Narasaraopeta Engineering College (Autonomous)

Kotappakonda Road, Yellamanda (P.O), Narasaraopet- 522601, Guntur District, AP.

Subject Code: R16CE4201

IV B.Tech II Semester Regular & Supple Examinations, June-2022

BUSINESS MANAGEMENT CONCEPTS FOR ENGINEERS

(CE)

Time: 3 hours **Max Marks: 60**

Question Paper Consists of **Part-A** and **Part-B.**

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. (a) Define law of demand. List out exceptions to the law demand. [CO1,K1,2M]

(b) Distinguish between monopoly and oligopoly [CO2,K2,2M]

(c) What are the accounting entries? Mention the rules of journal entries. [CO3,K2,2M]

(d) What are the difference between Theory X and Theory Y?[CO4,K2,2M]

(e) Briefly explain ABC analysis.[CO5,K2,2M]

(f) Define working capital. Write main components of working capital.[CO6,K1,2M]

PART-B

4 X 12 = 48

2. (a) Write the process of demand forecasting. Briefly explain different types of forecasting techniques. [CO1,K2,6M]

(b) How is managerial economics interrelated with other disciplines? Mention roles and responsibilities of managerial economist. [CO1,K1,6M]

3. (a) Berhannan's Cellular sells phones for $100. The unit variable cost per phone is $50 plus a selling commission of 10%. Fixed manufacturing costs total $1,250 per month, while fixed selling and administrative costs total $2,500. Calculate (a) Contribution margin per phone? (b) Breakeven point in phones? (c) How many phones must be sold to earn a targeted profit of $7,500? [CO2,K3,6M]

(b) Discuss the law of variable proportions and economies of scale with suitable examples.[CO2,K2,6M]

4. Chandran is a sole trader dealing in sports items. From the following transactions, pass journal entries for the month of March, 2021.[CO3,K3,12M]

	March	**Rs.**
1	Commenced business with cash	4,00,000
2	Cash deposited into bank	3,00,000
3	Purchased goods from Ravi and payment made through net banking	90,000
4	Sales made to Kumar, who deposited the money through CDM	10,000
5	Sales made to Vivek, who made the payment by debit card	60,000
6	Sold goods to Keerthana, who made the payment through credit card	50,000
7	Dividend directly received by bank	2,000
8	Money withdrawn from ATM	3,000
9	Salaries paid through ECS	6,000
10	Cricket bats donated to a trust	10,000

5. (a) Describe the features and functions of management. List out Henri Fayol's principles of management. [CO4,K2,6M]

(b) Discuss the challenges of management in globalised economic era. [CO4,K2,6M]

6. (a) Describe various methods of production. [CO5,K2,6M]

(b) Explain method study and motion study as techniques of scientific management. [CO5,K2,6M]

7. (a) What are the four capital budgeting techniques? Write steps in the capital budgeting process? [CO4,K2,6M]

(b) The following details are available regarding a project:[CO4,K3,6M]

Activity	**Predecessor Activity**	**Duration (weeks)**
A	-	3
B	A	5
C	A	7
D	B	10
E	C	5
F	D,E	4

Determine the critical path, the critical activities and the project completion time.

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Narasaraopeta Engineering College (Autonomous)
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Subject Code: R16CE4202

IV B.Tech II Semester Regular & Supple Examinations, June-2022

PRE-STRESSED CONCRETE STRUCTURES

(CE)

Time: 3 hours **Max Marks: 60**

Question Paper Consists of **Part-A** and **Part-B.**

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. (a) Define post tensed pre-stressed concrete [CO1,K1,2M]
   (b) Explain Hoyer System of pre-stressing[CO1,K1,2M]
   (c) What is loss due to slip[CO2,K1,2M]
   (d) What is the effect of tendon profile on bending moment?[CO3,K1,2M]
   (e) What is the effect of pre-stress on principal tensile stress?[CO3,K1,2M]
   (f) Mention the purpose of providing end block in pre-stressed concrete beam[CO3,K1,2M]

PART-B

4 X 12 = 48

2. (a) Discuss bout the necessity of high strength steel and concrete in pre-stressed concrete[CO1,K2,6M]
   (b) Discuss about the different types of pre-stressing[CO1,K2,6M]
3. Discuss about the following post tensioning systems
   (a) Fressinet system[CO1,K2,6M] (b) Gifford Udall[CO1,K2,6M]
4. (a) Explain about loss of pre-stress due to shrinkage and creep of concrete. [CO2,K2,4M]

