BONAM VENKATA CHALAMAYYA ENGINEERING COLLEGE::ODALAREVU
(AUTONOMOUS)

IV-B.Tech I-Semester Regular/Supplementary Examinations (BR20), November-2024

DISASTER MANAGEMENT (CE/ME)

Time: 3 hours Max. Marks: 70

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*Question Paper consists of **FIVE** units, each carrying 14 marks*
*Each unit has **TWO** questions; either of them should be answered*
All parts of a question must be answered at one place

UNIT-I

1.a)	Define disaster management. Explain the objectives and principles of disaster management.	(14M)
	(OR)	
1.c)	Discuss about various organisational structures used for disaster management.	(7M)
1.d)	Discuss the Outline of measures that are necessary for the prevention and mitigation of disasters.	(7M)

UNIT-II

2.a)	Write a brief note on global warming and its impact.	(7M)
2.b)	Write a short note on hazard and vulnerability profile of India.	(7M)
	(OR)	
2.c)	Explain the impact of predictable disasters, like cyclones, landslides and urban flooding, and the precautions people should take to save themselves from its impact.	(10M)
2.d)	Write a short note on man-made disaster structural collapse and industrial accident.	(4M)

UNIT-III

3.a)	Explain the following vulnerability types of disaster: (i) Physical (ii) Social (iii) Economic and (iv) Environmental.	(14M)
	(OR)	
3.c)	Briefly describe the global and national disaster trends.	(7M)
3.d)	Briefly describe climate change and urbanization impact on disasters.	(7M)

UNIT-IV

4.a)	What is meant by post disaster response? Discuss in detail about the post disaster environmental response such as disease control, waste management, and food safety.	(14M)
	(OR)	
4.c)	Briefly describe the role o NGOs in disaster management.	(7M)
4.d)	Discuss the major activities involved in mitigation phase.	(7M)

UNIT-V

5.a)	Discuss the factors affecting vulnerability by development projects and environmental modifications in disaster management.	(14M)
	(OR)	
5.c)	Explain the major actions under the recovery and reconstruction phase of disaster management cycle.	(10M)
5.d)	Explain the impact of dam constructions on disasters.	(4M)

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Course Code: **20CE7E04**

BONAM VENKATA CHALAMAYYA ENGINEERING COLLEGE::ODALAREVU
(AUTONOMOUS)

IV-B.Tech I-Semester Regular/Supplementary Examinations (BR20), November- 2024

PROJECT MANAGEMENT (CE)

Time: 3 hours Max. Marks: 70

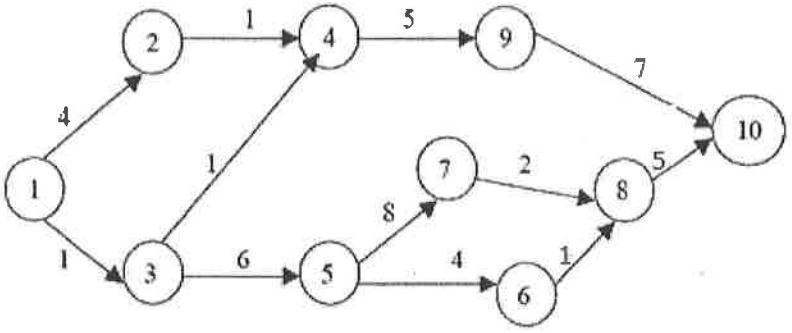
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*Question Paper consists of **FIVE** units, each carrying 14 marks*
*Each unit has **TWO** questions; either of them should be answered*
All parts of a question must be answered at one place

UNIT-I

1.a) What are the different types of floats involved in CPM? (7M)

1.b) Calculate the earliest and latest activity times and total floats for each activity for the given network and also determine the critical path and total duration of the project. (7M)



(OR)

1.c) What do you understand by updating? Why is it essential? Illustrate the method of updating a network during its execution period. (7M)

1.d) Differentiate between crashing for optimum cost and crashing for optimum resources. (7M)

UNIT-II

2.a) Explain in detail the procedure to calculate capacity of truck. (7M)

2.b) Discuss in detail different factors affecting selection of construction equipment. (7M)

(OR)

2.c) Mention the various types of earthwork equipment and their uses keeping in view of economical considerations. (7M)

2.d) Discuss about the rear dump truck and its significance. (7M)

UNIT-III

3.a) Explain cranes and types of cranes. (7M)

3.b) What are the differences between graders and scrapers? Discuss in detail. (7M)

(OR)

3.c) List out the various factors governing the selection of earthmoving equipment. (7M)

3.d) Explain tractor and different types of tractors. (7M)

UNIT-IV

4.a) What do you understand by screening of aggregate? Explain about its necessity in construction industry. (7M)

4.b) Give the detailed classification of Concrete mixers along with their limitations, advantages and disadvantages. (7M)

(OR)

4.c) Differentiate between impact and Gyratory Crushers based on their use and application. (7M)

4.d) Explain different types of crushers and its application. (7M)

UNIT-V

5.a) Explain different types of Formwork. (7M)

5.b) Discuss various criteria regarding quality management systems and requirements. (7M)

(OR)

5.c) Describe the process involved and the precautions to be followed in placing of concrete. (7M)

5.d) Explain in detail the role of various stake holders in safety management. (7M)

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BONAM VENKATA CHALAMAYYA ENGINEERING COLLEGE::ODALAREVU
(AUTONOMOUS)

IV-B. Tech I-Semester Regular/Supplementary Examinations (BR20), NOVE- 2024

REPAIR AND REHABILITATION OF STRUCTURES (CE)

Time: 3 hours Max. Marks: 70

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*Question Paper consists of **FIVE** units, each carrying 14 marks*
*Each unit has **TWO** questions; either of them should be answered*
All parts of a question must be answered at one place

UNIT-I

1.a) Explain physical causes of deterioration. (7M)

1.b) Discuss about different types of cracks. (7M)

(OR)

1.c) Write about the following: (14M)
- i) Freeze and thaw effect on concrete
- ii) Alkali aggregate reaction in concrete
- iii) Chloride attack on concrete

UNIT-II

2.a) Describe about pull out test. (7M)

2.b) Explain about rebound hammer test. (7M)

(OR)

2.c) Discuss the methods of corrosion measurement. (7M)

2.d) Explain the importance of mapping data when assessing corrosion in concrete structures. (7M)

UNIT-III

3.a) Discuss the causes of building failures. (7M)

3.b) Explain how fire damage result in building failures. (7M)

(OR)

3.c) Explain the typical signs of building failures that can be observed in a structure and how do they differ based on the type of failure? (7M)

3.d) Discuss the methodology for investigation of failures. (7M)

UNIT-IV

4.a) Discuss the use of admixtures. (7M)

4.b) Explain about moisture effect and thermal effect on concrete. (7M)

(OR)

4.c) Discuss acoustical emission methods. (7M)

4.d) Explain about disintegrated mechanisms. (7M)

UNIT-V

5.a) Discuss: (7M)
- i) Grouting
- ii) Jacketing
- iii) Shotcreting

5.b) Describe about Underpinning. (7M)

(OR)

5.c) Discuss a case study related to repair and rehabilitation of Bridge Pier structure. (14M)

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Course Code: **20CE7D13**

BONAM VENKATA CHALAMAYYA ENGINEERING COLLEGE::ODALAREVU
(AUTONOMOUS)

IV-B. Tech I-Semester Regular/Supplementary Examinations (BR20), NOVE- 2024

ESTIMATION COSTING AND VALUATION (CE)

Time: 3 hours Max. Marks: 70

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*Question Paper consists of **Part A & Part B.***
*Answer any **three questions** from **Part A.***
Part B is Compulsory

Part A (3X14=42M)

1.a) Explain the main items of work in building. (7M)

b) Explain the method of detailed estimating. (7M)

2. Prepare analysis of rates per cubic meter for following item of works. (14M)

i) R.C.C work in slabs and beams with mortar proportion 1:2:4

ii) I Class brick work in super structure with 1:6

3. Estimate the quantity of earth work for apportion of a road from the given data. (14M)

Formation width of road is 9.0 m side slopes 1.5: 1 in cutting. R.L of formation 139.00 at 200 m and a downward gradient of 1 in 200.

