



LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING (AUTONOMOUS)

L.B. Reddy Nagar :: Mylavaram-521 230 :: Krishna Dist. :: A.P.
Approved by AICTE, New Delhi. Affiliated to JNTUK, Kakinada

B.Tech.(VIII-Semester) (R14) Advanced Supplementary Examinations, September 2021

TIME TABLE

TIME :10.00 AM to 1.00 PM

A.Y. 2021-22

DATE	ASE	CE	CSE	ECE	EEE	EIE	IT	ME
14-09-2021 (Tuesday)	S349 - Principles of Management	S338 - Pavement Analysis and Design Engineering	S329 - Operations Research	S362 - Radar Systems	S230 - Energy Conservation and Audit	S311 - Micro Electro Mechanical Systems	OE-II S329 - Operations Research	S343 - Power Plant Engineering
15-09-2021 (Wednesday)	PE-IV S106 - Advanced Propulsion Systems	PE-IV S438 - Rural Road Technology S111 - Advanced Structural Design	PE-IV S157 - Cloud Computing	PE-IV S375 - Satellite Communications S426 - Wireless Sensor Networks	PE-IV S263 - HVDC Transmission S248 - FACTS Controllers	PE-IV S229 - Embedded Systems Design S107 - Advanced Sensors	PE-IV S326 - Object Oriented Software Engineering	PE-IV S353 - Production Planning and Control S365 - Rapid Prototyping
16-09-2021 (Thursday)	OE-II S376 - Satellite Technology	OE-II S433 - Green Buildings S436 - Modern Construction Systems and Techniques S151 - Building Technology	OE-II S296 - Managing Innovation and Entrepreneurship	OE-II S140 - Automobile Electronics S425 - Web Technologies S246 - Evolutionary Computing Techniques S371 - Robot Engineering	OE-II S180 - Database Management Systems S373 - Robotics and Automation	OE-II S370 - Renewable Energy Sources	S270 - Industrial Management	OE-II S409 - Total Quality Management S273 Innovation and Entrepreneurship

Note: Any omissions or clashes in the time table may please be informed to the Controller of Examinations immediately.

Date: 01-09-2021


CONTROLLER OF EXAMINATIONS


PRINCIPAL

Copy to: 1. Vice-Principal, Deans & HoDs
3. Canteen, Security & Hostels

2. Transport in-charge & Librarian
4. All Notice Boards

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
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L.B. Reddy Nagar :: Mylavaram – 521 230 :: Krishna Dist.:A.P.

B.Tech. (VIII Semester) ~~Regular~~/Supplementary Examinations

S438-RURAL ROAD TECHNOLOGY

(CE)

Time : 3 hours

Max. Marks : 75

PART-A

(Compulsory question)

Q.No	Questions	Marks	CO	BL
1(a)	Define the term "Utility value" of the habitation.	1M	CO1	L1
(b)	Mention the requirements for good bituminous binder.	1M	CO2	L1
(c)	Enlist the low cost alternate materials for sub base and base course construction.	1M	CO3	L1
(d)	Define the term "lean concrete".	1M	CO4	L1
(e)	Name the activities included in preventive maintenance.	1M	CO5	L1
(f)	What are the fundamental principles of road alignment?	2M	CO1	L1
(g)	List out the advantages of using modified bitumen in road construction.	2M	CO2	L1
(h)	Mention the objectives of providing bituminous surfacing on rural roads.	2M	CO3	L1
(i)	Enlist the advantages of waste materials in road construction.	2M	CO4	L1
(j)	Differentiate prime coat and seal coat in bituminous construction.	2M	CO5	L1

PART-B

(Answer any FOUR questions. All questions carry equal marks)

