 10 kΩ. Determine the gain and band width of the amplifier.	BL4	1	(5M)

UNIT-II

3.(a)	Describe PLL with block diagram. Also discuss applications of PLL in phase detector and voltage controlled oscillator.	BL3	2	(5M)
3.(b)	Draw the circuit for first-order lowpass filter and high pass filter and derive the expressions for cut-off frequencies.	BL3	2	(5M)
	(OR)			
3.(c)	With a neat sketch, explain IC566 VCO operation and discuss any two applications.	BL3	2	(5M)
3.(d)	Explain, how to obtain triangular wave using a square wave generator.	BL4	2	(5M)

UNIT-III

4.(a)	The LSB of a 10-bit DAC is 20 m volts. **i** What is its percentage resolution? **ii** What is its full-scale range? **iii.** What is the output voltage for an input, 10110 01101?	BL4	3	(5M)
4(b)	Draw the circuit of weighted resistor DAC and derive expression for output analog voltage Vo.	BL4	3	(5M)

(OR)

4.(c)	Explain the working of dual slope-type of ADC with a neat diagram.	BL4	3	(5M)
4(d)	Draw the basic circuit of parallel A/D converter and explain its operation.	BL 1	3	(5M)

UNIT-IV

5.(a)	Explain 1 to 16 demultiplexer with suitable IC	BL4	4	(5M)
5.(b)	Examine the design of multiplexers with suitable ICs	BL4	4	(5M)

(OR)

5.(c)	With truth table, explain the working of BCD to Binary converter	BL4	4	(5M)
5.(d)	Explain the operation of a 8-bit magnitude comparator with truth table	BL2	4	(5M)

UNIT-V

6.(a)	Explain SR and D flip-flops with help of circuit diagrams and truth tables	BL3	5	(5M)
6.(b)	Describe the working of a Parallel-In Serial-Out (PISO) shift register with a neat logic diagram and timing diagram.	BL3	5	(5M)

(OR)

6.(c)	Distinguish between static RAM and Dynamic RAM.	BL3	5	(5M)
6.(d)	Design and implement a MOD-193 counter with counting sequence 63,64,.....255 using IC74LS163	BL2	5	(5M)

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Course Code: 23EC5T07

BONAM VENKATA CHALAMAYYA ENGINEERING COLLEGE::ODALAREVU
(AUTONOMOUS)

III-B.Tech I-Semester Regular End Examinations (BR23), Nov-2025

DIGITAL COMMUNICATIONS (ECE)

Time: 3 hours Max. Marks: 70

Question Paper consists of Part-A and Part-B
*Answer **ALL** the question in **Part-A***
Part-B consists of 5 questions with either/or choice, answer any one from either/or choice

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PART–A (10X2 = 20M)

		BTL	CO	Marks
1. a)	What is Adaptive DPCM?	1	1	(2M)
b)	What is the purpose of Regeneration circuit in PCM?	2	1	(2M)
c)	What is BFSK?	1	2	(2M)
d)	Define coherent modulation.	2	2	(2M)
e)	Define correlation receiver.	1	3	(2M)
f)	What is the response of a correlator bank?	1	3	(2M)
g)	Define parity-check matrix.		4	(2M)
h)	Mention two differences between Linear Block Codes and Convolutional Codes.	1	4	(2M)
i)	What is a State Diagram in Convolutional Codes?	1	5	(2M)
j)	Mention one advantage of Convolutional Codes over Linear Block Codes.	2	5	(2M)

PART–B (5X10 = 50M)

		BTL	CO	Marks
	UNIT-I			
2.a)	Explain the working of Delta Modulation and Demodulation system with a neat block diagram.	2	1	(5M)
2.b)	Explain noise in Delta Modulation with the help of waveform.	2	1	(5M)
	(OR)			
3.	Explain the principle operation of Time Division Multiplexing. Mention its applications in digital communication system.	2	1	(10M)
	UNIT-II			
4.	Explain a) QPSK Transmitter b) QPSK Receiver with neat diagram	2	2	(10M)
	(OR)			
5.	Explain generation and reception of BPSK signal	2	2	(10M)
	UNIT-III			
6.	Solve the expression of impulse response of matched filter.	3	3	(10M)
	(OR)			
7.	Explain in detail about optimal receiver.	2	3	(10M)
	UNIT-IV			
8.	Explain how hamming codes are used in error detection with simple example.	4	4	(10M)
	(OR)			

9.a)	Explain parity check codes with suitable example.	2	4	(5M)
9.b)	Compare linear block codes and convolution codes.	2	4	(5M)

UNIT-V

10.a)	Explain the basic structure and operation of a Convolutional Encoder with a neat diagram.	2	5	(5M)
10.b)	Derive the output equations for a rate 1/2 Convolutional Encoder with constraint length K=3.	3	5	(5M)

(OR)

11.	Explain the following decoding algorithms for convolution codes: (a) Viterbi decoding algorithm. (b) Sequential decoding algorithm.	2	5	(10M)

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Course Code: 23EC5T08

BONAM VENKATA CHALAMAYYA ENGINEERING COLLEGE :: ODALAREVU
(AUTONOMOUS)

III-B.Tech I-Semester Regular End Examinations (BR23), November-2025

ANTENNAS AND WAVE PROPAGATION (ECE)

Time: 3 hours Max. Marks: 70

Question Paper consists of Part-A and Part-B
Answer ALL the questions of Part-A
Part-B consists of 5 questions with either/or choice, answer any one from either/or choice

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PART–A (10X2 = 20M)

		BTL	CO	Marks
1.a	What are Principal Planes?	BL2	1	(2M)
b.	Define Radiation Intensity and write the expression for avg RI	BL2	1	(2M)
c.	List out the Applications of loop Antenna	BL1	2	(2M)
d.	What are Retarded Potentials?	BL1	2	(2M)
e.	What is the role of Folded dipole in Yagi-Uda Antenna	BL1	3	(2M)
f.	List out any Four differences between Broad Side and End Fire Array	BL2	3	(2M)
g.	Describe the Applications of Log-periodic antenna	BL1	4	(2M)
h.	What is Aperture blocking and Spill Over?	BL1	4	(2M)
i.	Briefly Describe the Types of Wave Propagation and respective applications	BL2	5	(2M)
j.	With neat sketches briefly explain about Reflection and Refraction	BL1	5	(2M)

PART–B (5X10 = 50M)

		BTL	CO	Marks
	UNIT-I			
2.a	Explain the Radiation Mechanism of a Single Wire Antenna.	BTL1	1	(5M)
2.b	List out the Radiation pattern Characteristics and Write a note on radiation lobes with relevant sketches	BTL2	1	(5M)
	(OR)			
3.a	Define (i) Physical and effective aperture (ii) Beam efficiency and beam solid angle (iii)HPBW&FNBW (iv) Directive and power gain (v)Antenna efficiency and Radiation efficiency	BTL2	1	(10M)
	UNIT-II			
4.a	Derive the expression for power and radiation resistance of a half wave dipole antenna	BL3	2	(7M)
4.b	Sketch and briefly explain the fields and patterns of Thin Linear Center fed Antennas of different lengths.	BL3	2	(3M)
	(OR)			
5.a	State Reciprocity theorem in antenna. Prove that effective length (leff) of a transmitting antenna and receiving antenna are identical.	BL4	2	(10M)
	UNIT-III			