   (b)A concrete beam is pre-stressed by a cable carrying an initial pre-stressing force of 400kN. The cross-sectional area of the wires in the cable is 400 mm^2. Calculate the percentage loss of stress in the cable only due to shrinkage of concrete using IS: 1343 recommendations assuming the beam to be, (i) pre-tensioned and (ii) post-tensioned. Assume E_s = 200 kN/mm^2 and age of concrete at transfer is 8 days.[CO4,K2,8M]
5. A rectangular concrete beam of cross-section 350mm deep and 230mm wide is pre-stressed by means of 15 wires of 5 mm diameter located 6.5 cm from the bottom of the beam and 5 wires of diameter of 5 mm, 2.5 cm from the top. Assuming the pre-stress in the steel as 850 N/mm^2, calculate the stresses at the extreme fibers of the mid-span section when the beam is supporting its own weight over a span of 6m. If a uniformly distributed live load of 4kN/m is imposed, evaluate the maximum working stress in concrete. The density of concrete is 24kN/m^3 [CO3,K3,12M]
6. The horizontal pre-stress at the centroid of a concrete beam of size 150mmx250mm is 8Mpa and the maximum shear force on the beam is 80kN, calculate the maximum principal tensile stress. What is the minimum vertical pre-stress required to eliminate this principal tensile stress [CO3,K3,12M]
7. The end block of a post tensioned concrete beam 350mm X 350mm is subjected to a concentric anchorage force of 1200kN by a Freyssinet anchorage system of area 1200mm^2. Discuss and detail the anchorage reinforcement for the end block. [CO3,K3,12M]

Narasaraopeta Engineering College (Autonomous)
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Subject Code: R16EE4201

IV B.Tech II Semester Regular & Supple Examinations, June-2022

SOFT COMPUTING TECHNIQUES TO ELECTRICAL ENGINEERING (EEE)

Time: 3 hours **Max Marks: 60**

Question Paper Consists of **Part-A** and **Part-B.**

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. (a) Distinguish between soft computing and hard computing. [CO1,K2,2M]

(b) Compare supervised and unsupervised learning.[CO2,K2,2M]

(c) Differentiate Fuzzy set Vs Crisp set.[CO3,K2,2M]

(d) State the laws of proportional logic.[CO4,K1,2M]

(e) Explain the role of fitness function in Genetic Algorithm.[CO5,K2,2M]

(f) List the speed control methods employed in DC motor[CO6,K1,2M]

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. (a) Compare and contrast between biological neuron and artificial neuron.[CO1,K2,6M]

(b) Explain McCulloch–Pitts Neuron in brief? [CO1,K2,6M]

3. (a) What is Multi layer perceptron? Explain its architecture with suitable diagram? [CO2,K2,6M]

(b) Explain the Back propagation Training Algorithm in brief.[CO2,K2,6M]

4. (a) Distinguish the properties of fuzzy sets and Crisp sets.[CO3,K2,6M]

(b) (a) The two fuzzy vectors of length 4 are defined as

a=(0.5,0.2,1.0,0.8)

b=(0.8,0.1,0.9,0.3)

Verify basic fuzzy set operations for given fuzzy vectors [CO3,K3,6M]

5. a)Compare and contrast classical relations and fuzzy relations.[CO4,K2,6M]

(b) Explain the architecture and operation of Fuzzy logic Controller. [CO4,K2,6M]

6. (a) With an example for each bring out the significance of the following as referred to Genetic Algorithm: Mutation Operator and Bitwise operators [CO5,K3,6M]

(b) Describe the basic steps of Genetic Algorithm used for solving optimization techniques [CO5,K3,6M]

7. Explain an application using Artificial Intelligence in the field of Load forecasting [CO6,K2,12M]

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Narasaraopeta Engineering College (Autonomous)
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Subject Code: R16CE4212

IV B.Tech II Semester Regular & Supple Examinations, June-2022

GEOGRAPHIC INFORMATION SYSTEM

(CE)