2(a)	Elaborate the planning database for developing the rural road plan.	7M	CO1	L1
(b)	Illustrate the obligatory points controlling the road alignment with neat sketches.	8M	CO1	L2
3(a)	Discuss the effect of using superior pavement materials in flexible pavement.	7M	CO2	L2
(b)	Illustrate the deep catch water surface drain on the hillside with neat sketches.	8M	CO2	L2
4(a)	Discuss the construction of special pavements as per IRC SP: 20-2002.	7M	CO3	L2
(b)	Describe the various classifications of construction techniques for rural roads.	8M	CO3	L1
5.	Describe the materials and construction procedure for lime fly ash concrete in road constructions.	15M	CO4	L2
6(a)	Discuss the guidelines for quality control in rigid pavement construction.	7M	CO5	L2
(b)	Elaborate the defects occurring in bituminous surface roads, their causes and maintenance measures.	8M	CO5	L1
7(a)	Describe the term "Utility value" in network planning.	7M	CO1	L1
(b)	Develop the plan for rural road approach for network connectivity of habitations.	8M	CO1	L1
8(a)	Mention the tests and requirements for good bituminous binder.	7M	CO2	L1
(b)	Discuss the specifications recommended for construction of water bound macadam as base course of rural roads.	8M	CO4	L2

H.T.No

14 SEP 2021

R14

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B.Tech. (VIII Semester) ~~Regular~~ / Supplementary Examinations

S329-OPERATIONS RESEARCH

(CSE&IT)

Time : 3 hours

Max. Marks : 75

PART-A

(Compulsory question)

Q.No	Questions	Marks	CO	BL
1(a)	What is meant by linear programming problem?	1M	CO1	L1
(b)	List various methods used for obtaining an initial solution for a transportation problem.	1M	CO2	L1
(c)	Define saddle point.	1M	CO3	L1
(d)	Write the structure of a Queuing system.	1M	CO4	L1
(e)	Discuss about design constrains.	1M	CO5	L2
(f)	Write any two limitations of model in OR.	2M	CO1	L1
(g)	Why generally an assignment problem cannot be solved by transportation algorithm.	2M	CO2	L1
(h)	Define pure strategy.	2M	CO3	L1
(i)	Demonstrate the Group Replacement policy.	2M	CO4	L3
(j)	Elaborate general similarities between dynamic programming and linear programming.	2M	CO5	L2

PART-B

(Answer any FOUR questions. All questions carry equal marks)

2(a)	Describe the phases of Operations Research in detail.	7M	CO1	L1																																
(b)	Use the graphical method to maximize, $Z = 6x_1 + 8x_2$ subjected to constraints $5x_1 + 10x_2 \leq 60$, $4x_1 + 4x_2 \leq 40$ and $x_1, x_2 \geq 0$.	8M	CO1	L3																																
3(a)	Explain the variations in transportation problem.	7M	CO2	L2																																
(b)	Solve the following transportation problem and find optimal transportation cost. <table><tr><td></td><td>S1</td><td>S2</td><td>S3</td><td>supply</td></tr><tr><td>D1</td><td>9</td><td>15</td><td>12</td><td>10</td></tr><tr><td>D2</td><td>6</td><td>8</td><td>13</td><td>23</td></tr><tr><td>D3</td><td>9</td><td>3</td><td>11</td><td>27</td></tr><tr><td>demand</td><td>21</td><td>14</td><td>25</td><td></td></tr></table>		S1	S2	S3	supply	D1	9	15	12	10	D2	6	8	13	23	D3	9	3	11	27	demand	21	14	25		8M	CO2	L1							
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4(a)	Solve the following game by using the principle of dominance. <table><tr><td></td><td colspan="5">Player B</td></tr><tr><td rowspan="5">Player A</td><td></td><td>I</td><td>II</td><td>III</td><td>IV</td></tr><tr><td>I</td><td>3</td><td>2</td><td>4</td><td>0</td></tr><tr><td>II</td><td>3</td><td>4</td><td>2</td><td>4</td></tr><tr><td>III</td><td>4</td><td>2</td><td>4</td><td>0</td></tr><tr><td>IV</td><td>0</td><td>4</td><td>0</td><td>8</td></tr></table>		Player B					Player A		I	II	III	IV	I	3	2	4	0	II	3	4	2	4	III	4	2	4	0	IV	0	4	0	8	7M	CO3	L1
	Player B																																			
Player A		I	II	III	IV																															
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	II	3	4	2	4																															
	III	4	2	4	0																															
	IV	0	4	0	8																															