Distance (m)	200	250	300	350	400	450	500	550	600	650
R.L of ground (m	139.2	138.35	138.2	137.65	138	137.2	135.1	135.9	136.6	136.2

4.a) Discuss the conditions of contract. (7M)

b) What is valuation? Explain the methods of valuation. (7M)

5. a) How do you estimate the volume earthwork from borrow pits. (7M)

b) What are the various methods of estimating? Explain about centerline method with example. (7M)

6. a) Discuss the preparation of schedule of bars. (7M)

b) Describe the detailed specifications of the cement concrete. (7M)

Part B (1X28=28M)

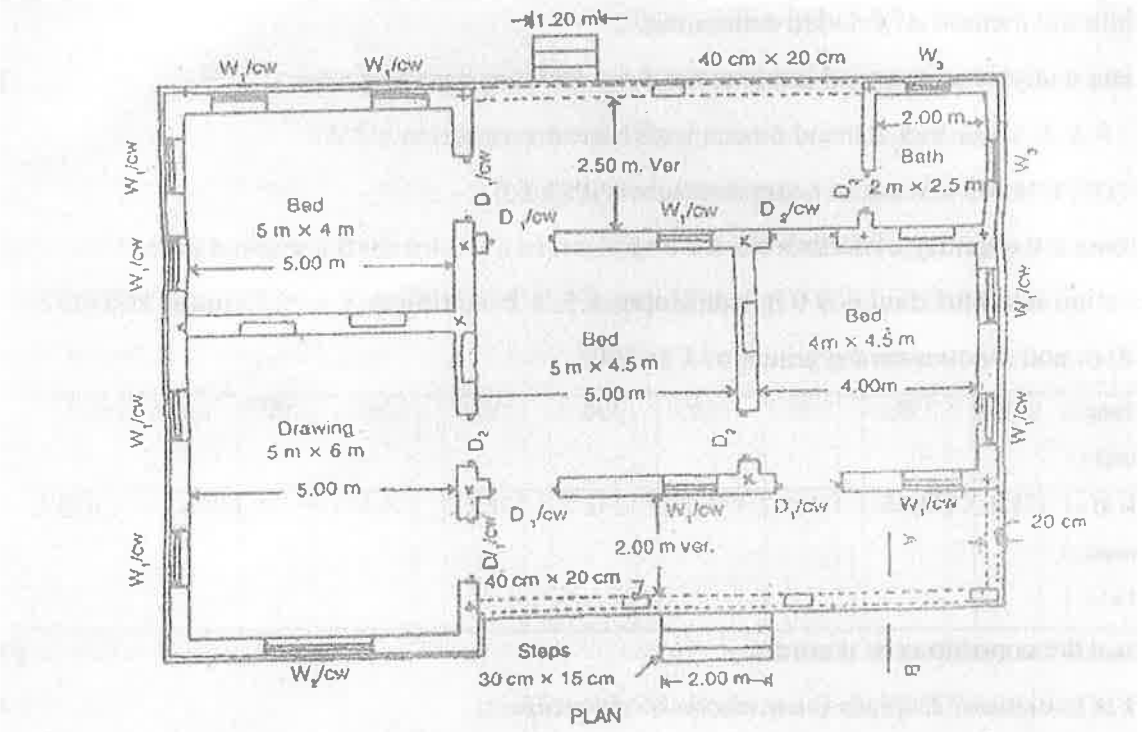
7. Estimate the following quantities of a residential building from the given drawing by using individual wall method. (28M)

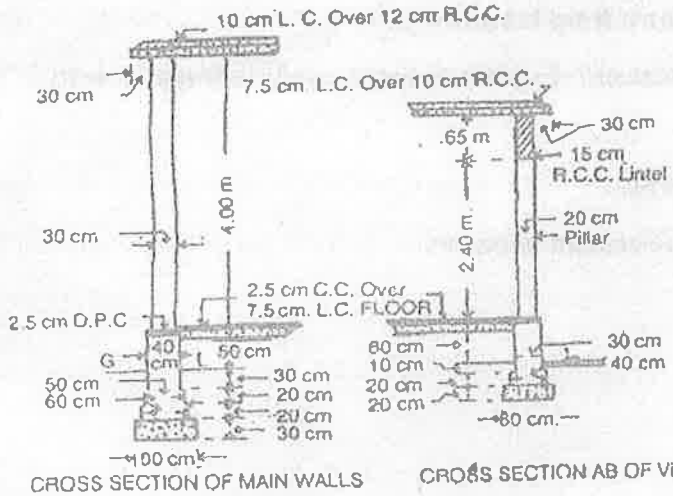
i) Earth work in excavation in foundation

ii) Lime concrete in foundation

iii) 1st class brick work in lime mortar in foundation and plinth with 1:6

iv) D.P.C 2.5 cm thick with 1:2 cement mortar v)1st class Brick work in super structure.





Doors:-
D_1 – 120 cm × 210 cm (1.20 m × 2.10 m)
D_2 – 100 cm × 200 cm (1.00 m × 2.00 m)
D_3 – 75 cm × 180 cm (.75 m × 1.80 m).

Windows:-
W_1 – 100 cm × 150 cm (1.00 m × 1.50 m)
W_2 – 200 cm × 150 cm (2.00 m × 1.50 m)
W_3 – 75 cm × 120 cm (.75 m × 1.20 m)
C.W. – 75 cm × 60 cm (.75 m × .60 m).

Shelves:-
S – 100 cm × 150 cm (1.00 m × 1.50 m)
Lintel Over Doors, Windows Etc
15 cm R.B.

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DONAM VENKATA CHALAMAYYA ENGINEERING COLLEGE::ODALAREVU
(AUTONOMOUS)

IV-B. Tech I-Semester Regular/Supplementary Examinations (BR20), NOVE- 2024

ENGINEERING WITH GEO SYNTHETICS (CE)

Time: 3 hours

Max. Marks: 70

*Question Paper consists of **FIVE** units, each carrying 14 marks*
*Each unit has **TWO** questions; either of them should be answered*
All parts of a question must be answered at one place

UNIT-I

1.a) Explain the following terms Any five with their field application: geogrids, Geo nets, production of Geo textile, internal stability, overall stability, Geoweb, fluid transmission, filtration, separation and protection. (14M)

(OR)

1.c) Describe the basic similarities under differences between geo textiles and geogrids. (7M)

1.d) What is Geo synthetics and give the classification of Geo synthetics. (7M)

UNIT-II

2.a) Explain the functions of Geo synthetics in detail with neat sketch. (7M)

2.b) List the major factors to be considered in the selection of a geo synthetic for field application. Explain any two in detail. (7M)

(OR)

2.c) Discuss briefly the various raw materials used in the manufacture of Geo synthetics. (14M)

UNIT-III

3.a) What are the performance characteristics of Geo synthetics other than their functions? Explain briefly. (7M)

3.b) Give the symbolic representation for a reinforcement of Geo textile. (7M)

(OR)

3.c) Discuss the physical and Mechanical properties of Geogrid under uniaxial load. (14M)

UNIT-IV

4.a) How Geo synthetics are used for the control of ground water level in drainage system. (7M)

4.b) What is the economical aspect of reinforced earth? Explain in detail. (7M)

(OR)

4.c) Explain use of Geo membrane for lining application management and maintenance. (14M)

UNIT-V

5.a) Explain the use of Geo synthetics in road and railway for dewatering and reclamation of land. (14M)

(OR)

5.c) Explain the use of Geo membrane for lining application. With the help of neat sketch explain the various modes of failure of retaining walls. (14M)

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Course Code: **20HS7E03**

BONAM VENKATA CHALAMAYYA ENGINEERING COLLEGE::ODALAREVU
(AUTONOMOUS)

IV-B. Tech I-Semester Regular/Supplementary Examinations (BR20), NOVE-2024

MANAGEMENT SCIENCE

(Common to CE, EEE, ECE, CSE, CSE(AI&DS), AI&ML, CSE(AI&ML))

Time: 3 hours Max. Marks: 70

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*Question Paper consists of **FIVE** units, each carrying 14 marks*
*Each unit has **TWO** questions; either of them should be answered*
All parts of a question must be answered at one place

UNIT-I

1.a)	Explain the nature and importance of management.	(7M)
1.b)	Define management and explain the functions of management.	(7M)
	(OR)	
1.c)	What is an Organization structure? Explain the types of Organization structures.	(7M)
1.d)	What are the principles of organization? Explain.	(7M)

UNIT-II

2.a)	What is plant location? Describe the factors influencing plant location.	(7M)
2.b)	Define EOQ. Write about the factors that influence in determination of EOQ?	(7M)
	(OR)	
2.c)	What do you mean by Statistical Quality Control? Explain its importance in quality control.	(7M)
2.d)	Define material management? Explain the importance of inventory control.	(7M)

UNIT-III

3.a)	Explain different methods of training in an organization.	(7M)
3.b)	What do you mean by marketing? Explain various functions of Marketing.	(7M)
	(OR)	
3.c)	Explain the concept Job Evaluation. Discuss its significance.	(7M)
3.d)	Discuss the different stages in Product Life Cycle.	(7M)

