

6 JUN 2018

H.T.No

R14

**LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
(AUTONOMOUS)**

L.B. Reddy Nagar :: Mylavaram – 521 230 :: Krishna Dist.::A.P.

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

S370-RENEWABLE ENERGY SOURCES

(EIE)

Time : 3 hours

Max. Marks : 75

PART-A

(Compulsory question)

- 1(a) How do you define the term solar constant? [1M]
(b) Define the function of gearbox in wind turbine. [1M]
(c) What is the source of tidal energy? [1M]
(d) How seeding of bacteria will affect the performance of a digester? [1M]
(e) Give an application for Thermoelectric generator. [1M]
(f) Give an example of indirect form of solar energy, explain it. [2M]
(g) What is the necessity of yaw control system in HAWT? [2M]
(h) How many high tides and low tides are formed in one day? Comment on it. [2M]
(i) Draw the line diagram of batch type biogas plant. [2M]
(j) List out the examples of positive and negative Thomson effect materials. [2M]

PART-B

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

- 2(a) What are non-conventional energy sources potential available and exploited in India? [8M]
(b) Enumerate the advantages and disadvantages of solar energy. [7M]
- 3(a) Describe the working of horizontal axis wind turbine with neat sketch. [8M]
(b) Prove that a wind turbine cannot extract more than 59.3% wind energy. [7M]
- 4(a) Elucidate the power generation from single basin tidal system. [8M]
(b) Enumerate the limitations and special applications of OTEC plant. [7M]
- 5(a) Sketch and explain the floating drum type biogas plant. [8M]
(b) List the advantages and disadvantages of fixed dome type biogas plant. [7M]
- 6(a) Illustrate the working of open cycle MHD generator. [8M]
(b) Discuss briefly about thermoelectric power generation. [7M]
- 7(a) Differentiate the Beam and Diffuse radiation. [8M]
(b) Determine Local solar time and declination at a location latitude $23^{\circ}15'N$, longitude $77^{\circ}30'E$ at 12.30 IST on June 19. Equation of time correction is given from standard table or chart = $-(11^{\circ}11')$. [7M]
- 8(a) Summarize about vapour dominated power plant with neat sketch. [8M]
(b) List the advantages and disadvantages of wind turbine. [7M]

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

S371-ROBOT ENGINEERING

(ECE)

Time : 3 hours

A. m. v.

Max. Marks:75

PART-A

(Compulsory question)

- | | | |
|------|---|------|
| 1(a) | Which type of drive system is more suitable for heavy load robot application? | [1M] |
| (b) | State different robot parameters. | [1M] |
| (c) | What is the element used to control a robot? | [1M] |
| (d) | Define Image segmentation. | [1M] |
| (e) | How many wheels are required to get static stability in wheeled robot? | [1M] |
| (f) | Classify the position sensors. | [2M] |
| (g) | Define dynamic modeling. | [2M] |
| (h) | What is the main difference between path and Trajectory? | [2M] |
| (i) | What are the important features in Image feature extraction process? | [2M] |
| (j) | Write any two applications of mobile robots. | [2M] |

PART-B

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

- | | | |
|------|--|-------|
| 2(a) | With a neat sketch classify the different subsystems of a robotic system? Explain any one of the subsystem. | [7M] |
| (b) | Discuss Robot classification based on coordinate system and actuation system. | [8M] |
| 3. | What is a forward kinematics problem? Derive Denavit-Hartenberg convention for selecting frames of reference in robotic application. | [15M] |
| 4(a) | Why control system is necessary in a robotic application? | [7M] |
| (b) | Explain the following three steps of trajectory planning
i. Task Description
ii. Selecting and employing a trajectory planning
iii. Computing the trajectory. | [8M] |
| 5(a) | How images are formed and captured in robot? | [7M] |
| (b) | Describe the process of extracting regions, points, lines from an image. | [8M] |
| 6(a) | What are different approaches used in vision based control? | [7M] |
| (b) | List out different types of Mobile robots. | [8M] |
| 7(a) | Discuss the types of drive systems used in robots. | [7M] |
| (b) | State the importance of sensors in Robotics. Elucidate the working of any position sensor. | [8M] |
| 8. | Determine the Joint torques required for a RR type of Planar manipulator using Lagrangian Euler formulation. | [15M] |