(b)	A item is produced at the rate of 50 items per day. The demand occurs at rate of 25 items per day. If the setup cost is Rs 100 per setup and holding cost is Rs 0.01 per unit of item per day. Find the economic lot size for one run, assuming that shortages are not permitted. Also find the time of cycle and minimum total cost for one run.	8M	CO3	L1																																																		
5.	A manufacturer is offered two machines A and B. A has cost price of Rs. 2,600, its running cost is Rs. 400 for each of the first 6 years and increases by Rs. 100 every subsequent year. Machine B, having the same capacity as A, costs Rs. 1,250, has running cost of Rs.500 for 5 years, increasing by Rs. 100 per year thereafter. If money is worth 10% per year, which machine should be purchased? Scrap value of both machines is negligibly small.	15M	CO4	L1																																																		
6.	An oil company has 8 units of money available for exploration of three sites. If oil is present at a site, the probability of finding it depends upon the amount allocated for exploiting the site, as given below. The probability that the oil exists at sites 1, 2 and 3 is 0.4, 0.3 and 0.2 respectively. Find the optimal allocation of money. <table><tr><td></td><td colspan="9">Units of money allocated</td></tr><tr><td></td><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td></tr><tr><td>Site 1</td><td>0.0</td><td>0.0</td><td>0.1</td><td>0.2</td><td>0.3</td><td>0.5</td><td>0.7</td><td>0.9</td><td>1.0</td></tr><tr><td>Site 2</td><td>0.0</td><td>0.1</td><td>0.2</td><td>0.3</td><td>0.4</td><td>0.6</td><td>0.7</td><td>0.8</td><td>1.0</td></tr><tr><td>Site 3</td><td>0.0</td><td>0.1</td><td>0.1</td><td>0.2</td><td>0.3</td><td>0.5</td><td>0.8</td><td>0.9</td><td>1.0</td></tr></table>		Units of money allocated										0	1	2	3	4	5	6	7	8	Site 1	0.0	0.0	0.1	0.2	0.3	0.5	0.7	0.9	1.0	Site 2	0.0	0.1	0.2	0.3	0.4	0.6	0.7	0.8	1.0	Site 3	0.0	0.1	0.1	0.2	0.3	0.5	0.8	0.9	1.0	15M	CO5	L1
	Units of money allocated																																																					
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Site 1	0.0	0.0	0.1	0.2	0.3	0.5	0.7	0.9	1.0																																													
Site 2	0.0	0.1	0.2	0.3	0.4	0.6	0.7	0.8	1.0																																													
Site 3	0.0	0.1	0.1	0.2	0.3	0.5	0.8	0.9	1.0																																													
7(a)	A machine costs Rs. 400. Operation and maintenance costs are zero for the first year and increase by Rs.200 every year. If money is worth 5% every year, determine the best age at which the machine should be replaced. The resale value of the machine negligibly small. What is the weighted average cost of owning and operating the machine?	7M	CO4	L1																																																		
(b)	A particular item has a demand of 9000 units per year. The cost of one procurement is Rs. 100 and the holding cost per unit is Rs. 2.40 per year. The cost of shortage is Rs. 5 per unit per year. Determine (i) the economic lot size, (ii)the number of orders per year, (iii) the time between orders and (iv) the total cost per year if the cost of one unit is Rs.1.	8M	CO3	L3																																																		
8(a)	Write engineering application for optimization.	7M	CO5	L1																																																		
(b)	If for a period of 3 hours in a day (8 A.M. to 11 A.M.) trains arrive at the yard every 20 minutes but the service time is 35 minutes, calculate for this period. (i) The probability that the yard is empty, (ii) The average number of trains at the yard. Line capacity of the yard is limited to 5 trains only.	8M	CO4	L3																																																		