Time: 3 hours **Max Marks: 60**

Question Paper Consists of **Part-A** and **Part-B.**

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. (a) Differentiate between plan and map. [CO1,K2,2M]
   (b) Describe the process of digitization?[CO2,K1,2M]
   (c) Explain datum and its importance.[CO3,K2,2M]
   (d) Name the different vector models.[CO4,K1,2M]
   (e) What is cartographic modelling?[CO5,K1,2M]
   (f) List the different types of multiple map analysis models.[CO6,K1,2M]

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. (a) Explain the key elements to make a GIS successful. [CO1,K2,6M]
   (b) Discuss the role and importance of GIS in Civil Engineering field. [CO1,K2,6M]

3. (a) Give the various processing errors in GIS. [CO2,K1,2M]
   (b) Briefly explain the hardware and software components of GIS. [CO2,K2,10M]

4. (a) What are the products derived from DEMs? [CO3,K1,3M]
   (b) Explain in detail about the UTM projection system. [CO3,K2,9M]

5. (a) Explain the concept of neighbourhood in detail? [CO4,K2,6M]
   (b) Write short notes on attribute data analysis. [CO4,K1,6M]

6. (a) What is Geographic Information Systems (GIS)? Explain. [CO5,K2,8M]
   (b) Give the comparison of kriging with other interpolation techniques. [CO5,K2,4M]

7. Explain in detail the various tools available for the analysis of single and multiple maps. [CO6,K2,12M]

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Subject Code: R16CE4213

IV B.Tech II Semester Regular & Supple Examinations, June-2022

WATER RESOURSES ENGINEERING

(CE)

Time: 3 hours Max Marks: 60

Question Paper Consists of Part-A and Part-B.

Answering the question in Part-A is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. (a) What is an impounding reservoir? [CO1,K1,2M]
   (b) What is a hydrograph? Give an example. [CO2,K1,2M]
   (c) How drought prone area will be developed?[CO3,K1,2M]
   (d) What is the bed load of a canal?[CO4,K1,2M]
   (e) Define spillway.[CO5,K1,2M]
   (f) Differentiate between weir and barrage.[CO6,K2,2M]

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. (a) Explain the various sources of water. Mention its characteristics. [CO1,K2,6M]
   (b) Describe the objectives of public water supply system. [CO1,K2,6M]

3. (a) What is runoff? Discuss the various factors affecting runoff. [CO2,K2,6M]
   (b) Explain the different methods for estimating runoff.[CO2,K2,6M]

4. (a) Discuss the various measure to control flood. [CO3,K2,6M]
   (b) Write a detailed note on meteorological, hydrological and agricultural droughts.[CO3,K2,6M]

5. (a) What are the main objectives of canal lining? Write the properties of canal lining materials. [CO4,K1,6M]
   (b) How will you design the canal by using Regime theory? Discuss in detail.[CO4,K2,6M]

6. (a) What are the various factors affecting selection of site for a reservoir? Discuss in detail. [CO5,K2,6M]
   (b) Describe the general design principles of a reservoir.[CO5,K3,6M]

7. (a) Explain the types of impounding structures.[CO6,K2,6M]
   (b) Summarize about the forces acting in a gravity dam. [CO6,K1,6M]

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Subject Code: R16EE4202

IV B.Tech II Semester Regular & Supple Examinations, June-2022

FLEXIBLE AC TRANSMISSION SYSTEMS

(EEE)

Time: 3 hours Max Marks: 60

Question Paper Consists of Part-A and Part-B.

Answering the question in Part-A is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. (a) Mention any two benefits of FACTS controllers?[CO1,K1,2M]

   (b) Explain the basic concept of current source converter.[CO2,K2,2M]

   (c) List the Objectives of shunt compensation.[CO3,K1,2M]

   (d) Write the difference between SVC and STATCOM.[CO4,K1,2M]

   (e) Write the advantages of static series compensators?[CO5,K1,2M]

   (f) Write the applications UPFC. [CO6,K1,2M]

PART-B

4 X 12 = 48

2. (a) Explain about the loading capability limits in an AC system. [CO1,K2,6M]
   (b) Explain the dynamic stability considerations during the power flow in an AC system. [CO1,K2,6M]

3. (a) Outline the basic concept of Voltage Source Converters.[CO2,K2,6M]
   (b) Illustrate the operation of Three Phase fullwave bridge converter with circuit diagram and waveforms.[CO2,K2,6M]