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

S296-MANAGING INNOVATION AND ENTREPRENEURSHIP

(CSE)

Time : 3 hours

Max. Marks : 75

PART-A

(Compulsory questions)

- | | | |
|------|--|------|
| 1(a) | Define creativity. | [1M] |
| (b) | Who is an entrepreneur? | [1M] |
| (c) | What are first mover advantages? | [1M] |
| (d) | What is a marketing plan? | [1M] |
| (e) | Write about materials management. | [1M] |
| (f) | Is innovation related to entrepreneurship? | [2M] |
| (g) | Elucidate Entrepreneurial traits. | [2M] |
| (h) | Interpret Franchising. | [2M] |
| (i) | Illustrate Internet advertising. | [2M] |
| (j) | Recall the distribution channels. | [2M] |

PART-B

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

- | | | |
|------|--|------|
| 2(a) | Explain in detail about the strategies that help in innovation. | [7M] |
| (b) | Explain about the role of innovation in the economy development | [8M] |
| 3(a) | Compare and contradict between the traditional & modern entrepreneurship. | [8M] |
| (b) | Explain about the growth of women entrepreneurship in India, highlighting the factors responsible for it. | [7M] |
| 4(a) | What is opportunity analysis? | [7M] |
| (b) | Who are the first movers? What are the advantages & disadvantages they face? | [8M] |
| 5(a) | Explain in detail about how the financial business plan is written. | [8M] |
| (b) | Explain in detail about the role of e-commerce in entrepreneurship. | [7M] |
| 6(a) | Explain the need for plant maintenance. What are the best ways for manufacturers to use their plants? | [8M] |
| (b) | What is the role of sales promotion in the performance of a company? Explain different methods of sales promotion. | [7M] |
| 7(a) | How can an entrepreneur assess the benefits & costs of Government grants & subsidies? Explain a detailed financial plan. | [8M] |
| (b) | What do you think are the major differences between an entrepreneur & a manager? Explain. | [7M] |
| 8(a) | What are the types of business organizations? Explain with examples. | [7M] |
| (b) | Explain about the role of marketing research & channel management in entrepreneurship. | [8M] |

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

S111-ADVANCED STRUCTURAL DESIGN

(CE)

Time : 3 hours

Max. Marks : 75

PART-A

(Compulsory questions)

- | | | |
|------|---|------|
| 1(a) | What is Butress in retaining walls? | [1M] |
| (b) | For which purpose chimneys are used? | [1M] |
| (c) | What is intermediate load carrying stiffener? | [1M] |
| (d) | What is tension field method as per IS 800:2007? | [1M] |
| (e) | Define web buckling. | [1M] |
| (f) | Write two stability checks for retaining walls. | [2M] |
| (g) | What are the loads that act on silo? | [2M] |
| (h) | Write the formula for reduced plastic moment capacity of flange and explain the terms of formula. | [2M] |
| (i) | Write the critical moment formula and moment interaction formula of beams. | [2M] |
| (j) | Write a short note on staging for elevated steel tanks. | [2M] |

PART-B

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

2. Design a counter fort retaining wall for the following data,
Height of earth to be retained = 7m, Unit weight of earth = 18 kN/m³,
Angle of repose = 30°, SBC of soil = 180kN/m²
Coefficient of friction between concrete and soil = 0.45
Use M20 concrete and Fe-415 steel. Draw reinforcement detailing. [15M]
3. Explain design procedure of chimney in detail. [15M]
4. Design a plate girder to carry a superimposed load of 40 kN/m and two concentrated loads of 200 kN each at one-third points of the span. The effective span of the plate girder is 24 m. Assume that the girder is laterally supported throughout its length. The yield strength of the steel (fy) is 250MPa. [15M]
5. Design a suitable section for a simply supported gantry girder for the following data:
Spacing of columns = 4m. Crane capacity = 160 kN
Weight of the crane excluding the crab=250 kN. Weight of the crab=60kN.
Minimum clearance of cross travel = 0.8 m. Wheel base = 4.2 m.
Centre to centre distance between gantry girder = 20 m.
Height of the rail = 105 m. Expected number of stress cycles = 2 x 10⁶.
Grade of the steel = E250. [15M]
6. Design the staging for the circular steel tank of circular in shape for 2,00,000 liters capacity with girder supported on suitable number of columns. The bottom of tank is 8.95 m above the ground level. Take intensity of wind pressure as 1.50 kN per square meter. [15M]
7. Write a note on curtailment of flange plates in plate girder. [15M]
8. Write a note on types of retaining wall and stability requirements. [15M]

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

S263-HVDC TRANSMISSION

(EEE)

f. m. a.