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B.Tech. (VIII Semester) ~~Regular~~/Supplementary Examinations

S180-DATABASE MANAGEMENT SYSTEMS

(EEE)

Time : 3 hours

Max. Marks : 75

PART-A

(Compulsory question)

Q.No	Questions	Marks	CO	BL
1(a)	Define Database.	1M	CO1	L1
(b)	Write syntax for INSERT command in SQL.	1M	CO2	L1
(c)	What is join dependency?	1M	CO3	L1
(d)	What is check point?	1M	CO4	L1
(e)	Give examples of tertiary storage.	1M	CO5	L1
(f)	What is a weak entity set? How is it represented in E-R diagrams.	2M	CO1	L1
(g)	Differentiate between candidate key and super key.	2M	CO2	L2
(h)	Give reasons for carrying out normalization.	2M	CO3	L2
(i)	List the properties of transactions.	2M	CO4	L1
(j)	List out different organizations of records in files.	2M	CO5	L1

PART-B

(Answer any FOUR questions. All questions carry equal marks)

2(a)	Compare the three tier architecture for the database with two tier architecture with neat diagrams.	7M	CO1	L2
(b)	Differentiate database systems with file systems.	8M	CO1	L2
3(a)	Construct an ER diagram for university registrar's office. The office maintains data about each class, including the instructor, the enrolment and the time and place of the class meetings. For each student class pair a grade is recorded. Determine the entities and relationships.	7M	CO2	L3
(b)	Differentiate between referential integrity constraints and key constraints with example.	8M	CO2	L3
4(a)	Describe the desirable properties of decomposition in normalization.	7M	CO3	L2
(b)	Compare BCNF with 3NF. Quote suitable examples.	8M	CO3	L2
5(a)	Why concurrency control is needed? Explain the problems that would arise when concurrency control is not provided by the database system.	7M	CO4	L4
(b)	What is serialization? Explain it.	8M	CO4	L2
6(a)	Differentiate between dense index and sparse index files with an example.	7M	CO5	L3
(b)	Write a short note on: (i) Optical disk (ii) Magnetic tapes.	8M	CO5	L2
7(a)	Explain the various applications of DBMS.	7M	CO1	L2
(b)	State 1NF, 2NF & 3NF and explain with examples.	8M	CO3	L2
8(a)	Consider the following schemas: Sailors (sid, sname, rating, age), Reserves (sid, bid, day), Boats (bid, bname, color) Write the following queries in relational algebra: (i) Find the name of sailors who have reserved boat 103. (ii) Find the names and ages of sailors with a rating above 7. (iii) Find the names of sailors who have reserved a red boat. (iv) Find the sname, bid, and day for each reservation.	8M	CO2	L3
(b)	Explain about log-based recovery in detail.	7M	CO4	L2

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B.Tech. (VIII Semester) ~~Regular~~/Supplementary Examinations

S263-HVDC TRANSMISSION

(EEE)

Time : 3 hours

Max. Marks : 75

PART-A

(Compulsory question)

- | | | |
|------|---------------------------------------------------------------------------|------|
| 1(a) | What are the types of DC links? | [1M] |
| (b) | Define pulse number. | [1M] |
| (c) | What are the advantages of Min Extinction angle control at inverter side? | [1M] |
| (d) | How to minimize over currents in converter station? | [1M] |
| (e) | List the various types of AC filters. | [1M] |
| (f) | Draw the converter station unit in HVDC transmission system. | [2M] |
| (g) | List the assumptions to simplify the analysis of graetz's circuit | [2M] |
| (h) | What are the advantages of EPC scheme? | [2M] |
| (i) | What are the different types protecting devices in HVDC system? | [2M] |
| (j) | How harmonics are generated? | [2M] |

PART-B

(Answer any FOUR questions. All questions carry equal marks)