UNIT-IV

4.a)	Explain the characteristics of CPM and list out the steps in crashing a project.	(7M)
4.b)	Explain the characteristics of PERT and its role in project network and in project Crashing.	(7M)
	(OR)	
4.c)	What are the rules to be satisfied for the identification of critical path? Explain.	(7M)

4.d) From the activity details given below, determine the optimal project duration and optimal project cost. Indirect Cost is Rs.150 per day. (7M)

Activity	Normal Time (Days)	Normal Cost (Rs.)	Crash Time (Days)	Crash Cost (Rs.)
1-2	8	200	6	400
1-3	4	300	2	700
2-4	2	100	1	180
2-5	10	200	5	800
3-4	5	200	1	200
4-5	3	160	1	200

UNIT-V

5.a) Draw the flow diagram for Corporate Planning Process and explain various steps involved? (7M)

5.b) Examine the statement, "Environmental scanning most important factor for planning". (7M)

(OR)

5.c) What is Mission? What are the characteristics of a Mission statement? (7M)

5.d) Explain SWOT analysis. Analyse how SWOT analysis can be used for business. (7M)

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BONAM VENKATA CHALAMAYYA ENGINEERING COLLEGE::ODALAREVU
(AUTONOMOUS)

IV-B. Tech I-Semester Regular/Supplementary Examinations (BR20), November- 2024

GREEN ENERGY SOURCES (EEE)

Time: 3 hours Max. Marks: 70

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*Question Paper consists of **FIVE** units, each carrying 14 marks*
*Each unit has **TWO** questions; either of them should be answered*
All parts of a question must be answered at one place

UNIT-I

1.a) Define solar radiation. Explain the process of capturing solar radiation. (7M)
1.b) Derive the expression for the angle of incidence for an inclined surface. (7M)

(OR)

1.c) Write short notes on solar radiation on tilted surfaces. (7M)
1.d) Calculate the angle made by the beam radiation with the normal to a flat collector on Dec 1, at 9:00 A.M. solar time for a location at $28^0$35'N. The collector is tilted at an angle of latitude plus 100, with the horizontal and is pointing due south. (7M)

UNIT-II

2.a) Draw and explain he equivalent circuit of a Solar cell and draw its I–V and P–V Characteristics. (7M)
2.b) List the advantages & disadvantages of PV system. (7M)

(OR)

2.c) Explain the significance of Perturb and Observe MPPT method and how it can realized. (7M)
2.d) Explain how solar photovoltaic cell generates electricity in detail. (7M)

UNIT-III

3.a) Explain with a neat sketch the working of a wind energy conversion system. (7M)
3.b) List the advantages and disadvantages of vertical axis machines and horizontal axis windmill. (7M)

(OR)

3.c) Derive an expression for maximum power coefficient for a horizontal axis wind turbine (7M)
3.d) Find the tip speed ratio if a 6m diameter rotor has rotation of 20rpm and the wind speed is 4m/sec (7M)

UNIT-IV

4.a) Explain the process of pyrolysis in detail. (7M)
4.b) What is the main advantage and disadvantage of biomass energy. (7M)

(OR)

4.c) Explain different digesters in biomass energy conversion process. (7M)
4.d) Explain the benefits of biomass. (7M)

UNIT-V

5.a) What are the different types of batteries? Explain any one in detail with a neat sketch. (7M)
5.b) Differentiate between electrolyte materials for lithium ion and lithium polymer batteries. (7M)

(OR)

5.c) Discuss the applications of lead acid batteries. (7M)
5.d) Explain the working principle of rechargeable battery with neat diagram. (7M)

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BONAM VENKATA CHALAMAYYA ENGINEERING COLLEGE::ODALAREVU
(AUTONOMOUS)

IV-B. Tech I-Semester Regular/Supplementary Examinations (BR20), November- 2024

UTILIZATION OF ELECTRICAL ENERGY (EEE)

Time: 3 hours Max. Marks: 70

*Question Paper consists of **FIVE** units, each carrying 14 marks*
*Each unit has **TWO** questions; either of them should be answered*
All parts of a question must be answered at one place

UNIT-I

1.a) Define Horizontal portal curve and Vertical polar curve. (7M)

1.b) It is required to provide an illumination of 100m candle in a factory hall 40mx10m. Assume that the depreciation factor is 0.8, coefficient of utilization is 0.4 and efficiency of lamp is 14 lumens per watt. Calculate the number of lamps and their disposition. (7M)

(OR)

1.c) Discuss inverse Square law & Lambert's law of Illustration. (14M)

UNIT-II

2.a) Discuss about M.B type mercury vapour lamp. (7M)

2.b) A room measuring 10m x 10m is to be illuminated by 5 lamps and the average illumination required is 40 lumens/m^2. Taking utilization and depreciations factor as 0.5 and 1.2 respectively, determine the man spherical candlepower per lamp. (7M)

(OR)

2.c) Compare between filament lamp & Fluorescent tube. (7M)

2.d) Explain about sodium vapour lamp with a neat diagram. (7M)

UNIT-III

3.a) With a neat sketch explain the construction and principle of indirect core type induction furnace. (7M)

3.b) How the defects of above furnaces can be removed Discuss about such formulae. (7M)

(OR)

3.c) What is skin effect? How is this effect made use of in heating? (7M)

3.d) What are the advantages and applications of electric heating? (7M)

UNIT-IV

4.a) What are the advantages and disadvantages of electrification of track? (7M)

4.b) Explain about trapezoidal speed-time curve of electric traction. (7M)

(OR)

4.c) Discuss the merits and demerits of the D.C and A.C systems for the main and suburban line electrification of the railways. (7M)

4.d) Which system you consider to be the best for the suburban railways in the vicinity of large cities? Given reasons for your answer. (7M)

UNIT-V

5.a) A train maintains the scheduled speed of V_s = 40km/hr while running the distance of 3.2km with 30sec stops. It accelerates at 2.4 km/hr/sec and brakes at 3.6km/hr/sec. Assuming a simplified trapezoidal speed-time curve, calculate (i) the maximum speed (ii) average energy output of the motor in watt-hr/tonne-km, if the tractive resistance averages 45newtons/tonne and additional rotational inertia 8%. (7M)

5.b) Derive expression for the specific energy output for a trapezoidal speed-time run of an electric train. (7M)

(OR)

5.c) Explain briefly the tractive effort required for propulsion and the train is moving up the gradient and down the gradient. (14M)

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Course Code: **20EE7D16**

BONAM VENKATA CHALAMAYYA ENGINEERING COLLEGE::ODALAREVU
(AUTONOMOUS)

IV-B. Tech I-Semester Regular/Supplementary Examinations (BR20), NOVE- 2024
SWITCHGEAR AND PROTECTION (EEE)

Time: 3 hours Max. Marks: 70

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*Question Paper consists of **FIVE** units, each carrying 14 marks*
*Each unit has **TWO** questions; either of them should be answered*
All parts of a question must be answered at one place

UNIT-I

1.a)	Explain about resistance switching of circuit breaker.	(7M)
1.b)	With neat diagram, explain the operation of air circuit breaker.	(7M)
	(OR)	
1.c)	With neat diagram, explain minimum oil circuit breaker.	(7M)
1.d)	Explain the working of Vacuum circuit-breaker with a neat diagram.	(7M)

UNIT-II

2.a)	Derive the universal torque equation of relays. Write torque equation for over current and directional power relay.	(7M)
2.b)	Classify different types of over current relay. Describe the operating principle, Constructional features of non directional over current relay.	(7M)
	(OR)	
2.c)	Describe the operating principle and construction of induction disc relay.	(7M)
2.d)	What are the applications of relays?	(7M)

UNIT-III

3.a)	Explain three zone distance relay protection using impedance relays.	(7M)
3.b)	Explain how generators are protected using restricted earth fault protection.	(7M)
	(OR)	
3.c)	Explain how differential relay are used in the protection of alternator against earth fault.	(7M)
3.d)	A 11kV, 3 phase alternator has full load rated current of 100A. The reactance of the armature winding is 12%. The differential protection system is set to operate on earth fault currents of more than 100A. Find the neutral earthing resistance which gives earth fault protection to 90% of the stator winding?	(7M)

UNIT-IV

4.a)	Explain about instantaneous over current relay.	(7M)
4.b)	Explain about different relay components.	(7M)
	(OR)	
4.c)	Explain about inverse definite time over current relays.	(7M)
4.d)	Give the advantages of static relays over electromagnetic relays.	(7M)

UNIT-V

5.a)	What is lightening? Describe the mechanism of lighting discharge by drawing suitable diagrams.	(7M)
5.b)	Explain about Arcing and Resistance grounding.	(7M)
	(OR)	
5.c)	Describe the construction and principle of operation of (i) Expulsion type lightning arrester. (ii) Valve type lightning arrester.	(7M)
5.d)	Discuss the effect of performance of an ungrounded neutral.	(7M)