6.a	What is an Uniform linear Array. Derive the expression for "E" in the case of N element Uniform Linear Array	BL2	3	(5M)
6.b	Deduce the expression of Null to Null Beam width in the case of Broad Side Array and End Fire Array.	BL3	3	(5M)
	(OR)			
7.a	What is Principle of Pattern Multiplication? Explain pattern multiplication with 4 and 8 element array by drawing unit pattern, group and resultant pattern.	BL3	7	(5M)
7.b	With a neat sketch, Briefly explain the concept of Scanning Arrays	BL4	3	(5M)
	UNIT-IV			
8.a	Draw the various shapes of Patch. With a neat sketch, explain the salient features and Applications of Micro strip Antenna.	BL4	4	(5M)
8.b	What is flaring and flared out structure? Write the types of Horn antenna. Explain the operation of Horn antenna and its applications	BL2	4	(5M)
	(OR)			
9.a	With a neat sketch, explain the operation of Log Periodic Antenna	BL3	4	(5M)
9.b	What is the importance of F/D ratio in the design of parabolic reflector antenna? With a neat sketch explain the operation and radiation mechanism of a parabolic reflector	BL4	4	(5M)
	UNIT-V			
10.a	Draw the block diagram for Antenna Gain measurement and Explain the method of measurement of Antenna Gain with relevant formulae.	BL3	5	(7M)
10.b	What is the radio horizon of a Television antenna placed at a height of 166 meters? If the signal is to be received at a distance of 66kms, what should be the height of the receiving antenna?	BL3	3	(3M)
	(OR)			
11.a	In detail draw and explain the structure and characteristics of all five Ionospheric layers	BL2	5	(10M)

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Course Code: **23AD5E01**

BONAM VENKATA CHALAMAYYA ENGINEERING COLLEGE::ODALAREVU
(AUTONOMOUS)
III-B. Tech I-Semester Regular Examinations (BR23), NOV-2025
Computer Architecture and Organization (ECE)

Time: 3 hours Max. Marks: 70

Question Paper consists of Part-A and Part-B
Answer ALL the questions of Part-A
Part-B consists of 5 questions with either/or choice, answer any one from either/or choice

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PART–A (10X2 = 20M)

		BTL	CO	Marks
1.a)	Write any two arithmetic micro-operations.	BL2	1	(2M)
b)	Explain the purpose of the Arithmetic Logic Shift Unit (ALSU).	BL2	1	(2M)
c)	What is an instruction cycle?	BL2	2	(2M)
d)	Explain the role of timing and control in a computer system.	BL2	2	(2M)
e)	Differentiate between general register organization and stack organization.	BL2	3	(2M)
f)	What is the purpose of Reduced Instruction Set Computer (RISC)?	BL2	3	(2M)
g)	State the condition for overflow in signed addition.	BL2	4	(2M)
h)	What is the role of an Input-Output Processor (IOP)?	BL2	4	(2M)
i)	What is associative memory?	BL2	5	(2M)
j)	What is virtual memory and why is it needed?	BL3	5	(2M)

PART–B (5X10 = 50M)

		BTL	CO	Marks
	UNIT-I			
2.(a)	Design a bus system for connecting 4 registers each of size 4 bits using multiplexers.	BL3	1	(5M)
2.(b)	Explain hardware implementation for shift micro-operations.	BL2	1	(5M)
	(OR)			
3.(a)	Explain arithmetic micro-operations with examples.	BL2	1	(5M)
3.(b)	What is the Von Neumann architecture? Explain with neat diagram.	BL2	1	(5M)
	UNIT-II			
4.(a)	What are the different types of computer instructions? Explain how they are differentiated.	BL2	2	(10M)
	(OR)			

5.(a)	Few bits of the current micro instruction are used to generate the address of the next micro instruction to be executed. Explain why?	BL3	2	(10M)

UNIT-III

6.(a)	Explain different addressing modes with an example.	BL2	3	(10M)

(OR)

7.(a)	Draw the flow chart and apply Booth's algorithm to multiply the numbers -15 and 20.	BL3	3	(10M)

UNIT-IV

8.(a)	With the help of a neat diagram explain how the priority of a device is decoded parallel for servicing the interrupts.	BL3	4	(5M)
8.(b)	Explain block diagram of Input-Output Interface.	BL2	4	(5M)

(OR)

9.(a)	With the help of suitable diagrams explain DMA in detail.	BL3	4	(10M)

UNIT-V

10.(a)	What is Cache memory? Explain the different mapping techniques of Cache memory.	BL2	5	(10M)

(OR)

11.(a)	Explain Associative memory. Derive and implement its match logic.	BL3	5	(5M)
11.(b)	Write shorts notes on main memory and explain how it is connected to CPU.	BL3	5	(5M)

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BONAM VENKATA CHALAMAYYA ENGINEERING COLLEGE ::ODALAREVU
(AUTONOMOUS)

III B.Tech. I Semester Regular End Examinations (BR23), NOV-2025

Digital System Design through HDL (ECE)

Time: 3 hours | Max. Marks: 70

Question Paper consists of Part-A and Part-B, Answer ALL the questions of Part-A
Part-B consists of 5 questions with either/or choice, answer any one from either/or choice

PART–A (10 X 2 = 20 Marks)

1.a	List the main components of a Verilog module.	BL1	1	(2M)
1.b	What is a gate primitive? Give an example.	BL1	1	(2M)
1.c	What is the difference between initial and always statements?	BL2	2	(2M)
1.d	List the different types of loops in Verilog.	BL1	2	(2M)
1.e	How are vectors used in continuous assignments?	BL2	3	(2M)
1.f	What are the transfer gates in switch-level modeling?	BL1	3	(2M)
1.g	State the rules for writing a function in Verilog.	BL1	4	(2M)
1.h	What is meant by "One Hot" encoding?	BL1	4	(2M)
1.i	What is the role of a test bench in simulation?	BL2	5	(2M)
1.j	What is combinational circuit testing?	BL1	5	(2M)

PART–B (5 X 10 = 50 Marks)

UNIT-I

2.a	Explain the delay Concept in verilog HDL with examples.	BL2	1	(10M)

(OR)

3.a	Explain the different data types in Verilog HDL with examples.	BL2	1	(5M)
3.b	Write a Verilog HDL code for a fulladder using gate-level modeling.	BL6	1	(5M)

UNIT-II

4.a	Explain the for and while loops in Verilog with examples.	BL2	2	(5M)
4.b	Write a Verilog HDL code for a 8-bit shift register (SISO) with test bench using behavioral modeling.	BL6	2	(5M)