- | | | |
|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| 2(a) | Compare HVAC and HVDC Transmission systems. | [8M] |
| (b) | What are the different applications of DC transmission system? Discuss them in detail. | [7M] |
| 3(a) | Describe with the help of neat diagram & wave forms, the operation of 6 pulse bridge converter with delay angle α and without overlap. Derive the expressions for its dc voltage stating the assumptions mode. | [8M] |
| (b) | With neat sketch, analyze the switching characteristics of thyristor. | [7M] |
| 4 (a) | Illustrate the hierarchy and control coordination of HVDC link operation. | [8M] |
| (b) | Discuss in detail about basic principles of DC link control. | [7M] |
| 5(a) | Classify different types of faults occur in HVDC. | [7M] |
| (b) | Illustrate the occurrence of commutation failure in inverters. | [8M] |
| 6(a) | What is the importance of harmonics in HVDC operation? How is characteristics harmonics different from non-characteristics harmonics? | [7M] |
| (b) | Outline all the types of DC filters with their design. | [8M] |
| 7(a) | An HVDC link delivers DC power with AC line voltage to the rectifier being 400KV and that at the inverter being 392KV. Taking $\alpha=10^\circ$, $\gamma=15^\circ$ and the DC resistance of the line is 20Ω . Calculate
i) The DC voltage at both the ends.
ii) The current in the DC-link.
iii) The power delivered and losses in the link. | [8M] |
| (b) | Illustrate the design aspects of High Pass filters. | [7M] |
| 8. | A HVDC bipolar link (six-pulse operation) having two bridges per pole is rated at 2KA, $\pm 500KV$. The resistance of the line is $15\Omega/\text{pole}$. The sending end voltage of the link is kept at rated voltage. Each bridge is connected with 3-phase, 220KV ac system. If rectifier controller is operating at a delay angle 15° and the inverter at constant extinction angle 15° . Find
i) The commutation resistance/bridge (R_c) and the overlap angle of rectifier end.
ii) Reconvening end line voltage and overlap angle if inverter commutation resistance is same as rectifier. | [15M] |

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B.Tech. (VIII Semester) ~~Regular~~/Supplementary Examinations

S230-ENERGY CONSERVATION AND AUDIT

(EEE)

Time : 3 hours

Max. Marks : 75

PART-A

(Compulsory question)

Q.No	Questions	Marks	CO	BL
1(a)	List out different Tariffs.	1M	CO1	L1
(b)	Mention the efficient control strategies of Pumps and Fans.	1M	CO2	L2
(c)	In its life time, the cost of electricity consumed by an electric motor is approximately equal to, how many times of its initial cost.	1M	CO1	L2
(d)	What are Energy efficient lighting sources?	1M	CO4	L2
(e)	Recite Luxmeter.	1M	CO4	L3
(f)	List out the audit instruments.	2M	CO2	L3
(g)	Write any two advantages of variable speed drives.	2M	CO2	L2
(h)	Mention the peak demand control methodologies.	2M	CO2	L2
(i)	What are the power quality issues in lighting systems?	2M	CO4	L2
(j)	State any two feature of topping cycle co-generation.	2M	CO5	L2

PART-B

(Answer any FOUR questions. All questions carry equal marks)

2(a)	Summarize the types of energy auditing.	7M	CO2	L2
(b)	A 5KW, 4 pole motor in frame ND116Lhas Standard motor efficiency 88% and Energy efficient motor efficiency of 90% cost the standard motor is Rs7300/- and that energy efficient motor is Rs9500/-. Calculate the simple Payback for 350 working hours /Year at an electricity cost of Rs 8/-per Kwh. Assume the motor runs on 80% of the rated capacity.	8M	CO2	L2
3(a)	Outline the optimal energy efficient operation of pumps and fans.	7M	CO5	L2
(b)	How would you pick up best Transformer from a pool of Transformers by considering various losses?	8M	CO2	L2
4(a)	Illustrate the capacitor size and location of shunt capacitor for reduction of losses in distribution feeders.	7M	CO2	L3
(b)	Write the role about the following in Reactive power management (i) synchronous condenser (ii) Tap-changing Transformers.	8M	CO2	L3
5(a)	List out the merits and demerits of compact florescent lamps and filament lamps.	7M	CO3	L3
(b)	Outline the factors affecting the lighting system design.	8M	CO3	L3
6.	Illustrate the types of cogeneration schemes with detailed examples.	15M	CO4	L2
7(a)	A centrifugal pump has a variable –frequency drive. The pump is running at 3000 rpm and delivering 1200 lit/m at 90 m height and consuming 27.Kw.If the pump speed is reduced to 2500 r.p.m. Calculate the effect on flow rate,head and power required.	7M	CO5	L2
(b)	Outline the sizing and ratings of the motors for a load.	8M	CO5	L2
8(a)	Illustrate the System and End- use approach to the efficient use of electricity.	7M	CO2	L2
(b)	Discuss the energy conservation measures in pumps and fans.	8M	CO2	L2