Time : 3 hours

Max. Marks : 75

PART-A

(Compulsory questions)

- | | | |
|------|---|------|
| 1(a) | What is meant by break even distance? | [1M] |
| (b) | Explain about VA rating of valve? | [1M] |
| (c) | Mention any two operating modes of DC link. | [1M] |
| (d) | What is meant by telephonic interference? | [1M] |
| (e) | What are characteristic harmonics? | [1M] |
| (f) | State some merits of A.C transmission over that of D.C transmission. | [2M] |
| (g) | What is the relation between commutation angle (μ), ignition angle (β) and extinction angle (γ). | [2M] |
| (h) | What is meant by overlap angle and firing angle? | [2M] |
| (i) | What is the function of DC smoothing reactor? | [2M] |
| (j) | What are the methods of reducing harmonics? | [2M] |

PART-B

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

- | | | |
|-------|--|-------|
| 2(a) | Explain about different types of DC links. | [7M] |
| (b) | Explain about economical and technical factors of AC and DC. | [8M] |
| 3(a) | Draw and explain about the circuit diagram of single phase full wave rectifier with all waveforms. | [8M] |
| (b) | What are the properties of converter circuits? Explain different kinds of their arrangement. | [7M] |
| 4(a) | Explain about the basic principles of DC link control. | [7M] |
| (b) | Explain about individual phase control scheme in detail. | [8M] |
| 5(a) | Explain about basic faults in converters. | [7M] |
| (b) | Explain about protection against over currents in HVDC. | [8M] |
| 6(a) | What are the methods of reducing harmonics? Explain. | [7M] |
| (b) | Explain about designing of single tuned filter in detail and its Characteristics. | [8M] |
| 7(a) | Explain the planning and modern trends in DC transmission. | [7M] |
| (b) | Explain about means of reducing harmonics. | [8M] |
| 8. | Write a brief note on the following. | |
| (i) | DC reactor | |
| (ii) | Bypass valves | |
| (iii) | DC circuit breakers. | [15M] |

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

S229-EMBEDDED SYSTEMS DESIGN

(EIE)

Time : 3 hours

Max. Marks : 75

PART-A

(Compulsory question)

- | | | |
|------|---|------|
| 1(a) | Define embedded system. | [1M] |
| (b) | List any two onboard communication interface. | [1M] |
| (c) | Define Device Driver. | [1M] |
| (d) | What is a socket in inter process communication? | [1M] |
| (e) | Label any two characteristics of RTOS. | [1M] |
| (f) | Classify the embedded systems. | [2M] |
| (g) | List out any four domain specific embedded systems. | [2M] |
| (h) | Define the latency in device drivers. | [2M] |
| (i) | Name any four inter process communication techniques. | [2M] |
| (j) | Compare OS and RTOS. | [2M] |

PART-B

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

- | | | |
|------|---|------|
| 2(a) | Compare embedded system Vs General computing system. | [7M] |
| (b) | Explain the Characteristics of embedded systems. | [8M] |
| 3(a) | Explain the core of the embedded systems. | [7M] |
| (b) | Illustrate the on board communication interfaces. | [8M] |
| 4(a) | Explain the parallel port device drivers of embedded systems. | [7M] |
| (b) | Illustrate the device driver for timing devices. | [8M] |
| 5(a) | Explain remote procedure calls and sockets. | [7M] |
| (b) | Explain message queues and mail boxes with example. | [8M] |
| 6(a) | Explain the characteristics of RTOS. | [7M] |
| (b) | Explain the scheduling mechanism in RTOS. | [8M] |
| 7(a) | Illustrate the external communication interfaces. | [7M] |
| (b) | Explain the quality attributes of embedded systems. | [8M] |
| 8(a) | Illustrate the purpose of embedded system. | [7M] |
| (b) | Explain the firmware design approaches of embedded systems. | [8M] |