5.a	Explain the procedural assignments (Blocking and Non-Blocking) with examples.	BL2	2	(5M)
5.b	Write a Verilog HDL code for a 4-bit ALU that performs ADD, AND, OR, and XOR operations using behavioral modeling.	BL6	2	(5M)
	UNIT-III			
6.a	Explain the concepts of delays in continuous assignments with examples.	BL2	3	(5M)
6.b	Write a Verilog HDL code for a 4-bit ripple carry adder using dataflow modeling.	BL6	3	(5M)
	(OR)			
7.a	Explain the basic transistor switches (NMOS, PMOS) with their truth tables and Verilog syntax.	BL2	3	(5M)
7.b	Write a Verilog HDL code for a 2to1 Multiplexer using switch-level modeling.	BL6	3	(5M)
	UNIT-IV			
8.a	Design an FSM for a sequence counter to detect the sequence 101 in given binary pattern using a Moore machine.	BL6	4	(5M)
8.b	Explain the synthesis of sequential logic with flip-flops, highlighting the difference between latches and flip-flops.	BL2	4	(5M)
	(OR)			
9.a	Write a Verilog code for a UDP of a 2-input AND gate.	BL6	4	(5M)
9.b	Explain the synthesis of implicit state machines with a suitable example.	BL2	4	(5M)
	UNIT-V			
10.a	Explain how ATPG works in testing of combinational circuit testing.	BL2	5	(5M)
10.b	Explain the concept of Design Verification.	BL2	5	(5M)
	(OR)			
11.a	Explain the steps involved in testing a sequential circuit like a counter.	BL2	5	(5M)
11.b	Write a Verilog test bench for a D Flip-Flop with asynchronous reset. Include necessary clock generation and test cases.	BL6	5	(5M)

CourseCode:23CS5T07

BONAMVENKATACHALAMAYYAENGINEERINGCOLLEGE::ODALAREVU
(AUTONOMOUS)

III- B.Tech I-Semester Regular End Examinations (BR23), November-2025

DATA WAREHOUSING AND DATA MINING (CSE)

Time:3hours Max.Marks: 70

Question Paper consists of Part-A and Part-B
Answer ALL the questions of Part-A
Part-B consists of 5 questions with either/or choice, answer any one from either/or choice

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PART–A (10X2 = 20M)

		BTL	CO	Marks
1.a)	Define Data Warehouse and mention its key features.	BL1	1	(2M)
b)	Distinguish between ROLAP and MOLAP.	BL1	1	(2M)
c)	What is the role of data cleaning in data preprocessing?	BL2	2	(2M)
d)	Define data reduction and state its importance	BL2	2	(2M)
e)	What are the steps in building a decision tree?	BL3	3	(2M)
f)	Mention two advantages of Naïve Bayes classification.	BL3	3	(2M)
g)	Define support and confidence in association analysis.	BL4	4	(2M)
h)	What is the Apriori property?	BL4	4	(2M)
i)	List any four distance measures used in clustering.	BL2	5	(2M)
j)	Define outlier and noise in clustering context.	BL3	5	(2M)

PART–B(5X10=50M)

		BTL	CO	Marks
	UNIT-I			
2.(a)	Differentiate between OLAP and OLTP systems with examples.	BL2	1	(5M)
2.(b)	Explain the three-tier architecture of Data Warehouse with a neat diagram.	BL4	1	(5M)
	(OR)			
3.(a)	Explain the steps involved in data warehouse design.	BL3	1	(5M)
3.(b)	Describe metadata and its role in data warehousing.	BL2	1	(5M)
	UNIT-II			
4.(a)	Discuss data integration challenges and how they are resolved.	BL3	2	(5M)
4.(b)	Explain data transformation process with examples.	BL2	2	(5M)
	(OR)			
5.	Explain the steps in data preprocessing and illustrate with examples.	BL2	2	(10M)

	UNIT-III			
6.	Explain Naïve Bayesian Classification algorithm with a suitable example.	BL3	3	(10M)
	(OR)			
7.	Consider the following data and construct decision tree using ID3 algorithm	BL3	3	(10M)

Outlook	Temperature	Humidity	Wind	Played Football (yes/no)
Sunny	Hot	High	Weak	No
Sunny	Hot	High	Strong	No
Overcast	Hot	High	Weak	Yes
Rain	Mild	High	Weak	Yes
Rain	Cool	Normal	Weak	Yes
Rain	Cool	Normal	Strong	No
Overcast	Cool	Normal	Strong	Yes
Sunny	Mild	High	Weak	No
Sunny	Cool	Normal	Weak	Yes
Rain	Mild	Normal	Weak	Yes
Sunny	Mild	Normal	Strong	Yes
Overcast	Mild	High	Strong	Yes
Overcast	Hot	Normal	Weak	Yes
Rain	Mild	High	Strong	No

	UNIT-IV			
8.	Explain Apriori Algorithm for frequent itemset generation with example.	BL3	4	(10M)
	(OR)			
	Describe the Compact Representation of Frequent Item sets using Closed and Maximal Item sets. Why is compact representation important in association rule mining?	BL3	4	(10M)
	UNIT-V			
10.(a)	Explain the types of clusters with examples.	BL2	5	(5M)
10.(b)	Illustrate the steps of K-Means clustering with a sample dataset.	BL3	5	(5M)
	(OR)			
11.(a)	Explain Agglomerative Hierarchical Clustering with a diagram. Explain the main steps involved in it with example.	BL3	5	(5M)
11.(b)	Discuss the DBSCAN algorithm and its advantages over K-Means.	BL4	5	(5M)

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Course Code: **23CS5T08**

BONAM VENKATA CHALAMAYYA ENGINEERING COLLEGE::ODALAREVU
(AUTONOMOUS)
III B.Tech I Semester Regular End Examinations (BR23), NOV-2025
COMPUTER NETWORKS (CSE)

Time:3 hours Max.Marks:70

Question Paper consists of Part-A and Part-B, Answer ALL the questions of Part-A
Part-B consists of 5questions with either /or choice, answer any one from either/or choice

PART–A (10X2 = 20M)

		BTL	CO	Marks
1.a)	What are the functionalities of the layers in TCP/IP?	BL2	1	(2M)
b)	What are the types of guided medias are used in the computer networks?	BL1	1	(2M)
c)	What are the three types of frames in HDLC?	BL1	2	(2M)
d)	What is the difference between error detection and error correction?	BL2	2	(2M)
e)	Explain Bitmap protocol?	BL3	3	(2M)
f)	Explain ALOHA?	BL2	3	(2M)
g)	What is packet switching?	BL2	4	(2M)
h)	Explain IPV4 Addressing?	BL2	4	(2M)
i)	Write about e-Mail.	BL2	5	(2M)
j)	Why is UDP unreliable?	BL2	5	(2M)

PART–B(5X10=50M)

UNIT-I

2.(a)	Discuss different types of network topologies.	BL2	1	(5M)
2.(b)	Explain Coaxial cable and twisted pair cable?	BL2	1	(5M)