4. (a) Explain the transient stability limit in a power system using shunt compensation. [CO3,K2,6M]
   (b) Explain how to prevent voltage instability in a power system using shunt compensation. [CO3,K2,6M]

5. (a) Explain the operation of Thyristor Switched Capacitor (TSC) using circuit diagram and necessary waveforms.[CO4,K2,6M]
   (b) Explain the differences between Thyristor Switched Capacitor (TSC) and Thyristor Switched Reactor (TSR).[CO4,K2,6M]

6. (a) Explain the concept of series capacitive compensation.[CO5,K2,6M]
   (b) Explain how the transient stability can be improved with series capacitive compensation. [CO5,K2,6M]

7. Explain the basic operating principles of an Interline power flow controller (IPFC) with a neat schematic.[CO6,K2,12M]

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Narasaraopeta Engineering College (Autonomous)

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Subject Code: R16CC42OE5

IV B.Tech II Semester Regular & Supple Examinations, June-2022

INTRODUCTION TO EMBEDDED SYSTEMS (OPEN ELECTIVE-III)

(EEE)

Time: 3 hours **Max Marks: 60**

Question Paper Consists of **Part-A** and **Part-B.**

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. (a) Differences between embedded systems and general computing systems [CO1,K1,2M]
   (b) Write the features of ARM processor[CO2,K1,2M]
   (c) Defend the need for watchdog timer in real time embedded applications[CO3,K1,2M]
   (d) Explain the quality attributes of embedded systems[CO4,K2,2M]
   (e) Write the important features of RTOS[CO5,K1,2M]
   (f) Explain the importance of Dissemblers[CO6,K2,2M]

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. (a) Explain about embedded system design flow [CO2,K2,6M]
   (b) Explain any major Application of embedded Systems in detail [CO2,K2,6M]

3. (a) Write a note on different types of memories used in embedded system design [CO3,K2,6M]
   (b) Explain the importance of optimum memory selection for embedded systems [CO3,K2,6M]

4. (a) Defend the need for brown-out detection circuit in real time embedded applications and explain the mechanism for implementing the same. [CO4,K2,6M]
   (b) Briefly explain the procedure of super loop approach for embedded firmware design [CO4,K2,6M]

5. Design a smart Traffic light controller as an embedded system. [CO3,K3,12M]

6. (a) What are the different types of semaphores in vxworks RTOS? Explain briefly?[CO3,K2,6M]
   (b) Write a short note on the following with respect to RTOS [CO2,K2,6M]
   i) Multitasking ii) Real-time kernel iii) Thread

7. (a) Explain the role of hardware debugging tools for embedded systems [CO3,K3,4M]
   (b) Discuss the various components of IDE of embedded system development environment? [CO3,K3,8M]

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Narasaraopeta Engineering College (Autonomous)
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Subject Code: R16ME4201

IV B.Tech II Semester Regular & Supple Examinations, June-2022

MECHATRONICS

(ME)

Time: 3 hours Max Marks: 60

Question Paper Consists of Part-A and Part-B.

Answering the question in Part-A is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1 a) Brief evolution of mechatronics. [CO1,K1,2M]
b) State the transduction principle. [CO2,K1,2M]
c) List out the different types of actuators. [CO3,K1,2M]
d) What is Hexa decimal system? [CO4,K1,2M]
e) Explain the principle of sensor. [CO5,K1,2M]
f) State the role of Digital Controller in mechatronics system. [CO6,K1,2M]

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

2 a) List the various measurement systems in mechatronics. [CO1,K1,4M]

b) Explain the working of any one pneumatic actuator and state its advantages. [CO1,K2,8M]

3 a) Explain the working of any one capacitive transducer and state its advantages. [CO2,K2,6M]

b) Sketch and explain hall effect transducer.[CO2,K2,6M]

4 a) What is meant by Electrical actuation system? Explain the devices used in such systems. [CO3,K2,6M]

b) Explain the working principle in piezoelectric actuators.[CO3,K2,6M]

5 a) Explain the following logic gates [CO4,K2,8M]
i) AND ii) OR iii) NOT iv) NAND

b) Enlist applications of logic gates. [CO4,K2,4M]

6 a) Explain the different micro sensors used in mechatronics. [CO3,K2,6M]

b) What is significance role of artificial intelligence in mechatronics?[CO3,K1,6M]