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

S107-ADVANCED SENSORS

(EIE)

Time : 3 hours

Max. Marks : 75

PART-A

(Compulsory question)

- | | | |
|------|--|------|
| 1(a) | Relate Refractive index of a thermo sensor with temperature. | [1M] |
| (b) | Define Absolute sensitivity of Hall Effect sensor. | [1M] |
| (c) | List the factors affecting radiation measurement. | [1M] |
| (d) | Name the micro sensor for measuring thermal radiation. | [1M] |
| (e) | What are the temperature sensors used in automobiles? | [1M] |
| (f) | What is Seebeck effect? | [2M] |
| (g) | Distinguish between Matteucci effect, Villari effect and Wiedemann effect. | [2M] |
| (h) | What are the materials used for solid state radiation detectors? | [2M] |
| (i) | Explain Cross-sensitivity. | [2M] |
| (j) | Draw the schematic of Pressure sensor used in Automobiles. | [2M] |

PART-B

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

- | | | |
|------|--|------|
| 2(a) | Summarize the concepts of junction semiconductor diodes for temperature measurement. | [7M] |
| (b) | Discuss dielectric constant and refractive index thermo sensors. | [8M] |
| 3(a) | How can Switching magnetic sensors are used for stress measurement? What other factors are important in design of such sensor? | [8M] |
| (b) | Evaluate the performance of Hall sensor. | [7M] |
| 4(a) | Describe the principle of operation of Ionization Chamber. | [7M] |
| (b) | Distinguish various radiation sensors. | [8M] |
| 5(a) | Discuss some aspects of smart transmitter development in recent years. | [7M] |
| (b) | Analyze cubic spline interpolation method and derive the expression for nth order polynomial. | [8M] |
| 6(a) | Illustrate the major processing steps in developing the standard semiconductor micro sensor technology. | [8M] |
| (b) | Describe three types of oxygen sensors used in automobiles. | [7M] |
| 7(a) | Describe with a diagram TC-NT sensor and show how it is used in temperature measurement. | [8M] |
| (b) | Distinguish between the operations of Cross transducer type and four-bench type Yoke Coil Designs for torque sensing. | [7M] |
| 8(a) | Describe the technique of computation of air speed on aircraft by measuring the static pressure, total pressure and temperature. | [8M] |
| (b) | Illustrate Plastic film and luminescent detectors. | [7M] |

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B.Tech. (VI Semester) Regular/Supplementary Examinations

S157-CLOUD COMPUTING

Time : 3 hours

(CSE)

Max. Marks : 75

PART-A

(Compulsory question)

- | | | |
|------|---|------|
| 1(a) | What is Cloud Computing? | [1M] |
| (b) | Define Virtualization. | [1M] |
| (c) | What is Private Cloud? | [1M] |
| (d) | What is SaaS? | [1M] |
| (e) | State any two Public cloud names. | [1M] |
| (f) | Define (i) HPC and (ii) HTC. | [2M] |
| (g) | Define Live VM Migration. | [2M] |
| (h) | What is Comet Cloud? | [2M] |
| (i) | State any two basic principles of Cloud Computing. | [2M] |
| (j) | Define (i) Scalability and () Elasticity in Cloud Computing. | [2M] |

PART-B

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

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|------|---|-------|
| 2. | What is Cloud Computing? Explain in detail about the roots of Cloud Computing. | [15M] |
| 3(a) | Explain in detail about Eucalyptus architecture with neat diagram. | [8M] |
| (b) | What is VM management? Explain about image management in OpenNebula. | [7M] |
| 4(a) | What is Hybrid Cloud? Write about design and implementation guidelines of Hybrid Clouds. | [8M] |
| (b) | Explain about the importance of quality and security in Cloud Computing. | [7M] |
| 5. | Explain in detail about the MapReduce Programming model with an example and list out the features of MapReduce. | [15M] |
| 6(a) | Write briefly about different types of SLA. | [7M] |
| (b) | Explain in detail about Life cycle of SLA. | [8M] |
| 7(a) | Explain about the challenges of SaaS paradigm. | [7M] |
| (b) | Write in detail about Cloud Supply chain with neat Diagram. | [8M] |
| 8. | Explain in detail about the architecture of Sensor-Cloud Integration with neat Diagram. | [15M] |

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

**S338-PAVEMENT ANALYSIS AND DESIGN ENGINEERING
(CE)**

Time : 3 hours

Max. Marks : 75

The codes IRC-37-2001 and IRC-51-2002 are allowed.