(OR)

3.(a)	Explain in detail about TCP/IP reference model.	BL3	1	(5M)
3.(b)	Describe the various layers in the ISO-OSI model.	BL3	1	(5M)

UNIT-II

4.(a)	Explain about various framing techniques in Data link layer.	BL2	2	(5M)
4.(b)	The message 11001001 is to be transmitted using CRC error correction algorithm. Assume the CRC polynomial is x^3+1. Determine the message that should be transmitted. If the second left most bit is corrupted, show it is detected by the receiver.	BL3	2	(5M)

(OR)

5.(a)	What are the design issues of data link layer explain	BL5	2	(5M)
5.(b)	Explain the Hamming code as a technique for single-bit error correction in transmitted data?	BL6	2	(5M)

UNIT-III

6.(a)	Explain the Gigabit Ethernet?	BL4	3	(5M)
6.(b)	Explain about code division multiplexing with a neat sketch.	BL6	3	(5M)
	(OR)			
7.(a)	Explain CSMA with collision avoidance.	BL6	3	(5M)
7.(b)	Briefly explain about Slotted Aloha of channel Allocation?	BL5	3	(5M)

UNIT-IV

8.(a)	Explain the techniques for congestion control?	BL6	4	(5M)
8.(b)	Analyze multicast routing in computer networks and explain how it differs from unicast and broadcast communication	BL2	4	(5M)
	(OR)			
9.(a)	Explain Distance vector routing algorithm with suitable example.	BL3	4	(5M)
9.(b)	Explain shortest path routing algorithm with suitable example.	BL4	4	(5M)

UNIT-V

10.(a)	Interpret the header format of UDP protocol.	BL2	5	(5M)
10.(b)	Explain DNS in internet	BL4	5	(5M)
	(OR)			
11(a)	Explore email communication within the context of the application layer.	BL6	5	(5M)
11(b)	Differentiate TCP and UDP	BL2	5	(5M)

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Course Code: 23CS5T09

BONAM VENKATA CHALAMAYYA ENGINEERING COLLEGE :: ODALAREVU
(AUTONOMOUS)

III B.Tech I Semester Regular End Examinations (BR23), Nov-2025

FORMAL LANGUAGES AND AUTOMATA THEORY (CSE)

Time: 3 hours Max. Marks: 70

Question Paper consists of Part-A and Part-B
Answer ALL the questions of Part-A
Part-B consists of 5 questions with either/or choice, answer any one from either/or choice

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PART–A (10X2 = 20M)

		BTL	CO	Marks
1.a)	List the properties of Transition functions.	L1	1	(2M)
b)	Give the DFA accepting the language over the alphabet 0, 1 that have the set of all strings that either begins or end (or both) with 01.	L2	1	(2M)
c)	Write regular expression for "all strings of *a*'s and *b*'s which starts with and ends with the same symbol.	L2	2	(2M)
d)	Write the classification of grammars.	L1	2	(2M)
e)	Is it possible to reduce the unit production in context free grammar? Justify through example.	L2	3	(2M)
f)	Define Right Linear and Left Linear Grammars formally and also provide examples.	L1	3	(2M)
g)	Describe the Model for PDA.	L2	4	(2M)
h)	Write any three applications of PDA.	L1	4	(2M)
i)	Define computations of a TM.	L1	5	(2M)
j)	State Church's Thesis.	L1	5	(2M)

PART–B (5X10 = 50M)

		BTL	CO	Marks
	UNIT-I			
2.	Construct DFA equivalent to the following NFA. Show the acceptance of the string 00011 on both the Fas. Assume that q0 is the start state and q3 is final state?	L4	1	(10M)

	0	1
q0	{q0,q1}	{q0}
q1	-	{q2}
q2	-	{q3}
q3	-	-

(OR)

3.	Construct a Moore machine to determine the residue mod 3 for each binary string treated as a binary integer. Convert the resultant to Mealy machine?	L4	1	(10M)
	UNIT-II			
4.a)	List and explain any six identity rules of the Regular expressions?	L2	2	(5M)
4.b)	Construct a Finite Automata for the regular expression? (0+1)(1+10)*	L3	2	(5M)

(OR)

5.a)	State and explain the Pumping Lemma for Regular sets?	L2	2	(5M)
5. b)	Prove that $L = \{ a^n b^n / n > 0\}$ is not regular using pumping lemma?	L4	2	(5M)

UNIT-III

6. a)	How do you simplify Context Free Grammars? Explain with examples?	L3	3	(5M)
6. b)	Give the Context Free Grammar generating the set of palindromes over an alphabet, $\Sigma = \{a, b\}$?	L4	3	(5M)

(OR)

7.	Convert the following CFG into Griebach Normal Form? $S \rightarrow XA \mid BB$ $B \rightarrow b \mid SB$ $X \rightarrow b$ $A \rightarrow a$	L6	3	(10M)

UNIT-IV

8. a)	Define mathematical model of Pushdown Automata? What are the different ways of string acceptance in PDA?	L1	4	(5M)
8. b)	Construct PDA for the Language $L = \{ a^n b^m \mid n > m \}$?.	L5	4	(5M)

(OR)

9.a)	Describe equivalence of CFL and PDA with appropriate example?	L2	4	(5M)
9.b)	Design PDA to accept the following CFG? $S \rightarrow AA/a$ $A \rightarrow SA/b$	L6	4	(5M)

UNIT-V

10.a)	What is Turing machine? Give the various types of Turing machines?	L1	5	(5M)
10.b)	State Post's Correspondence Problem with following example	L2	5	(5M)

i	g_i	h_i
1	100	1
2	0	100
3	1	00

(OR)

11.a)	Design Turing's Machine to accept the language $L=\{a^n b^n c^n / n \geq 1\}$. Also give the graphical representation and Instantaneous description (ID) for the import "aabbcc"?	L6	5	(5M)
11.b)	Describe in detail about Turing reducibility and Halting Problem?	L2	5	(5M)

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BONAMVENKATACHALAMAYYAENGINEERINGCOLLEGE::ODALAREVU
(AUTONOMOUS)

III B.Tech I Semester Regular End Examinations(BR23),November2025

MICROPROCESSORS AND MICROCONTROLLERS (CSE)

Time:3hours Max.Marks: 70

QuestionPaperconsistsof Part-AandPart-B Answer
ALL the questions of Part-A
Part-Bconsistsof5questionswitheither/orchoice,answeranyonefromeither/orchoice

PART–A (10X2 = 20M)

		BTL	CO	Marks
1.a)	Define microprocessor	BL1	1	(2M)
b)	What is the function of Execution unit?	BL1	1	(2M)
c)	List the addressing modes of 8086.	BL1	2	(2M)
d)	Define Assembler directive and list 3 assembler directives.	BL1	2	(2M)
e)	Write short notes on Memories (RAM&ROM)?	BL2	3	(2M)
f)	Draw the Bit set register format of 8255?	BL3	3	(2M)
g)	Write 3 major features of 8051 microcontroller.	BL1	4	(2M)
h)	What are the interrupts of 8051 microcontroller?	BL2	4	(2M)
i)	What is ARM Processors?	BL1	5	(2M)
j)	What are the different modes of 8051 timers?	BL1	5	(2M)