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BONAM VENKATA CHALAMAYYA ENGINEERING COLLEGE::ODALAREVU (AUTONOMOUS)

Course Code: **20EE7E03**

IV-B. Tech I-Semester Regular/Supplementary Examinations (BR20), NOVE- 2024

ELECTRICAL DISTRIBUTION SYSTEMS (EEE)

Time: 3 hours

Max. Marks: 70

*Question Paper consists of **FIVE** units, each carrying 14 marks*
*Each unit has **TWO** questions; either of them should be answered*
All parts of a question must be answered at one place

UNIT-I

1.a) Explain following: (i) Contribution factor (ii) load diversity factor (iii) loss factor. (7M)

1.b) Discuss in detail about load modelling and its characteristics in distribution systems. (7M)

(OR)

1.c) Explain the various factors affecting the distribution system planning. (7M)

1.d) Assume that a load of 120 kW is connected at the River side substation. The 15-min weekly maximum demand is given by 70 kW, and the weekly energy consumption is 4100 kWh. Assuming a week is 7 days; determine the demand factor and the 15-min weekly load factor of the substation. (7M)

UNIT-II

2.a) Explain with neat sketches radial type and loop type distribution feeders. (7M)

2.b) Explain the basic design practice of secondary distribution system and also discuss about secondary banking. (7M)

(OR)

2.c) How do you fix the rating of a distribution sub-station? Explain. (7M)

2.d) Explain the optimal location of sub-stations by perpendicular bisector rule. (7M)

UNIT-III

3.a) Derive the expression for voltage drop and total power loss per phase of a uniformly distributed load. Give the assumption made, if any. (14M)

(OR)

3.c) Derive an approximate voltage-drop equation of primary feeder and give the condition for load power factor at which voltage drop is maximum. (7M)

3.d) Prove the power loss due to load currents in the conductors of the single-phase two-wire ungrounded lateral with full capacity neutral is 6 times larger than the one in the equivalent three phase 4-wire lateral. (7M)

UNIT-IV

4.a) Explain the general coordination procedure of protective devices. (7M)

4.b) Explain the protection coordination of fuse-fuse. (7M)

(OR)

4.c) What are the main objectives of distribution protection? Discuss. (7M)

4.d) Explain the principle of operation of (i) Fuses (ii) Auto-line sectionalizer. (7M)

UNIT-V

5.a) Illustrate the economic justification of shunt capacitors for distribution systems. (7M)

5.b) A sub-station supplies power to the following, lighting load 100-kW, a 3-phase induction motor 400 h.p. (298.4 kW), power factor 0.8, efficiency 0.92, a 3-phase synchronous motor giving 100 A at 500 V at an efficiency of 0.94. What must be the power factor of the synchronous motor in order that the power factor of the supply station may be unity? (7M)

(OR)

5.c) With the help of a phasor diagram, show how a series capacitor boosts the voltage? What are the drawbacks of this method? (7M)

5.d) Discuss why the voltage control is required in the distribution system. Describe different types of equipment for voltage control with neat diagrams. (7M)

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Course Code: 20EE7E04

BONAM VENKATA CHALAMAYYA ENGINEERING COLLEGE::ODALAREVU
(AUTONOMOUS)

IV-B.Tech I-Semester Regular/Supplementary Examinations (BR20), NOV- 2024

POWER QUALITY (EEE)

Time: 3 hours | Max. Marks: 70

*Question Paper consists of **FIVE** units, each carrying 14 marks*
*Each unit has **TWO** questions; either of them should be answered*
All parts of a question must be answered at one place

UNIT-I

1.a) Explain in detail about the long duration voltage variation? (14M)

(OR)

1.c) Illustrate the general classes of power quality problems and their attributes? (7M)

1.d) What are the different modes of wave form distortion and explain them in detail? (7M)

UNIT-II

2.a) What is Voltage Sag & Interruption? Explain briefly the estimated voltage sag performance of the supply system. (7M)

2.b) What are the Transient Problems during Load Switching. (7M)

(OR)

2.c) Illustrate the various Principles of Over Voltage Protection. (14M)

UNIT-III

3.a) What is meant by flicker and explain its mitigating techniques? (7M)

3.b) Illustrate briefly about Power factor penalty. (7M)

(OR)

3.c) Discuss the principle of shunt voltage controllers and how it will improve the power quality. (7M)

3.d) Specify the solutions for improving equipment immunity due to voltage sag. (7M)

UNIT-IV

4.a) Discuss briefly about Harmonics verses Transients? (7M)

4.b) Illustrate the phenomena of impulsive transients and oscillatory transients. (7M)

(OR)

4.c) Explain the power quality terms
i) Oscillatory Transients ii) Inter harmonics iii) Notching. (7M)

4.d) Discuss the behaviour of power electronics equipment during voltage sags. (7M)

UNIT-V

5.a) What are various power quality issues we face while interconnecting distributed generation to the grid? Explain. (7M)

5.b) Explain the solutions to wiring and grounding problems due to interconnection of DG to improve power quality. (7M)

(OR)

5.c) Discuss the working of any one device for voltage regulation in distribution systems. (7M)

5.d) Explain in detail the various power quality issues of DG on low voltage Distribution networks (7M)

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Course Code: 20ME7D10

BONAM VENKATA CHALAMAYYA ENGINEERING COLLEGE::ODALAREVU
(AUTONOMOUS)

IV-B.Tech I-Semester Regular/Supplementary Examinations (BR20), November- 2024

REFRIGERATION & AIR-CONDITIONING (MECH)

Time: 3 hours Max. Marks: 70

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*Question Paper consists of **FIVE** units, each carrying 14 marks*
*Each unit has **TWO** questions; either of them should be answered*
All parts of a question must be answered at one place

UNIT-I

1.a) With the help of P-V and T-S diagrams, explain the working of Carnot Refrigerator. (7M)

1.b) A machine working on a Carnot cycle operates between 305 K and 260 K. Determine the COP .When it is operated as (7M)

i) A refrigerating machine
ii) Heat pump
iii) Efficiency, if it is acting as Heat engine

(OR)

1.c) With the help of P-v and T-s diagrams, explain the working of Bell-Coleman Cycle. (7M)

1.d) A simple air refrigeration system is used for an aircraft to take a load of 20 TR, the ambient pressure and temperature are 0.9 bar & 22^0C respectively. The pressure of air is increased to 1 bar due to isentropic ramming action. The air is further compressed in a compressor to 3.5 bar and then cooled in a Heat Exchanger to 70^0C. Finally, the air is passed through the cooling turbine and it is supplied to the cabin at a pressure of 1.013 bar. The air leaves the cabin at a temperature of 25^0C. Assuming isentropic efficiencies of the compressor and the turbine are 80% & 75%. Find the C.O.P of the system. C_p=1.003 kJ/kgK, γ=1.4. (7M)

UNIT-II

2.a) Enumerate the basic components of a vapour compression refrigeration system. Mention their functions in brief. (7M)

2.b) What are the factors affecting the performance of vapour compression refrigeration system and explain in detail? (7M)

(OR)

2.c) A vapour compression machine is used to maintain a temperature of -23^0 C in a refrigerated space. The ambient temperature is 37^0 C. The compressor takes in dry saturated vapour of R-12. A minimum 10^0 C temperature difference is required at the evaporator as well as at condenser. There is no sub cooling of the liquid if the refrigerant flow rate is 1 Kg/min. Estimate (7M)

i)Tonnage of refrigeration
ii) Power requirement in KW
iii) Ratio of COP of this cycle to COP of Carnot cycle.

2.d) Differentiate between the Actual VCR cycle and ideal VCR cycle with the help of P-h diagram. (7M)

UNIT-III

3.a) Describe the advantages and disadvantages of centrifugal over reciprocating compressors. (7M)

3.b) Explain about refrigerant nomenclature. What are the specific number given to (7M)

(i) Difluro-Ethane ($C_2Cl_2F_4$)

(ii) Monofluoro-Trichloro-Methane (CCL_3F) based on refrigerant nomenclature.