Assume any suitable missing data. State your assumptions clearly.

PART-A

(Compulsory question)

- | | | |
|------|--|------|
| 1(a) | List the typical layers in flexible and rigid pavement. | [1M] |
| (b) | Give the advantages of CBR method of flexible pavement design. | [1M] |
| (c) | Mention formula for calculating the friction stress in reinforced cement concrete. | [1M] |
| (d) | State the functional evaluation of pavement. | [1M] |
| (e) | Justify the necessity of geo synthetics in stabilization of pavement. | [1M] |
| (f) | Identify the necessity of repetition loads concept in design. | [2M] |
| (g) | State theoretical method of flexible pavement. | [2M] |
| (h) | List out the factors influencing the rigid pavement design. | [2M] |
| (i) | Differentiate between the functional and structural evaluation of pavement. | [2M] |
| (j) | List the field control tests of the stabilized roads. | [2M] |

PART-B

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

- | | | |
|------|---|-------|
| 2(a) | Explain briefly the principle of Burmister's two layer theory and mention advantages over the elastic single layer theory for the analysis of flexible pavements. | [7M] |
| (b) | List out the various design factors considered in design of pavements and explain in detail. | [8M] |
| 3(a) | Design a pavement for construction of a bypass with the following data. Four lane single carriage way road with initial traffic in the year completion of construction 700 CV/day, growth rate per annum 8%, design life 20 years, vehicle damage factor 2.5 and design CBR of soil sub grade 5%. | [7M] |
| (b) | Explain the design procedure recommended by IRC for design of a flexible pavement. | [8M] |
| 4(a) | Design the CC pavement expansion and contraction joint spacing for a wheel load of 5100kg. Assume any data suitably. | [8M] |
| (b) | Discuss the functions of tie bar in rigid pavements. Mention its design principle. | [7M] |
| 5(a) | List and explain various techniques adopted for evaluation of pavement. | [8M] |
| (b) | Discuss the deficiencies occur in the flexible pavement and rigid pavement. | [7M] |
| 6(a) | Enumerate the construction procedure of lime stabilized base course. | [7M] |
| (b) | State and explain the functions fulfilled by geo textiles. | [8M] |
| 7. | Elaborate the procedure of designing flexible pavement by California resistance value method. | [15M] |
| 8(a) | Discuss the maintenance aspects of Water Bound Macadam roads. | [8M] |
| (b) | List and describe various types of overlays considered for strengthening the existing flexible pavements. Mention their relative advantages. | [7M] |

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

**S329- OPERATIONS RESEARCH
(CSE)**

Time : 3 hours

Max. Marks:75

PART-A

(Compulsory question)

- 1(a) Define optimum basic feasible solution. [1M]
- (b) What is meant by dummy row in transportation problem? [1M]
- (c) Define the term game. [1M]
- (d) Give the expression for traffic intensity or utilization factor. [1M]
- (e) Give any two classifications of optimization problem. [1M]
- (f) Write about artificial variable and its use in linear programming. [2M]
- (g) Specify the variations of assignment problem. [2M]
- (h) Write a short note on inventory control. [2M]
- (i) What is meant by replacement policy? [2M]
- (j) List the features of dynamic programming problem. [2M]

PART-B

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

- 2(a) Explain the procedure of Big-M method for solving linear programming problem. [7M]
- (b) Use simplex method to maximize $Z = 4x_1 + 3x_2 + 6x_3$ subjected to $2x_1 + 3x_2 + 2x_3 \leq 440$, $4x_1 + 3x_3 \leq 470$, $2x_1 + 5x_2 \leq 430$, x_1, x_2 and $x_3 \geq 0$. [8M]
- 3(a) Explain the variations in transportation problem. [7M]
- (b) Solve the following transportation problem and find optimal transportation cost.