PART–B (5X10 =50M)

		BTL	CO	M
	UNIT-I			
2.(a)	Describe the internal architecture of 8086 microprocessor with neat diagrams.	BL2	1	(10M)
	(OR)			
2.(b)	Draw and explain about the timing diagrams of 8086 in Minimum mode for read and write cycles.	BL3	1	(10M)
	UNIT-II			
3.(a)	Explain about the arithmetic, logical, bit manipulation and control transfer instructions of 8086 with examples.	BL2	2	(10M)
	(OR)			
3.(b)	Write an 8086 ALP to sort the numbers in the array in descending order and draw the flowchart	BL3	2	(10M)

	UNIT-III			
4.(a)	Draw and explain the architecture of 8255 PPI. Discuss its different operating modes	BL2	3	(10M)
	(OR)			
4.(b)	Draw and explain the architecture of Intel 8251 USART and its interfacing with 8086.	BL3	3	(10M)
	UNIT-IV			
5.(a)	Draw & Explain the Architecture of 8051 Microcontroller.	BL3	4	(10M)
	(OR)			
5.(b)	List and explain the different types of addressing modes in 8051. .	BL2	4	(10M)
	UNIT-V			
6.(a)	Compare microprocessor, microcontroller, PIC, and ARM processors.	BL1	5	(10M)
	(OR)			
6.(b)	Discuss in detail about the following with respect to 8051? a. TMOD b. TCON c. PCON d. SCON	BL3	5	(10M)

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Course Code: 23AD5T02

BONAM VENKATA CHALAMAYYA ENGINEERING COLLEGE:: ODALAREVU
(AUTONOMOUS)
IIIB.Tech I Semester Regular End Examinations (BR23), November 2025
ARTIFICIAL INTELLIGENCE (CSE (AI&DS))

Time: 3 hours Max. Marks: 70

Question Paper consists of Part-A and Part-B
Answer ALL the questions of Part-A
Part-B consists of 5 questions with either/or choice, answer any one from either/or choice

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PART–A (10X2 = 20M)

		BTL	CO	Marks
1.a)	What is a heuristic search? Give one example.	2	1	(2M)
b)	Mention two real-world applications of AI.	2	1	(2M)
c)	Define an axiomatic system.	2	2	(2M)
d)	What is game playing in AI?	2	2	(2M)
e)	Write a short note on script structure.	2	3	(2M)
f)	What are the different approaches to knowledge representation?	2	3	(2M)
g)	What is the definition of a probability in the context of classical probability theory?	2	4	(2M)
h)	Define the concept of a certainty factor in expert systems. How is it used to represent uncertainty?	2	4	(2M)
i)	How does fuzzy set differ from a classical set in terms of membership?	2	5	(2M)
j)	What are linguistic variables in fuzzy logic?	2	5	(2M)

PART–B (5X10 = 50M)

	UNIT-I			
2.	Explain the working of the A* algorithm. Derive how heuristic functions affect its performance.	**2**	**1**	(10M)
	(OR)			
3.	Discuss the various foundations of AI and explain their importance in building intelligent systems.	**2**	1	(10M)
	UNIT-II			
4.(a)	Explain the steps involved in propositional calculus with an example.	3	2	(5M)
4.(b)	Describe the natural deduction system and its role in logical reasoning.	3	2	(5M)

	(OR)			
5.	Explain the concept of two-player perfect information games with a suitable example.	3	2	(10M)
	UNIT-III			
6.	Discuss knowledge representation using semantic networks and its advantages.	2	3	(10M)
	(OR)			
7.	Explain the role of the semantic web in modern knowledge representation systems.	2	3	(10M)
	UNIT-IV			
8.	Analyze the role of conditional independence in Bayesian Belief Networks. How do they facilitate reasoning in uncertain domains, and what are the computational challenges in large-scale networks? Provide examples where Bayesian Networks are preferable over traditional probabilistic models.	4	4	(10M)
	(OR)			
9.	Evaluate the effectiveness of Certainty Factor Theory in modelling uncertainty within expert systems. How does it compare to probability theory in terms of its interpretability and usability in real-time decision-making? Illustrate with an example of a medical diagnosis system.	4	4	(10M)
	UNIT-V			
10.	Discuss in detail the different types of operations that can be applied to fuzzy sets, such as union, intersection, and complement. How are these operations defined mathematically, and how are they used in practical applications?	2	5	(10M)
	(OR)			
11(a)	What is a fuzzy system? Provide an overview of its components, including fuzzyfication, inference, and defuzzification.	2	5	(5M)
11(b)	How do fuzzy systems handle uncertainty and imprecision in decision-making?	2	5	(5M)

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Course Code: **23AD5T03**

BONAM VENKATA CHALAMAYYA ENGINEERING COLLEGE :: ODALAREVU
(AUTONOMOUS)

III B.Tech I Semester Regular End Examinations (BR23), NOV-2025

COMPUTER NETWORKS (CSE(AI&DS),AI&ML,CSE(AI&ML))

Time: 3 hours Max. Marks: 70

Question Paper consists of Part-A and Part-B
Answer ALL the questions of Part-A
Part-B consists of 5 questions with either/or choice, answer any one from either/or choice

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PART–A (10X2 = 20M)

		BTL	CO	Marks
1.a)	What is topology? List its types	BL2	1	(2M)
b)	Define protocol and mention its key elements	BL2	1	(2M)
c)	List the functions of Data Link layer	BL2	2	(2M)
d)	Define Access control.	BL2	2	(2M)
e)	What is congestion control? State its impact in networking	BL4	3	(2M)
f)	Why transition is required from IPV4 to IPV6?	BL4	3	(2M)
g)	What is the minimum and maximum size of TCP header?	BL3	4	(2M)
h)	Do port address need to be unique? Validate your answer.	BL3	4	(2M)
i)	State the advantages of a hierarchical name space in DNS	BL3	5	(2M)
j)	What is the difference between local and remote log-in in TELNET?	BL3	5	(2M)

PART–B (5X10 = 50M)

UNIT-I

2.(a)	With relevant diagram explain the layered architecture of OSI / ISO reference Model	BL2	1	(10M)
	(OR)			
3.(a)	Explain the transport layer models proposed in the OSI Model	BL2	1	(10M)

UNIT-II

4.(a)	Explain guided and unguided transmission media.	BL2	2	(10M)
	(OR)			
5.(a)	Explain the MAC frame format of IEEE 802.3 Ethernet	BL2	2	(10M)

UNIT-III

6.	a) Explain about shortest path routing Algorithm b) Explain CSMA with Collision Detection.	BL4	3	(10M
	(OR)			
7.(a)	Explain the working of Distance Vector Routing Algorithm with an example	BL4	3	(10M