7 a) Classify the different types of Process Controllers? Distinguish them in detail. [CO6,K2,8M]

b) Explain the basic standard symbols used in ladder diagram for programming PLC.[CO6,K2,4M]

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Subject Code: R16ME4202

IV B.Tech II Semester Regular & Supple Examinations, June-2022

REFRIGERATION & AIR CONDITIONING

(ME)

Time: 3 hours Max Marks: 60

Question Paper Consists of **Part-A** and **Part-B.**

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. (a) What are the applications of refrigeration? [CO1,K1,2M]
   (b) Write the working principle of vapor compression refrigeration. [CO2,K1,2M]
   (c) Name some of the refrigerants used. [CO3,K1,2M]
   (d) What are the applications of three fluid absorption system. [CO4,K1,2M]
   (e) What is the need for ventilation? [CO5,K1,2M]
   (f) Define humidification and dehumidification. [CO6,K1,2M]

PART-B

4 X 12 = 48

2. (a) What are the types of ideal cycles of refrigeration? [CO1,K1,4M]
   (b) A refrigerator working on Bell – Coleman cycle operates between pressure limits of 1.05 bar and 8.5 bar. Air is drawn from the cold chamber at 10^0C. Air coming out of compressor is cooled to 30^0C before entering the expansion cylinder. Expansion and compression follow the law $pv^{1.35}$ = constant. Determine C.O.P of the system. [CO1,K4,8M]
3. (a) List out the advantages of vapor refrigeration system over air refrigeration system.[CO2,K2,6M]
   (b) Explain the construction of T-S and p-h diagrams of vapor refrigeration system and state why p-h diagram is more suitable for calculations over T-S diagram.[CO2,K4,6M]
4. (a) Under what circumstances, the steam jet refrigeration system is preferable over the other systems? [CO3,K2,6M]

(b)Explain the working principle of vortex tube and explain that the energy exchange phenomenon in a vortex tube is not a violation of second law of thermodynamics. [CO3,K4,6M]

5. (a) Explain the following:[CO4,K2,6M]
   i) wet bulb temperature and dew point temperature
   ii) Degree of saturation and Relative humidity

(b)Define and write the expressions for the following:[CO4,K1,6M]
   i) Room Sensible Heat Factor ii) Gross Sensible heat Factor

6. (a) What are the different types of compressors? Mention the fields for the use of each in refrigeration systems? [CO5,K2,6M]
   (b)What are the advantages of water-cooled condensers over air cooled condensers? [CO5,K2,6M]
7. In an absorption type refrigerator, the heat is supplied to NH_3 generator by condensing steam at 2 bar and 90% dry. The temperature to be maintained in the refrigerator is -5^0C. The temperature of the atmosphere is 30^0C. Find the maximum C.O.P possible of the refrigerator. If the refrigerator load is 20 tons and actual C.O.P is 70% of maximum C.O.P, find the mass of steam required per hour. [CO6,K3,12M]

   Take at 2 bar steam pressure. The saturation temperature of steam is 120.2^0C and latent heat of steam (h_{fg}) is 2201.6 Kj/Kg

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Subject Code: R16ME4206

IV B.Tech II Semester Regular & Supple Examinations, June-2022

ALTERNATE SOURCES OF ENERGY

(ME)

Time: 3 hours Max Marks: 60

Question Paper Consists of Part-A and Part-B.

Answering the question in Part-A is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. (a) State the expression for hour angle and day length. [CO1,K1,2M]
   (b) Write any two advantages of concentrating collectors over flat-plate collectors?[CO2,K1,2M]
   (c) Define solar distillation. [CO3,K1,2M]
   (d) Discuss about Betz criteria[CO4,K1,2M]
   (e) Write a short note on bio fuels[CO5,K1,2M]
   (f) Classify the wells in geothermal energy[CO6,K1,2M]

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. (a) Write short note on classification of energy sources and explain about them [CO1,K2,6M]
   (b) Discuss about sun-earth relation, extra terrestrial and terrestrial solar radiation[CO1,K2,6M]

3. (a) Classify solar concentrated solar collectors. Explain the working of fixed mirror solar collector. [CO2,K2,6M]
   (b) What are the main applications of a solar pond? Describe briefly.[CO2,K2,6M]

4. (a) Explain the working of sensible heat storage system with a neat sketch[CO3,K2,6M]
   (b) With a neat sketch explain the working of solar distillation plant. [CO3,K2,6M]