	A	B	C	Supply
P	7	3	6	5
Q	4	6	8	10
R	5	8	4	7
S	8	4	3	3
Demand	5	8	10	

- 4(a) What are the advantages and disadvantages of increase in inventory? [8M]
- (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 replacement is instantaneous and no shortages are allowed. Determine [7M]
 - (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]

5. The maintenance cost and resale value per year of a machine whose purchase price is Rs. 7000 is given below. When should the machine be replaced?

Year	1	2	3	4	5	6	7	8
Maintenance cost in Rs	900	1200	1600	2100	2800	3700	4700	5900
Resale value in Rs	4000	2000	1200	600	500	400	400	400

[15M]

6. A firm has divided its marketing area into three zones. The amount of sales depends upon the number of salesman in each zone. The firm has been collecting the data regarding sales salesman in each area over a number of past year. The information is summarized in table. For the next year firm has only 9 salesmen and the problem is to allocate these salesman to 3 different zones so that the total sales are maximum.

No of salesman	Profits in thousands of rupees		
	Zone 1	Zone 2	Zone 3
0	30	35	42
1	45	45	54
2	60	52	60
3	70	64	70
4	79	72	82
5	90	82	95
6	98	93	102
7	105	98	110
8	100	100	110
9	90	100	110

[15M]

- 7(a) Explain the variations of assignment problem. [7M]
- (b) An automobile manufacturer purchases 2400 castings over a period of 360 days. This requirement is fixed and known. These castings are subject to quantity discounts. Ordering cost is Rs. 70,000 per order and shortage cost per day is 0.12 % of the unit cost. Determine the optimal purchase quantity if the supplier has offered the following unit prices for the castings.
 Unit price is Rs. 1000 for $q < 1000$,
 Unit price is Rs. 950 for $q \geq 1000$. [8M]

- 8(a) Find the minimum value of $Z = -x_1 + 2x_2$ subjected to $-x_1 + 3x_2 \leq 10$, $x_1 + x_2 \leq 6$, $x_1 - x_2 \leq 2$ and $x_1, x_2 \geq 0$ by graphical method. [7M]
- (b) If for a period of 2 hours in a day (8 A.M. to 10 A.M.) trains arrive at the yard every 20 minutes but the service time is 36 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 4 trains only. [8M]

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**LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
(AUTONOMOUS)**

L.B. Reddy Nagar :: Mylavaram – 521 230 :: Krishna Dist.::A.P.

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

S311-MICRO ELECTRO MECHANICAL SYSTEMS

(EIE)

Time : 3 hours

Max. Marks: 75

PART-A

(Compulsory question)

- 1(a) Define a microsystem and give an example. [1M]
- (b) What is scaling in geometry form the MEMS context? [1M]
- (c) What is Ion implantation? [1M]
- (d) What is Isotropic etching? [1M]
- (e) What is a micro sensor? [1M]
- (f) List any four materials used in fabrication of MEMS. [2M]
- (g) List any two views of a design engineer's in scaling a system. [2M]
- (h) What is meant by photo resist removal? [2M]
- (i) What is surface machining? Name a process. [2M]
- (j) List any two names of the pressure sensors used in the micro systems. [2M]

PART-B

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

- 2(a) Give at least four distinct advantages of miniaturization of machines and devices and elaborate. [8M]
- (b) Outline the applications of sensors in the Medical systems and aircraft systems. Give at least 3 distinct applications for each. [7M]
- 3(a) Summarize the scaling in electricity for MEMS and microsystems. [7M]
- (b) Explain the MEMS design considerations with examples. [8M]
- 4(a) Explain any one thin film deposition method. Write its advantages and disadvantages. [7M]
- (b) Explain the Sputtering technique used in the fabrication of micro systems with neat sketch. [8M]
- 5(a) What is etching? Compare and contrast dry and wet etching. [7M]
- (b) Summarize the mechanical problems faced in the micromachining of surfaces in micro systems. [8M]
- 6(a) Explain various types of primary sensing principles used in biomedical sensors. [7M]
- (b) Explain the working of micro grippers with neat sketches. [8M]
- 7(a) Explain the Photolithography technique used in the fabrication of micro systems with neat sketches. [7M]
- (b) Explain the principle, three major steps involved, and Application of LIGA process in manufacture of MEMS. [8M]
- 8(a) Describe the properties, design, fabrication and packaging of micro system products. [7M]
- (b) Explain the working of micro gears with neat sketches. [8M]

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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)