UNIT-IV

8.(a)	Explain the frame format of TCP. Also mention its features	BL3	4	(10M
	(OR)			
9.(a)	Explain the frame format of UDP	BL3	4	(5M
9.(b)	Compare TCP and SCTP	BL3	4	(5M

UNIT-V

10(a)	What is Domain Name System (DNS)? Explain	BL3	5	(5M
10(b)	Explain the HTTP in detail	BL3	5	(5M
	(OR)			
11(a)	Explain Remote loging protocol used in application layer	BL3	5	(5M)
11(b)	Explain the E-mail protocol	BL3	5	(5M)

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Course Code: 23AD5T04

BONAM VENKATA CHALAMAYYA ENGINEERING COLLEGE::ODALAREVU
(AUTONOMOUS)

III-B.Tech I-Semester Regular Examinations (BR23), Nov 2025

COMPUTER ORGANIZATION AND ARCHITECTURE (CSE (AI&DS))

Time: 3 hours Max. Marks: 70

Question Paper consists of Part-A and Part-B
Answer ALL the questions of Part-A
Part-B consists of 5 questions with either/or choice, answer any one from either/or choice

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PART–A (10X2 = 20M)

		BTL	CO	Marks
1.a)	Define De-Morgan's theorem and verify it.	BL3	1	(2M)
b)	Convert i) $(DAD)_{16} = (\quad)_{10}$. ii) $(BAD)_{16} = (\quad)_2$	BL2	1	(2M)
c)	Realize all Basic Gates using NAND gate.	BL2	2	(2M)
d)	Mention the properties of Bistable Latch.	BL2	2	(2M)
e)	Define Register Transfer Language.	BL2	3	(2M)
f)	Define Micro operation. Mention Logical micro operations.	BL2	3	(2M)
g)	Distinguish between Hardwired and Micro-programmed control unit.	BL2	4	(2M)
h)	List typical program control instructions.	BL2	4	(2M)
i)	Compare different I/O data transfer techniques.	BL3	5	(2M)
j)	Mention various characteristics of memory device.	BL3	5	(2M)

PART–B (5X10 = 50M)

		BTL	CO	Marks
	UNIT-I			
2.(a)	Perform the following i) $(1234.56)_8 = (\quad)_{16}$ ii) $(1B6.CA8)_{16} = (\quad)_2$ iii) $(10110101001.101011)_2 = (\quad)_8$	BL2	1	(5M)
2.(b)	Obtain 7-bit Hamming code word for the data 1010.	BL2	1	(5M)
	(OR)			
3.(a)	Realize AND,OR gates from Universal gates.	BL2	1	(5M)
3.(b)	Explain about Fixed point and Floating point Representation.	BL2	1	(5M)

	UNIT-II			
4.(a)	Explain differences between a MUX and DEMUX.	BL3	2	(5M)
4.(b)	Design S-R Latch Using two 2 input NAND,NOR gates.	BL2	2	(5M)
	(OR)			
5.(a)	Design a decade counter with suitable flip-flops.	BL3	2	(5M)
5.(b)	Explain 4-bit Serial- in - Parallel - Out (SIPO) shift register with neat diagram.	BL2	2	(5M)
	UNIT-III			
6.(a)	Draw the flowchart describing the Booth's multiplication algorithm and illustrate the process with a numerical example.	BL2	3	(5M)
6(b)	Illustrate how floating point addition will be implemented.	BL2	3	(5M)
	(OR)			
7.(a)	Draw and explain the flow chart of instruction cycle.	BL3	3	(5M)
7.(b)	Explain with neat diagram of hardware implementation of logical micro operations.	BL2	3	(5M)
	UNIT-IV			
8.(a)	Explain about Micro program execution with an example.	BL3	4	(5M)
8.(b)	Explain about addressing modes with an example.	BL3	4	(5M)
	(OR)			
9.(a)	Describe the address sequencer with neat diagram.	BL3	4	(5M)
9.(b)	Explain about Instruction Formats.	BL2	4	(5M)
	UNIT-V			
10.(a)	Describe the need and importance of cache memory.	BL3	5	(5M)
10.(b)	Explain memory mapping techniques in cache memory.	BL2	5	(5M)
	(OR)			
11.(a)	Narrate the principles of Interrupt driven I/O technique.	BL2	5	(5M)
11.(b)	Discuss about daisy chaining Priority interrupt.	BL3	5	(5M)

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Course Code:23AD5D03

BONAM VENKATA CHALAMAYYA ENGINEERING COLLEGE::ODALAREVU
(AUTONOMOUS)

III B.Tech I Semester Regular End Examinations (BR23), November2025

INTERNET OF THINGS

(CSE(AI&DS,AI&ML,CSE(AI&ML))

Time:3hours Max.Marks:70

Question Paper consists of Part-A and Part-B
Answer ALL the questions of Part-A
Part-B consists of 5questions with either/or choice, answer anyone from either/or choice

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PART–A (10X2 = 20M)

		BTL	CO	Marks
1.a)	Write the differences between M2M and IoT devices?	BTL2	1	(2M)
b)	List out the differences between HTTP and FTP.	BTL2	1	(2M)
c)	Mention the communication technologies used in IOT and M2M devices?	BTL3	2	(2M)
d)	What definition of business model and mention its applications?	BTL2	2	(2M)
e)	List comparisons between CoAP-MQ and MQTT features	BTL2	3	(2M)
f)	What is data analytics in IOT?	BTL2	3	(2M)
g)	What are uses of data validation in IOT?	BTL2	4	(2M)
h)	What is Data Categorization for Storage ?	BTL1	4	(2M)
i)	What are various types of cloud platforms used in different organizations explain?	BTL1	5	(2M)
j)	Define WSN technology?	BTL2	5	(2M)

PART–B(5X10= 50M)

		BTL	CO	Marks
	UNIT-I			
2.(a)	Discuss the major technologies behind the Internet of Things	BTL2	1	(5M)
2.(b)	List the characteristics, range, data transfer rates, three operational modes and two communication modes of NFC communication.	BTL2	1	(5M)
	(OR)			
3.(a)	List and explain the sources of IoT development board which can be used for prototype development	BTL2	1	(5M)
3.(b)	What are various internet connectivity principles?	BTL2	1	(5M)
	UNIT-II			