(OR)

3.c) With neat sketch explain construction and working of capillary tube. (7M)

3.d) Explain automatic expansion valve with neat sketch. (7M)

UNIT-IV

4.a) Demonstrate the practical aqua-ammonia vapour absorption refrigeration system and mention their applications. (7M)

4.b) Explain the working of Vortex tube with the help of neat sketch. State its advantages and disadvantages. (7M)

(OR)

4.c) Construct the lithium bromide water absorption refrigeration system and explain its working principle. List the major field of applications of the systems. (7M)

4.d) Explain the working principle of three fluid vapour absorption refrigeration system with a neat sketch. What is the purpose of hydrogen in it and list the merits and demerits of the system. (7M)

UNIT-V

5.a) Sketch the psychrometric chart and Explain the properties of moist air and its representation on psychrometric chart. (7M)

5.b) Describe briefly any two types of axial –flow type fans with a neat sketch. (7M)

(OR)

5.c) Demonstrate the comfort chart with neat sketch and briefly discuss about an effective temperature. (7M)

5.d) The following data is collected regarding a space to be air-conditioned, room sensible heat load 42 KW, room latent heat load 12.5 KW, outdoor condition 36^0C DBT and 26^0C WBT, room design condition 24^0C DBT and 50% RH. Ventilation of outdoor air is 40 m^3/min, assume bypass factor 0.15 determine : (7M)

1) room apparatus dew point 2) temperature of air leaving the conditioner 3) total quantity of air supply, 4) Temperature of air entering the coil 5) Coil dew point temperature

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Course Code: 20ME7D16

BONAM VENKATA CHALAMAYYA ENGINEERING COLLEGE::ODALAREVU
(AUTONOMOUS)

IV-B.Tech I-Semester Regular/Supplementary Examinations (BR20), Oct 2024

AUTOMOBILE ENGINEERING (ME)

Time: 3 hours Max. Marks: 70

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*Question Paper consists of **FIVE** units, each carrying 14 marks*
*Each unit has **TWO** questions; either of them should be answered*
All parts of a question must be answered at one place

1.a)	Discuss components of four wheeler automobile. Explain power transmission system unit of automobile with neat sketch.	(14M)
	(OR)	
1.c)	Explain about multiplate clutch with neat diagram?	(7M)
1.d)	Describe sliding mesh gear box with neat sketch.	(7M)
2.a)	Explain steering linkages.	(7M)
2.b)	Explain steering geometry.	(7M)
	(OR)	
2.c)	Explain the functioning of independent suspension system with a neat sketch.	(7M)
2.d)	Discuss about shock absorber.	(7M)
3.a)	Describe pneumatic and vacuum brake system.	(7M)
3.b)	Explain hydraulic braking system with neat sketch.	(7M)
	(OR)	
3.c)	Discuss about engine temperature indicator.	(7M)
3.d)	Explain current voltage regulator.	(7M)
4.a)	Elaborate various requirements of HVs and EVs.	(14M)
	(OR)	
4.c)	Describe the vehicle transmission characteristics in Hybrid vehicles.	(7M)
4.d)	Explain series and parallel electric drive trains.	(7M)
5.a)	Describe anti-lock brake system (ABS) in detail?	(7M)
5.b)	Describe about speed control.	(7M)
	(OR)	
5.c)	Write about service details of piston connecting rod assembly.	(7M)
5.d)	Explain service details of cranck shaft and main bearings.	(7M)

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Course Code: 20ME7D19

BONAM VENKATA CHALAMAYYA ENGINEERING COLLEGE::ODALAREVU
(AUTONOMOUS)

IV-B. Tech I-Semester Regular/Supplementary Examinations (BR20), November- 2024

FARM MACHINERY (ME)

Time: 3 hours Max. Marks: 70

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*Question Paper consists of **FIVE** units, each carrying 14 marks*
*Each unit has **TWO** questions; either of them should be answered*
All parts of a question must be answered at one place

UNIT-I

1.a)	Classify farm machines in detail.	(7M)
1.b)	Discuss merits and demerits of different sources of farm power.	(7M)
	(OR)	
1.c)	Differentiate between ferrous and non-ferrous materials in detail.	(7M)
1.d)	What is farm mechanization? Explain the concept of farm mechanization in India.	(7M)

UNIT-II

2.a)	What is tillage? Explain the objectives of tillage.	(7M)
2.b)	What do you mean by indigenous plough? Discuss about Chisel plough with a neat sketch.	(7M)
	(OR)	
2.c)	What are the functions of mould board plough? Describe its different parts with help of suitable sketch.	(9M)
2.d)	Discuss about Spike tooth harrow with a neat sketch.	(5M)

UNIT-III

3.a)	Explain in brief about different methods of sowing.	(5M)
3.b)	Describe about different types of seeding mechanisms.	(9M)
	(OR)	
3.c)	What is transplanting? Explain the working of vegetable transplanting.	(7M)
3.d)	What is the mechanism for metering fertilizer in a seed cum fertilizer drill? Explain in detail.	(7M)

UNIT-IV

4.a)	What are the functions of sprayers? Explain its applications.	(9M)
4.b)	Discuss about flame weeding in detail. Also write the advantages and disadvantages of flame weeding.	(5M)
	(OR)	
4.c)	Explain about different types of dusters with suitable examples.	(9M)
4.d)	Explain briefly about calibration of the sprayer in detail.	(5M)

UNIT-V

5.a)	Discuss the needs of aqua faming and its significance.	(5M)
5.b)	Discuss about water quality improvement and maintenance methods in brief.	(9M)
	(OR)	
5.c)	What is aeration? What are the different types of aerators? Explain.	(9M)
5.d)	Discuss about the environmental considerations for aqua faming in detail.	(5M)

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Course Code: **20ME7E04**

BONAM VENKATA CHALAMAYYA ENGINEERING COLLEGE::ODALAREVU
(AUTONOMOUS)

IV-B. Tech **I**-Semester Regular/Supplementary Examinations **(BR20),** November-2024

3D PRINTING TECHNOLOGIES (ME)

Time: 3 hours Max. Marks: 70

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*Question Paper consists of **FIVE** units, each carrying 14 marks*
*Each unit has **TWO** questions; either of them should be answered*
All parts of a question must be answered at one place

UNIT-I

1.a)	Describe the steps involved in rapid prototyping process chain.	(7M)
1.b)	Write short notes on advantages of rapid prototyping.	(7M)
	(OR)	
1.c)	Explain in detail the common information work flow indicating the main stage of rapid prototyping system work flow.	(7M)
1.d)	Discuss classification of rapid prototyping system.	(7M)

UNIT-II

2.a)	Discuss the fundamental principle of stereo lithography process.	(7M)
2.b)	Differentiate solid based rapid prototyping and liquid based rapid prototyping.	(7M)
	(OR)	
2.c)	Describe laminated object manufacturing and specification.	(7M)
2.d)	Differentiate between stereo lithography and solid ground curing.	(7M)

UNIT-III

3.a)	Describe the selective laser sintering Process and its advantages	(7M)
3.b)	Explain the powder based rapid prototyping and its applications	(7M)
	(OR)	
3.c)	Explain Working Principle of 3D Printing with a neat sketch and its Applications.	(7M)
3.d)	What is the need of rapid prototyping while conventional tooling are existing?	(7M)

UNIT-IV

4.a)	Explain the STL format. Discuss the Generic and dedicated solution with example.	(7M)
4.b)	Differentiate soft tooling and hard tooling and also Compare direct tooling and indirect tooling.	(7M)
	(OR)	
4.c)	Explain the features of RP software and summarize about solid view, view expert, 3D view and STL view in detail.	(7M)
4.d)	With example Compare velocity 2 and Rhino in detail	(7M)

UNIT-V

5.a)	Describe how reverse engineering will be applied to rapid prototyping techniques	(7M)
5.b)	Discuss with a case study in medical application.	(7M)
	(OR)	
5.c)	Explain with a cases study how design and production of medical devices are done by the rapid prototyping.	(7M)
5.d)	Explain how forensic science and anthropology uses rapid prototyping technique.	(7M)

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Course Code: 20AE7E01

BONAM VENKATA CHALAMAYYA ENGINEERING COLLEGE::ODALAREVU
(AUTONOMOUS)

IV-B.Tech I-Semester Regular/Supplementary Examinations (BR20), NOV- 2024

RESOURCE MANAGEMENT (ME)

Time: 3 hours Max. Marks: 70

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*Question Paper consists of **FIVE** units, each carrying 14 marks*
*Each unit has **TWO** questions; either of them should be answered*
All parts of a question must be answered at one place

UNIT-I

1.a)	What are advantages of resource management? Explain them.	(7M)
1.b)	What are the steps involved in optimization process of resource management.	(7M)

(OR)

1.c)	Discuss about environmental scanning in business.	(7M)
1.d)	Discuss about evaluation of organizational resource.	(7M)

UNIT-II

2.a)	Describe various steps involved in job analysis.	(7M)
2.b)	State the merit rating and market function.	(7M)

(OR)

2.c)	What is mean by man power planning and job evolution?	(7M)
2.d)	Suggest various methods in HRM.	(7M)

UNIT-III

3.a)	Explain HML analysis.	(7M)
3.b)	Explain about economic order quantity.	(7M)