H.T.No

14 SEP 2021

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B.Tech. (VIII Semester) ~~Regular~~/Supplementary Examinations

S343-POWER PLANT ENGINEERING

(ME)

Time : 3 hours

Max. Marks : 75

PART-A

(Compulsory question)

Q.No	Questions	Marks	CO	BL
1(a)	List out the various methods of coal transfer.	1M	CO1	L1
(b)	Differentiate open and closed cycle gas turbines.	1M	CO2	L4
(c)	Define the term mass number.	1M	CO3	L1
(d)	Name the blade profile of Horizontal Axis Wind Turbine.	1M	CO4	L1
(e)	Classify the tidal energy systems.	1M	CO5	L2
(f)	Enumerate the different methods of ash handling systems.	2M	CO1	L1
(g)	Distinguish between turbo charging and super charging.	2M	CO2	L4
(h)	Outline the function of surge tank.	2M	CO3	L2
(i)	Name any two materials used as moderator in the nuclear power plant.	2M	CO4	L1
(j)	A power plant having maximum demand of 210 MW is operated with load factor of 0.72. Calculate average load of the plant.	2M	CO5	L3
PART-B				
(Answer any FOUR questions. All questions carry equal marks)				
2(a)	Elaborate the burning sequence of coal in 'overfeed' and 'underfeed' stokers.	7M	CO1	L2
(b)	Enumerate the advantages of burning the fuels in pulverized form.	8M	CO1	L1
3(a)	Illustrate the fuel storage and fuel supply system used for a diesel power plant.	7M	CO2	L2
(b)	Elucidate the closed cycle gas turbine plant.	8M	CO2	L2
4(a)	Describe the significance of rainfall and run-off data in the design of hydro-electric power plant.	7M	CO3	L2
(b)	List out the properties of moderator, coolant and reflector.	8M	CO3	L1
5(a)	Enumerate the factors to be considered for selecting a suitable site for tidal power plants.	7M	CO4	L2
(b)	Differentiate open and closed cycle MHD systems.	8M	CO4	L2

S343-POWER PLANT ENGINEERING

6(a)	Discuss different methods used to control SO ₂ , NO _x in the flue gases. Explain any two.	7M	CO5	L2
(b)	A residential consumer has a connected load of 10 lamps of 100W each, his demand is as follows. From midnight to 5am-100W, From 5am to 6pm- no load From 6pm to 7pm- 800W From 7Pm to 9pm- 900W From 9Pm to mid night-400W i) Plot the load curve ii) Find the energy consumed during 24 hrs iii) Calculate the demand factor, average load, maximum load and load factor.	8M	CO5	L3
7(a)	Describe various ash handling systems with the help of line diagrams.	7M	CO1	L2
(b)	Define hydrograph and discuss its importance in the design of storage type hydro-electric power project.	8M	CO3	L1
8(a)	Illustrate the solar power plant for power generation to grid connection.	7M	CO4	L2
(b)	A central power station has annual factors as follows Load factor = 60%, Capacity factor = 40%, Use factor = 50%, Power station has a maximum demand of 20MW. Determine (i) Annual energy production ii) Reserve capacity over and above peak load (iii) Hours per year not in service	8M	CO5	L3