4.(a)	Explain about various design standardizations in IOT and M2M system layers?	BTL2	2	(5M)
4.(b)	Write in detail about various wireless communication technologies?	BTL1	2	(5M)
	(OR)			
5.(a)	Explain about 9 building blocks of business model canvas.	BTL2	2	(10M)
	UNIT-III			
6.(a)	Explain CoAP Client Web Connectivity in detail	BTL4	3	(5M)
6.(b)	Discuss Message Queuing Telemetry Transport (MQTT) open-source protocol.	BTL4	3	(5M)
	(OR)			
7.(a)	Discuss the Lightweight Machine-to-Machine Communication Protocol.	BTL4	3	(10M)
	UNIT-IV			
8.(a)	List and explain the different types of data which is generated at the devices.	BTL2	4	(5M)
8.(b)	Explain in detail about Database Management System	BTL2	4	(5M)
	(OR)			
9.(a)	Describe Data Categorisation for Storage in detail.	BTL2	4	(5M)
9.(b)	How do you organise data in IoT? Explain.	BTL2	4	(5M)
	UNIT-V			
10.(a)	List and explain the cloud computing features and advantages	BTL2	5	(5M)
10.(b)	Describe the uses of wireless sensor network technology.	BTL2	5	(5M)
	(OR)			
11.(a)	Explain about IoT cloud based services using Xively (Pachube/COSM).	BTL2	5	(10M)

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Course Code: 23AM5T03

BONAM VENKATA CHALAMAYYA ENGINEERING COLLEGE :: ODALAREVU
(AUTONOMOUS)
III B.Tech I Semester Regular End Examinations (BR23), November 2025
DEEP LEARNING (AI&ML)

Time: 3 hours Max. Marks: 70

Question Paper consists of Part-A and Part-B
Answer ALL the questions of Part-A
Part-B consists of 5 questions with either/or choice, answer any one from either/or choice

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PART–A (10X2 = 20M)

		BTL	CO	Marks
1.a)	What is a biological neuron and how is it abstracted in a computational unit?	BL1	1	(2M)
b)	Define the McCullochPitts unit.	BL2	1	(2M)
c)	What does back propagation refer to in neural networks?	BL1	2	(2M)
d)	Define empirical risk minimization in the context of neural network training.	BL2	2	(2M)
e)	What is the saddle point problem in neural network optimization?	BL1	3	(2M)
f)	What is the purpose of batch normalization?	BL1	3	(2M)
g)	What is back propagation through time in recurrent neural networks?	BL1	4	(2M)
h)	Define a Long Short Term Memory unit.	BL2	4	(2M)
i)	What is a variational auto encoder?	BL1	5	(2M)
j)	Name one transformer based model and one application area.	BL1	5	(2M)

PART–B (5X10 = 50M)

		BTL	CO	Marks
	UNIT-I			
2. a)	Explain the structure and working principle of perceptron learning Algorithm	BL2	1	(5M)
b)	Discuss the scope of computational neurons: how the biological idea led to perceptron units, their limitations and how that motivates more advanced network models.	BL2	1	(5M)
	(OR)			
3.	Compare and contrast the McCullochPitts unit, threshold perceptron, and linear perceptron in terms of model assumptions, functionality, and learning capability.	BL3	1	(10M)
	UNIT-II			
4.(a)	Explain back-propagation: derivation of error propagation through layers, calculation of gradients for weights and biases.	BL4	2	(5M)
4.(b)	What is an auto encoder? Explain its structure, purpose and how it can be used for dimensionality reduction or feature learning.	BL2	2	(5M)

	(OR)			
5.	Describe the challenges in training deep neural networks. What is greedy layer wise training and why was it used in early deep networks?	BL4	2	(10M)
	UNIT-III			
6.	Explain how batch normalization, drop connect and other methods together help improve training of deep networks, enabling deeper architectures to converge faster and generalize better.	BL4	3	(10 M)
	(OR)			
7. a)	Explain the saddle-point problem in high-dimensional neural network loss landscapes and why it is more problematic than local minima.	BL4	3	(5 M)
b)	Explain dropout and drop-connect regularization: mechanism, intuition, and how they reduce over fitting.	BL2	3	(5 M)
	UNIT-IV			
8. a)	Explain the concept of GRU: its gating mechanism and how it compares to LSTM.	BL4	4	(5M)
b)	Describe convolutional neural network architecture of LeNet or AlexNet: major layers, activation functions, training strategy and importance.	BL3	4	(5M)
	(OR)			
9.	Explain bidirectional RNNs / bidirectional LSTMs: motivation, architecture, applications.	BL4	4	(10M)
	UNIT-V			
10(a)	Explain the structure and working principle of a variational auto encoder.	BL2	5	(5M)
(b)	Describe the architecture of a transformer model and how it differs from RNNs/CNNs.	BL3	5	(5M)
	(OR)			
11	Explore recent trends in deep learning. Evaluate their advantages, limitations and potential future directions.	BL4	5	(10M)

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Course Code: **23AM5T04**

BONAM VENKATA CHALAMAYYA ENGINEERING COLLEGE :: ODALAREVU
(AUTONOMOUS)
III B.Tech I Semester Regular End Examinations (BR23), Nov-2025
NATURAL LANGUAGE PROCESSING (AI&ML)

Time: 3 hours Max. Marks: 70

Question Paper consists of Part-A and Part-B
Answer ALL the questions of Part-A
Part-B consists of 5 questions with either/or choice, answer any one from either/or choice

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PART–A (10X2 = 20M)

		BTL	CO	Marks
1.a)	Define NLP.	BL1	1	(2M)
b)	What is the difference between Grammar-based and Statistical Language Models?	BL2	1	(2M)
c)	What is an N-gram? Give an example.	BL1	2	(2M)
d)	What is POS tagging?	BL2	2	(2M)
e)	What is a Context-Free Grammar (CFG)?	BL1	3	(2M)
f)	What is Greibach Normal Form (GNF)?	BL1	3	(2M)
g)	Define Thematic Roles with one example.	BL2	4	(2M)
h)	Give two uses of Thesaurus in Word Similarity	BL3	4	(2M)
i)	What is the difference between a Corpus and a Lexical Database?	BL2	5	(2M)
j)	What is Penn Treebank?	BL1	5	(2M)

PART–B (5X10 = 50M)

		BTL	CO	Marks
	UNIT-I			
2. a)	Discuss the challenges in building an effective Language Model.	BL4	1	(5M)
b)	Explain the process of tokenization and its role in text preprocessing.	BL2	1	(5M)
	(OR)			
3.	Explain the origins and challenges in NLP.	BL3	1	(10M)
	UNIT-II			
4.a)	Discuss major issues faced during PoS tagging and their possible solutions.	BL4	2	(5M)
4.b)	Explain the working of an unsmoothed N-gram model with an example.	BL3	2	(5M)
	(OR)			
5.	Explain the architecture and working of a Hidden Markov Model in PoS tagging.	BL4	2	(10M)

UNIT-III

6. a)	Describe chunking and its implementation in shallow parsing.	BL3	3	(5 M)
b)	Describe the unification process in NLP grammar systems.	BL4	3	(5 M)
	(OR)			
7.	Explain the structure and working of Context-Free Grammars with examples.	BL3	3	(10 M)

UNIT-IV

8. a)	Describe the concept of Word Sense Disambiguation (WSD) and its significance in NLP.	BL2	4	(5M)
b)	Explain Dictionary and Thesaurus-basedWSD approaches in detail.	BL4	4	(5M)
	(OR)			
9.	Describe in detail First-Order Logic and its application in semantic representation.	BL4	4	(10M)