(OR)

3.c)	Define ABC analysis and explain it.	(7M)
3.d)	What is MRP explain it.	(7M)

UNIT-IV

4.a)	What is importance of statistical quality control?	(7M)
4.b)	Explain the types of accepting sampling.	(7M)

(OR)

4.c)	Write brief note about operational resource.	(7M)
4.d)	Explain about methods of work study.	(7M)

UNIT-V

5.a)	What is importance of project management?	(7M)
5.b)	Explain about critical path method.	(7M)

(OR)

5.c)	What are the rules involved in networking analysis.	(7M)
5.d)	Explain about time estimation in PERT.	(7M)

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Course Code: **20EC7D11**

BONAM VENKATA CHALAMAYYA ENGINEERING COLLEGE::ODALAREVU
(AUTONOMOUS)

IV-B. Tech I-Semester Regular/Supplementary Examinations (BR20), November- 2024

ELECTRONIC MEASUREMENTS AND INSTRUMENTATION (ECE)

Time: 3 hours Max. Marks: 70

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*Question Paper consists of **FIVE** units, each carrying 14 marks*
*Each unit has **TWO** questions; either of them should be answered*
All parts of a question must be answered at one place

UNIT-I

1.a)	a) Explain the following terms in detail. (i) Accuracy (ii) Resolution (iii) Precision (iv) Expected value	7M
1.b)	List out different AC voltmeters and explain the working of any one voltmeter in detail.	7M
	(OR)	
1.c)	List out different DC voltmeters and explain any one voltmeter in detail.	7M
1.d)	A Voltmeter having a sensitivity of 30k/V reads 80V on a 100V scale, when connected across an unknown resistor. The current through the resistor is 2mA. Calculate the % of error due to loading effect.	7M

UNIT-II

2.a)	Explain the principle and working of a storage oscilloscope.	7M
2.b)	What is AF oscillators and explain its operation along with circuit diagram.	7M
	(OR)	
2.c)	Draw the circuit diagram of Sweep generator and explain its operation in detail.	7M
2.d)	What are the applications of a Spectrum analyzer?	7M

UNIT-III

3.a)	Quantitatively explain about a bridge which is used for the measurement of the High Quality factor values.	7M
3.b)	Explain the operation of Maxwell's Bridge and derive the condition for balance of a Bridge.	7M
	(OR)	
3.c)	Draw the circuit of Wien Bridge and derive the expression for bridge balance.	7M
3.d)	Discuss various methods of connecting components to a Q-meter for measurement.	7M

UNIT-IV

4.a)	What is Piezo-electric effect? Explain the operation of Piezo-electric transducer.	7M
4.b)	Explain the following terms in detail (i) Thermistors (ii) Sensistors.	7M
	(OR)	
4.c)	Derive the expression for gauge factor of a strain gauge. Also, explain about the thermocouples.	7M
4.d)	A Thermistor has a temperature coefficient of resistance of -0.04 over a temperature range of 20°C to 60°C. Find the resistance of the thermistor at 35°C if the resistance of the thermistor at 25°C is 100 ohm.	7M

UNIT-V

5.a)	Define magnetic field and magnetic flux density. Explain their differences and units of measurement.	7M
5.b)	Describe about Hall Effect sensors in detail.	7M
	(OR)	
5.c)	Define acoustic or sonic sensors. Explain how these sensors detect the intensity and frequency of sound in various media.	14M

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BONAM VENKATA CHALAMAYYA ENGINEERING COLLEGE::ODALAREVU
(AUTONOMOUS)

IV-B.Tech I-Semester Regular/Supplementary Examinations (BR20), November- 2024

NETWORK SECURITY AND CRYPTOGRAPHY (ECE)

Time: 3 hours Max. Marks: 70

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*Question Paper consists of **FIVE** units, each carrying 14 marks*
*Each unit has **TWO** questions; either of them should be answered*
All parts of a question must be answered at one place

1.a)	Explain the cryptographic services and mechanisms.	(7M)
1.b)	Explain the basic components of a conventional encryption system.	(7M)
	(OR)	
1.c)	Discuss about active and passive attacks.	(7M)
1.d)	How is GCD calculated with Euclid's algorithm? Calculate the GCD of (270, 192).	(7M)
2.a)	Using RSA algorithm, Find n, d if p=11, q=3, e=3. Encrypt "Hello World" Message.	(7M)
2.b)	Explain about simplified DES.	(7M)
	(OR)	
2.c)	Let q=353 and α=3. Xa=97, X_b=233. Use Diffie Hellman Key exchange algorithm to find Ya, Y_b and Secret key K.	(7M)
2.d)	Explain the Key Expansion process in AES.	(7M)
3.a)	Give the structure of SHA-512 compression function and explain.	(7M)
3.b)	Explain Chinese Remainder Theorem.	(7M)
	(OR)	
3.c)	State Euler's theorem and describe its importance in cryptographic algorithms.	(7M)
3.d)	Give the structure of CMAC. What is the difference between CMAC and HMAC?	(7M)
4.a)	Explain the authentication procedures defined by X.509 certificate. Illustrate the concept of 'certificate chain' for verification of digital signature on X.509 certificate.	(7M)
4.b)	Write and explain the digital signature algorithm.	(7M)
	(OR)	
4.c)	Write down the steps involved in Elgamal Digital Signature Scheme used for authenticating a person.	(7M)
4.d)	Differentiate digital signature from digital certificate.	(7M)
5.a)	Explain Secure Electronic transaction with neat diagram.	(7M)
5.b)	Draw and explain PGP Cryptographic function for Authentication.	(7M)
	(OR)	
5.c)	Explain in detail S/MIME certification processing.	(7M)
5.d)	Write the methodology involved in computing the keys in SSL/TLS protocol.	(7M)

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Course Code: 20EC7D18

BONAM VENKATA CHALAMAYYA ENGINEERING COLLEGE::ODALAREVU
(AUTONOMOUS)

IV-B. Tech I-Semester Regular/Supplementary Examinations (BR20), November- 2024

WIRELESS SENSOR NETWORKS (ECE)

Time: 3 hours | Max. Marks: 70

*Question Paper consists of **FIVE** units, each carrying 14 marks*
*Each unit has **TWO** questions; either of them should be answered*
All parts of a question must be answered at one place

	UNIT-I	
1.a)	Explain the challenges for WSN.	(7M)
1.b)	Explain Enabling technologies used in WSN.	(7M)
	(OR)	
1.c)	Explain the applications of WSN in detail.	(7M)
1.d)	Explain about Hardware components of sensor node with neat block diagram.	(7M)
	UNIT-II	
2.a)	Explain the design considerations of Physical layer.	(7M)
2.b)	Compare MANET and WANET.	(7M)
	(OR)	
2.c)	Discuss in detail the Transceiver characteristics and structure.	(7M)
2.d)	Explain MANETS.	(7M)
	UNIT-III	
3.a)	Explain the design approaches and performance of S-MAC protocol.	(7M)
3.b)	Discuss the distributed assignment of network wide unique MAC address for WSN.	(7M)
	(OR)	
3.c)	Discuss the major challenges in designing a routing protocol for Adhoc wireless.	(7M)
3.d)	What are the main issues that need to be addressed while designing a MAC protocol for wireless sensor networks?	(7M)
	UNIT-IV	
4.a)	Explain in brief about the Issues in Designing a Routing Protocol for Adhoc Wireless Networks.	(7M)
4.b)	Explain the hierarchical state routing protocol with example and mention advantages and disadvantages.	(7M)
	(OR)	
4.c)	Write about Driven Routing Protocols and Aware Routing Protocols.	(7M)
4.d)	Discuss about Power – Aware Routing Protocols.	(7M)
	UNIT-V	
5.a)	Explain in brief about security in Ad hoc wireless networks.	(7M)
5.b)	Explain the application of WSN for Wireless fidelity systems.	(7M)
	(OR)	
5.c)	Explain various network and application layer security attacks in detail.	(7M)
5.d)	Discuss about ultra-wide band radio communication.	(7M)

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BONAM VENKATA CHALAMAYYA ENGINEERING COLLEGE:ODALAREVU
(AUTONOMOUS)

IV-B.Tech I-Semester Regular/Supplementary Examinations (BR20), Nov- 2024

EMBEDDED AND REAL TIME SYSTEMS (ECE)

Time: 3 hours Max. Marks: 70

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*Question Paper consists of **FIVE** units, each carrying 14 marks*
*Each unit has **TWO** questions; either of them should be answered*
All parts of a question must be answered at one place

UNIT-I

1.a)	Define an embedded system, explain the characteristics of Embedded Systems.	(7M)
1.b)	List the major application areas of embedded systems with an example to each.	(7M)
	(OR)	
1.c)	Discuss in detail about Application specific and Domain specific embedded system design.	(7M)
1.d)	Identify the role of sensors and actuators in embedded system design	(7M)