- | | | |
|------|---|------|
| 1(a) | Define tariff. | [1M] |
| (b) | Define Affinity law. | [1M] |
| (c) | List out the types of reactive power compensation techniques. | [1M] |
| (d) | Write one energy conservation opportunity for a light load. | [1M] |
| (e) | What do you mean by cold storage? | [1M] |
| (f) | What is the use of combustion analyzer? | [2M] |
| (g) | How the I^2R losses can be minimized in motors? | [2M] |
| (h) | Draw the phasor diagram of capacitor related to loss angle. | [2M] |
| (i) | Classify gas discharge lamps. | [2M] |
| (j) | Write the applications of air conditioning. | [2M] |

PART-B

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

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|------|--|-------|
| 2(a) | Summarize the types of energy auditing. | [7M] |
| (b) | Summarize the advantages and disadvantages of payback period method. | [8M] |
| 3(a) | Illustrate the transformer loading and efficiency analysis with neat sketches. | [8M] |
| (b) | Describe the factors effecting the selection of motors. | [7M] |
| 4(a) | Discuss the effect of Series and shunt compensation on voltage stability. | [7M] |
| (b) | A Single phase 400V, 50Hz, motor takes a supply current of 50A at a P.F (Power factor) of 0.6. The motor power factor has to be improved to 0.9 by connecting a capacitor in parallel with it. Calculate the required capacity of Capacitor in both kVAR and farads. | [8M] |
| 5(a) | Illustrate different power quality issues associated with the use of energy efficient bulbs. | [7M] |
| (b) | Distinguish between electronic ballast and magnetic ballast. | [8M] |
| 6(a) | Distinguish between storage electric water heating and immediate electric water heating. | [7M] |
| (b) | Describe the topping cycle used in combined heat and power (CHP) systems with neat sketches and also write the advantages and disadvantages. | [8M] |
| 7 | Illustrate the following audit instruments:
i)Lux meter ii)Anemometer iii)Leak detectors
iv) Water flow meters v)Tachometer | [15M] |
| 8(a) | Summarize the factors that are affecting the performance of pump. | [7M] |
| (b) | Write short notes on system use approach to efficient use of electricity. | [8M] |

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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)

- 1(a) What is the present thermal power generation in MW across India? [1M]
- (b) Classify lubrication systems in diesel power plant. [1M]
- (c) State multiplication factor of a fission process. [1M]
- (d) Name the different types of MHD generators. [1M]
- (e) Define load curve. [1M]
- (f) Differentiate between In plant and Out plant handling. [2M]
- (g) Mention different types of combustion chambers used in gas turbine plants. [2M]
- (h) What is the main purpose of the reservoir? Also mention the pollutant coming out from hydro power plants. [2M]
- (i) Outline the desirable properties of a good moderator. [2M]
- (j) Distinguish the load factor and capacity factor of a power plant. [2M]

PART-B

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

- 2(a) Enumerate the various energy sources available in India for power development. [7M]
- (b) Draw a general layout of a thermal power plant and explain the working of different circuits. [8M]
- 3(a) Compare the advantages and disadvantages of diesel and gas power plants. [8M]
- (b) Bring out the difference between the closed cycle and open cycle gas turbine power plants. [7M]
- 4(a) Classify the hydroelectric power plants and explain the pumped storage plant. [7M]
- (b) Discuss the functions of various components of a nuclear reactor with neat sketch. [8M]
- 5(a) Enunciate the basic principles of thermo-electric and thermionic power generation with neat sketch. [7M]
- (b) Elucidate the principle, operation and limitations of MHD power generation. [8M]
- 6(a) What is meant by power plant economics? What are fixed and operating costs? [7M]
- (b) A hydro plant is to be used as peak load plant at an annual load factor of 30 %. The electrical energy obtained during the year is 750×10^5 kWh. Determine the maximum demand and reserve capacity if the plant capacity factor is 24 % of the reserve capacity of the plant. [8M]
- 7(a) Summarize the Indian Energy Scenario. [7M]
- (b) Why the starting of diesel plant is more difficult? What different methods are used for starting diesel engine? [8M]
- 8(a) What are the different factors to be considered while selecting the site for hydroelectric power plant? [7M]
- (b) Elucidate the working of different solar collectors. [8M]