UNIT-V

10.	Explain anaphora resolution using Hobbs and Centering Algorithm.	BL3	5	(10M)
	(OR)			
11.a)	What is Brill's Tagger? Explain its rule-based POS tagging approach.	BL3	5	(5M)
11.b)	Illustrate the relationship between Discourse Analysis and Semantic Interpretation.	BL4	5	(5M)

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Course Code: **23ML5T01**

BONAM VENKATA CHALAMAYYA ENGINEERING COLLEGE :: ODALAREVU
(AUTONOMOUS)
III B.Tech I Semester Regular/Supplementary Examinations (BR23), November 2025
INFORMATION RETRIEVAL SYSTEMS (CSE(AI&ML))

Time: 3 hours Max. Marks: 70

Question Paper consists of Part-A and Part-B
Answer ALL the questions of Part-A
Part-B consists of 5 questions with either/or choice, answer any one from either/or choice

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PART–A (10X2 = 20M)

		BTL	CO	Marks
1.a)	What is the purpose of "IR System Evaluation"?	BL1	1	(2M)
b)	What is "Domain Analysis" in the context of an IR system?	BL1	1	(2M)
c)	What is an Inverted File?	BL1	2	(2M)
d)	Define "Vertical Partitioning" for a signature file.	BL2	2	(2M)
e)	What is a stop list?	BL1	3	(2M)
f)	What are applications of PATRICIA tree?	BL1	3	(2M)
g)	List two key features of a thesaurus.	BL2	4	(2M)
h)	How can stemming be used to compress inverted files?	BL2	4	(2M)
i)	What is the main goal of a String Searching Algorithm?	BL1	5	(2M)
j)	What is the purpose of the "prefix table" (or failure function) in the Knutt-Morris-Pratt algorithm?	BL1	5	(2M)

PART–B (5X10 = 50M)

		BTL	CO	Marks
	UNIT-I			
2. a)	Illustrate how an IR system for a digital library (Domain Analysis) differs in function from a standard database?	BL4	1	(5M)
b)	Describe the typical process for "IR System Evaluation"?	BL2	1	(5M)
	(OR)			
3.	Discuss the role of "Basic Data structures" and "Algorithms" in the design of an Information Retrieval system?	BL3	1	(10M)
	UNIT-II			
4.(a)	Compare and contrast Vertical Partitioning and Horizontal Partitioning for signature files?	BL3	2	(5M)
4.(b)	Explain the process of compressing Signature Files. What are the trade-offs involved in compression?	BL2	2	(5M)
	(OR)			
5.(a)	Explain the "Concepts of Signature files" and how they are used to process queries?	BL2	2	(5M)
5 (b)	Discuss the modifications to basic inverted file techniques to improve efficiency?	BL3	2	(5M)

	UNIT-III			
6. a)	Explain the concept of PATRICIA Tree. How are PAT Trees built as PATRICIA Trees?	BL2	3	(5 M)
b)	Explain the "PAT Tree structure" with a neat diagram for a simple set of strings?	BL2	3	(5 M)
	(OR)			
7. a)	Show how stop-word removal improves indexing and retrieval results using a dataset?	BL3	3	(5 M)
b)	Describe how PAT Trees can be represented as PAT Arrays. What are the advantages of using PAT Arrays?	BL4	3	(5 M)
	UNIT-IV			
8.	Describe two different "Types of Stemming algorithms" and give an example of how they would process a word like "running"?	BL2	4	(10M)
	(OR)			
9.(a)	What is a semantic network? Explain its role and "Features" in "Thesaurus Construction"?	BL3	4	(5M)
9.(b)	How are existing thesauri merged? Explain tools and methods involved?	BL4	4	(5M)
	UNIT-V			
10.	Explain the Boyer-Moore string matching algorithm with neat pseudo code and diagrammatic representation?	BL4	5	(10M)
	(OR)			
11.	Explain "Knutt-Morris Algorithm", with an example.	BL2	5	(10M)

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Course Code: **23CS5T04**

BONAM VENKATA CHALAMAYYA ENGINEERING COLLEGE :: ODALAREVU
(AUTONOMOUS)
III B.Tech I Semester Regular End Examinations (BR23), NOV-2025
OPERATING SYSTEM (CSE (AI & ML))

Time: 3 hours Max. Marks: 70

Question Paper consists of Part-A and Part-B
Answer ALL the questions of Part-A
Part-B consists of 5 questions with either/or choice, answer any one from either/or choice

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PART–A (10X2 = 20M)

		BTL	CO	Marks
1.a)	Explain operating system goals from user's view and system's view.	2	1	(2M)
b)	Define the system call.	2	1	(2M)
c)	Define the Thread Library.	2	2	(2M)
d)	What is process scheduling?	1	2	(2M)
e)	What is monitors?	2	3	(2M)
f)	What is Semaphore?	1	3	(2M)
g)	What is page fault?	1	4	(2M)
h)	Explain about Memory-mapped files.	2	4	(2M)
i)	Define Protection Domain with Example.	2	5	(2M)
j)	What are the objectives of file management system?	1	5	(2M)

PART–B (5X10 = 50M)

		BTL	CO	Marks
	UNIT-I			
2.(a)	Discuss the important functions of an operating System.	**2**	**1**	(5M)
2.(b)	What is meant by Dual Booting? Explain the Booting process in Operating System.	**2**	**1**	(5M)
	(OR)			
3 (a)	What are the System services provided by the operating system? Explain briefly.	**2**	1	(5M)
3.(b)	Explain the types of System calls Operating systems.	**2**	1	(5M)
	UNIT-II			
4.(a)	Describe with an example the inter-Process communication.	**2**	**2**	(5M)
4.(b)	Illustrate about FCFS and Shortest Job First algorithms with suitable examples.	**2**	**2**	(5M)
	(OR)			
5.(a)	What is a thread? Explain with examples multithreaded Programming.	**2**	**2**	(5M)
5.(b)	Draw the Process state diagram and explain its states.	**3**	**2**	(5M)

6.(a)	Discuss the concepts of Critical section and Mutual exclusion.	2	3	(5M)
6.(b)	When thrashing happens in the system. What are the various disadvantages of thrashing?	2	3	(5M)
	(OR)			
7.	What is a deadlock? When do deadlocks occur? Discuss the methods of detecting a deadlock and recovering from deadlock.	3	3	(10M)
	UNIT-IV			
8.(a)	Why Swapping is used in Memory-Management Strategies. Write various advantages of paging and Segmentation.	2	4	(5M)
8.(b)	What are various Memory-Management Strategies? Discuss contiguous memory allocation and segmentation.	2	4	(5M)
	(OR)			
9.	What is the demand paging? Discuss any three page replacement algorithms.	2	4	(10M)
	UNIT-V			
10.	Define file system and explain directory structures.	3	5	(10M)
	(OR)			
11(a)	Write a short note on implementation of file system and its optimization.	2	5	(5M)
11(b)	What is system protection? Discuss goals and principles of protection.	2	5	(5M)

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