UNIT-II

2.a)	What is the Synchronous Communication? Discus different ways of Synchronization.	(7M)
2.b)	Discuss in detail about wireless devices	(7M)
	(OR)	
2.c)	Identify the role of timers and counters in real time systems.	(7M)
2.d)	Describe the process of serial communication with an example.	(7M)

UNIT-III

3.a)	What are the basic approaches for the design and implementation of embedded firmware? Explain any one approach.	(7M)
3.b)	Discuss about interrupt servicing mechanism	(7M)
	(OR)	
3.c)	Explain in detail about device driver programming.	(7M)
3.d)	Explain briefly about Mixing Assembly and high-level language	(7M)

UNIT-IV

4.a)	What is a process? With a neat representation explain the process states and state transition.	(7M)
4.b)	Explain the different multitasking models in the operating system context.	(7M)
	(OR)	
4.c)	List and explain about various task synchronization techniques.	(7M)
4.d)	Explain the concept of hardware software trade-off in real time systems.	(7M)

UNIT-V

5.a)	Discuss in detail about the role of Integrated Development Environment (IDE) for embedded Software development	(7M)
5.b)	Explain the advantages and limitations of simulator-based debugging.	(7M)
	(OR)	
5.c)	Explain the boundary scan-based hardware debugging in detail.	(7M)
5.d)	List cross compilation files generated in embedded system development.	(7M)

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Course Code: 20CS7E05

BONAM VENKATA CHALAMAYYA ENGINEERING COLLEGE::ODALAREVU
(AUTONOMOUS)

IV-B.Tech I-Semester Regular/Supplementary Examinations (BR20), NOV- 2024

SECURE CODING TECHNIQUES (ECE,CSE,CSE (AI&DS), AI&ML)

Time: 3 hours | Max. Marks: 70

*Question Paper consists of **FIVE** units, each carrying 14 marks*
*Each unit has **TWO** questions; either of them should be answered*
All parts of a question must be answered at one place

UNIT-I

1.a) Explain different types in network and communication. (7M)
1.b) Discuss about cyber security objectives and services. (7M)

(OR)

1.c) Explain different networking models. (7M)
1.d) Describe about categories of Attacks. (7M)

UNIT-II

2.a) Explain about AI injection Risks root causes and its Mitigation. (7M)
2.b) Discuss about A7 Cross Site Scripting XSS. (7M)

(OR)

2.c) Describe about A2 Broken Authentication and Session management. (7M)
2.d) Discuss about A8 Insecure Deserialization. (7M)

UNIT-III

3.a) Discuss about Input and Output Sanitization. (7M)
3.b) Explain about type safety and memory management to mitigate errors. (7M)

(OR)

3.c) Describe about error handling and Exception management with example. (7M)
3.d) Explain about vulnerability scanning and penetration testing. (7M)

UNIT-IV

4.a) Describe potential software risks in C and C++ as well as defensive coding practices. (7M)
4.b) Define Denial of service and how java can manage this attack. (7M)

(OR)

4.c) Describe purpose and implementation low level design inspections and unit tests. (7M)
4.d) Discuss about preventive planning and clean coding techniques. (7M)

UNIT-V

5.a) Discuss about conditional statements in python with an example. (7M)
5.b) Explain about loops in python through example code. (7M)

(OR)

5.c) Explain about functions in python through example code. (7M)
5.d) Discuss about operations on files in python. (7M)

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Course Code: 20CS7D09

BONAM VENKATA CHALAMAYYA ENGINEERING COLLEGE::ODALAREVU
(AUTONOMOUS)

IV-B.Tech I-Semester Regular/Supplementary Examinations (BR20), November- 2024

CRYPTOGRAPHY AND NETWORK SECURITY (CSE)

Time: 3 hours Max. Marks: 70

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*Question Paper consists of **FIVE** units, each carrying 14 marks*
*Each unit has **TWO** questions; either of them should be answered*
All parts of a question must be answered at one place

UNIT-I

1.a) Explain about network security model with a neat sketch (7M)

1.b) "Network security is complex and fascinating". Validate the statement with proper reasoning (at least 4 reasons). (7M)

(OR)

1.c) Explain in detail about different active and passive attacks (7M)

1.d) Distinguish between cryptography and stegnography. (7M)

UNIT-II

2.a) With the relevant diagram explain single round of DES algorithm (7M)

2.b) It is possible to use a hash function to construct a block cipher with a structure similar to DES. Because a hash function is one way and a block cipher must be reversible (to decrypt), how is it possible? (7M)

(OR)

2.c) With a neat block diagram explain the overall structure of AES encryption and decryption (7M)

2.d) Explain key generation process in DES algorithm with a neat diagram (7M)

UNIT-III

3.a) Illustrate Diffie Hellman Key exchange algorithm in detail (7M)

3.b) Solve the following problems using Diffie-Hellman key exchange algorithm: (7M)

i. Consider a prime number p =19. Prove that a=3 is primitive root
ii. Consider user A private key $X_A = 7$ and user B private key $X_B = 11$. Find the shared key

(OR)

3.c) Perform encryption and decryption using the RSA algorithm for P=3,q=11, e=7,M=5 (7M)

3.d) Write Elgamal Cryptography algorithm with example (7M)

UNIT-IV

4.a) Explain the different types of Authentication Procedures in X.509 (7M)

4.b) Explain digital signatures algorithm in detail (7M)

(OR)

4.c) With a diagram, explain the creation of 80-word input sequence for SHA-512 used in processing of a single block (7M)

4.d) List the properties of Hash function and explain the significance of each (7M)

UNIT-V

5.a) What are the services provided by IPSec? Where can be the IPSec located on a network (7M)

5.b) Explain in brief the importance of the components of SSL protocol stack. (7M)

(OR)

5.c) Explain PGP message generation and reception (7M)

5.d) Justify why S/MIME is a security enhancement to MIME internet e-mail format standard? (7M)

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BONAM VENKATA CHALAMAYYA ENGINEERING COLLEGE:ODALAREVU
(AUTONOMOUS)

IV-B. Tech I-Semester Regular/Supplementary Examinations (BR20), November- 2024

SOFTWARE TESTING METHODOLOGIES (CSE, CSE(AI&DS), AI&ML)

Time: 3 hours Max. Marks: 70

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*Question Paper consists of **FIVE** units, each carrying 14 marks*
*Each unit has **TWO** questions; either of them should be answered*
All parts of a question must be answered at one place

	UNIT-I	
1.a)	State and explain various dichotomies in software testing.	(7M)
1.b)	What are structural bugs? Explain.	(7M)
	(OR)	
1.c)	Explain heuristics procedures for sensitizing paths.	(7M)
1.d)	Explain about life cycle of Bug.	(7M)
	UNIT-II	
2.a)	What is transaction flow testing? Explain with example.	(7M)
2.b)	What is transaction instrumentation in transaction flow? Explain with example.	(7M)
	(OR)	
2.c)	Explain the terms Dicing, Data-flow and debugging.	(7M)
2.d)	Explain Data - flow testing strategies.	(7M)
	UNIT-III	
3.a)	Explain the following: i) Nonlinear domain boundaries ii) Complete domain boundaries	(7M)
3.b)	Discuss with example the equal - span range/ Domain compatibility bugs	(7M)
	(OR)	
3.c)	Explain the importance of interface testing.	(7M)
3.d)	Define domain testing. Explain about nice domains in detail.	(7M)
	UNIT-IV	
4.a)	Reduce the following functions using K-Maps: $F(A,B,C,D) = P(4,5,6,7,8,12,13)+d(1,15)$	(7M)
4.b)	Explain path expression with examples.	(7M)
	(OR)	
4.c)	Explain Regular Expressions and Flow Anomaly detection.	(7M)
4.d)	Write the procedure to count minimum number of paths in a graph.	(7M)
	UNIT-V	
5.a)	Explain good state graph with suitable example.	(7M)
5.b)	What are properties of relations? Explain.	(7M)
	(OR)	
5.c)	What are graph matrices and their applications? Explain.	(7M)
5.d)	Discuss about matrix representation software.	(7M)

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Course Code: 20CS7D17

BONAM VENKATA CHALAMAYYA ENGINEERING COLLEGE::ODALAREVU
(AUTONOMOUS)

IV-B.Tech I-Semester Regular/Supplementary Examinations (BR20), Nov-2024

MOBILE COMPUTING (CSE)

Time: 3 hours Max. Marks: 70

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*Question Paper consists of **FIVE** units, each carrying 14 marks*
*Each unit has **TWO** questions; either of them should be answered*
All parts of a question must be answered at one place

UNIT-I

1.a)	Discuss about mobile and hand held devices	(7M)
1.b)	Elaborate GSM-Services	(7M)
	(OR)	
1.c)	Discuss about Radio interfaces	(7M)
1.d)	Explain Novell applications of Mobile Computing	(7M)

UNIT-II

2.a)	Explain Medium Access Control (MAC)	(7M)
2.b)	Describe specialized MAC	(7M)
	(OR)	
2.c)	Explain SDMA, FDMA, TDMA	(14M)

UNIT-III

3.a)	Elaborate IP and mobile IP network layer	(7M)
3.b)	Explain tunnelling and encapsulation	(7M)
	(OR)	
3.c)	Illustrate route optimization	(7M)
3.d)	Explain DHCP	(7M)

UNIT-IV

4.a)	Explain conventional TCP/IP protocols	(7M)
4.b)	Elaborate Indirect TCP	(7M)
	(OR)	
4.c)	Explain query processing	(7M)
4.d)	Describe data recovery process and QOS issues	(7M)

UNIT-V

5.a)	Explain communication asymmetry	(7M)
5.b)	Discuss classification of data delivery mechanisms	(7M)
	(OR)	
5.c)	Illustrate data dissemination	(7M)
5.d)	Explain data synchronization	(7M)

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BONAM VENKATA CHALAMAYYA ENGINEERING COLLEGE::ODALAREVU
(AUTONOMOUS)

IV-B. Tech I-Semester Regular/Supplementary Examinations (BR20), NOV- 2024

NATURE INSPIRED COMPUTING TECHNIQUES
(Common to CSE, CSE_AI&DS and AI&ML)

Time: 3 hours Max. Marks: 70

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*Question Paper consists of **FIVE** units, each carrying 14 marks*
*Each unit has **TWO** questions; either of them should be answered*
All parts of a question must be answered at one place

	UNIT-I	
1.a)	Explain the importance of analyzing algorithms. What metrics are most commonly used to evaluate an algorithm's efficiency and effectiveness?	(7M)
1.b)	Discuss nature inspired algorithms.	(7M)
	(OR)	
1.c)	What is parameter tuning? Why is it essential in the context of nature-inspired algorithms?	(7M)
1.d)	What is stochastic tunneling? and how does it differ from simulated annealing in addressing optimization problems?	(7M)
	UNIT-II	
2.a)	Explain about the role of genetic operators.	(7M)
2.b)	Discuss different variants of genetic algorithms.	(7M)
	(OR)	
2.c)	Illustrate the convergence analysis.	(7M)
2.d)	Explain about the Accelerated particle swarm optimization.	(7M)
	UNIT-III	
3.a)	Provide examples of real-world applications where the Firefly Algorithm has been successfully implemented.	(7M)
3.b)	Discuss different variants of cuckoo search.	(7M)
	(OR)	
3.c)	Explain the main steps of the Cuckoo Search Algorithm. What are the key operations, and how does each contribute to the optimization process?	(7M)
3.d)	Discuss the Levy flight strategy used in Cuckoo Search. How does it enhance exploration and improve the algorithm's ability to avoid local minima?	(7M)
	UNIT-IV	
4.a)	Discuss the behaviour of the Microbats.	(7M)
4.b)	Explain loudness and pulse emission modules.	(7M)
	(OR)	
4.c)	Describe the continuous optimization.	(7M)
4.d)	Discuss the clustering and data mining.	(7M)
	UNIT-V	
5.a)	What is flower pollination? Discuss the characteristics of flower pollination.	(7M)
5.b)	What is multi objective flower pollination algorithm? Explain.	(7M)
	(OR)	
5.c)	Explain about single objective test functions.	(7M)
5.d)	Explain the following test functions: i) Rastrigin Function ii) Griewank Function iii) Easom Function	(7M)

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Course Code:20AD7D07

BONAM VENKATA CHALAMAYYA ENGINEERING COLLEGE::ODALAREVU
(AUTONOMOUS)

IV-B. Tech I-Semester Regular/Supplementary Examinations (BR20), November- 2024

REINFORCEMENT LEARNING [CSE-AI&DS & AI&ML]

Time: 3 hours | Max. Marks: 70

*Question Paper consists of **FIVE** units, each carrying 14 marks*
*Each unit has **TWO** questions; either of them should be answered*
All parts of a question must be answered at one place

	UNIT-I	
1.a)	Describe key constituents of reinforcement learning.	(7M)
1.b)	What is meant by passive and active reinforcement learning and how do we compare the two?	(7M)
	(OR)	
1.c)	Discuss Bandit Algorithm in details.	(7M)
1.d)	Explain about tracking a non stationary problem.	(7M)
	UNIT-II	
2.a)	Discuss the convergence of policy iteration and when it is considered complete.	(7M)
2.b)	Explain about various goals and rewards with examples.	(7M)
	(OR)	
2.c)	Define Dynamic programming. Explain about policy evaluation.	(7M)
2.d)	Discuss about agent –environment interface with examples.	(7M)
	UNIT-III	
3.a)	Explain a Unifying Algorithm: n – step with an example.	(7M)
3.b)	Explain Deferential Semi-gradient n-step Sarsa.	(7M)
	(OR)	
3.c)	Discuss the advantages of TD Prediction Methods	(7M)
3.d)	Explain about Monte Carlo Control and Monte Carlo Control without Exploring Starts with examples.	(7M)
	UNIT-IV	
4.a)	Describe how semi-gradient TD methods differ from full-gradient methods.	(7M)
4.b)	Explain with examples about Off-policy divergence	(7M)
	(OR)	
4.c)	Discuss the advantages and potential drawbacks of using Gradient-TD methods.	(7M)
4.d)	How does reducing variance contribute to the stability and effectiveness of off-policy learning?	(7M)
	UNIT-V	
5.a)	Explain Policy Approximation and its advantages.	(7M)
5.b)	What are the advantages and limitations of using TD-Gammon's approach in other board games?	(7M)
	(OR)	
5.c)	Explain about the Policy Gradient Theorem.	(7M)
5.d)	Discuss Actor–Critic Methods.	(7M)

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Course Code: 20AD7D15

BONAM VENKATA CHALAMAYYA ENGINEERING COLLEGE::ODALAREVU
(AUTONOMOUS)

IV-B.Tech I-Semester Regular/Supplementary Examinations (BR20), Nov-2024

DATA VISUALIZATION (CSE(AI&DS)/AI&ML)

Time: 3 hours Max. Marks: 70

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*Question Paper consists of **FIVE** units, each carrying 14 marks*
*Each unit has **TWO** questions; either of them should be answered*
All parts of a question must be answered at one place

UNIT-I

1.a)	Briefly explain about various types of data in creating effective visualizations ?	(7M)
1.b)	What are Cartesian coordinates and explain how they help in representing complex data in visualizations?	(7M)

(OR)

1.c)	Explain how colors are used to represent data values effectively in visualization?	(7M)
1.d)	Explain how geospatial data is represented in data visualizations to showcase geographic patterns?	(7M)

UNIT-II

2.a)	Construct and apply stacked bar charts to compare data sets with multiple categories?	(7M)
2.b)	Explain different techniques used for multiple distribution?	(7M)

(OR)

2.c)	Differentiate between histograms and density plots in terms of their use, data representation in data visualization?	(7M)
2.d)	Explain the use of Q-Q plot to assess the normality of a dataset?	(7M)

UNIT-III

3.a)	Differentiate between stacked bar charts and stacked density plots.	(7M)
3.b)	Explain the use of tree maps to visualize hierarchical data	(7M)

(OR)

3.c)	How can you use a scatter plot to visualize the relationship between two continuous variables? Give an example.	(7M)
3.d)	Explain the use of multiple time series to analyze and compare trends across different variables over time	(7M)

UNIT-IV

4.a)	Explain different layers used in geospatial data visualization	(7M)
4.b)	Discuss the concepts of detrending and time series decomposition in data analysis	(7M)

(OR)

4.c)	Explain the uses of cartograms in data visualization, and how do they help in visualizing complex data by distorting geographic areas to reflect quantitative information	(7M)
4.d)	How do choropleth maps work in data visualization, and what is their role in displaying regional variations of a dataset by using color gradients or patterns across geographic regions?	(7M)

UNIT-V

5.a)	Explain the concept of logarithmic axes in data visualization, and how do they differ from linear axes in representing data	(7M)
5.b)	Explain the uses of 2D histograms in data visualization and discuss how they help in analyzing the joint distribution of two continuous variables?	(7M)

(OR)

5.c)	Explain the concepts of partial transparency and jittering in data visualization	(7M)
5.d)	Explain the use of non-monolithic color scales to encode data values in visualization	(7M)

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