5. (a) With a neat sketch explain the working of horizontal axis wind turbine. [CO4,K2,6M]
   (b) Explain the working of wind data measurement anemometer with a neat sketch [CO4,K2,6M]

6. (a) Explain the fixed dome type bio gas digester with a neat sketch. [CO5,K2,6M]
   (b) What are the factors which affect the generation of biogas? [CO5,K1,6M]

7. (a) Discuss about Geothermal energy potential in India. Write the applications of Geothermal energy. [CO6,K2,6M]
   (b) Briefly explain the methods of harnessing the geothermal energy[CO6,K2,6M]

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Subject Code: R16EC4201

IV B.Tech II Semester Regular & Supple Examinations, June-2022

CELLULAR AND MOBILE COMMUNICATIONS

(ECE)

Time: 3 hours **Max Marks: 60**

Question Paper Consists of **Part-A** and **Part-B.**

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. (a) List out the techniques of Improving Coverage and Capacity in Cellular Systems.[CO1,K1,2M]
   (b) What is cross talk in wireless systems?[CO2,K1,2M]
   (c) Illustrate Umbrella pattern.[CO3,K1,2M]
   (d) Write a short note on Channel Assignments.[CO4,K1,2M]
   (e) Explain the significant features of Cellular mobile communication [CO5,K2,2M]
   (f) State the Basic Features of GSM Architecture[CO6,K1,2M]

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. (a) Derive the co -channel interference reduction factor for seven cell reuse pattern[CO1,K2,6M]
   (b) Explain the designing of the omni directional antenna under the worst case conditions for K = 7, K = 12 and K = 19 with all the suitable values and explaining each of them? [CO1,K3,6M]

3. (a) Why the Real time CCI measurement is difficult to achieve in practice? Justify your answer. [CO2,K2,6M]
   (b) Explain the antenna, which helps to improve the signal quality by reducing co -channel interference? [CO2,K2,6M]

4. (a) Explain different types of antennas used for coverage and interference reduction? [CO3,K2,6M]
   (b) Explain the Sum and difference patterns and their synthesis. [CO3,K2,6M]

5. (a) Explain briefly how the handoff initiation applied in Digital Cellular systems. [CO4,K2,6M]
   (b) Define and derive the dropped call rate? [CO4,K16M]

6. (a) Explain GSM architecture in detail. [CO5,K2,6M]
   b) Write a short note on TDMA structure frame length & frame offset. [CO5,K1,6M]

7. (a) What are the different non-fixed channel assignment algorithms? Briefly explain. [CO6,K2,6M]
   (b) Explain the channel allocation procedure of TDMA and CDMA in detail. [CO6,K2,6M]

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Narasaraopeta Engineering College (Autonomous)
Kotappakonda Road, Yellamanda (P.O), Narasaraopet- 522601, Guntur District, AP.

Subject Code: R16EC4203

IV B.Tech II Semester Regular & Supple Examinations, June-2022

WIRELESS SENSOR NETWORKS

(ECE)

Time: 3 hours Max Marks: 60

Question Paper Consists of Part-A and Part-B.

Answering the question in Part-A is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. (a) List out the applications of wireless sensor networks. [CO1,K1,2M]
   (b) What is a personal area network? List out few personal area networks.[CO2,K1,2M]
   (c) What are the different design issues in designing MAC protocols for wireless sensor networks? [CO3,K1,2M]
   (d) Classify routing protocols.[CO4,K1,2M]
   (e) What are the functionalities of Transport layer?[CO5,K1,2M]
   (f) What are the issues in providing security in wireless sensor networks?[CO6,K1,2M]

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. (a) Discuss the energy advantages of wireless sensor network.[CO1,K2,6M]
   (b) What are the enabling technologies for wireless sensor network?[CO1,K1,6M]

3. (a) Explain hidden node and exposed node problems in detail. [CO2,K2,6M]
   (b) Discuss about MANETs. [CO2,K2,6M]

4. Classify MAC protocols for wireless sensor networks. Explain contention-based MAC protocols with reservation mechanisms. [CO3,K2,12M]

5. (a) Discuss the design issues of a routing protocol for adhoc wireless sensor networks.[CO4,K2,6M]
   (b) Explain distance-vector routing protocol.[CO4,K2,6M]

6. (a) Why does traditional TCP fail in adhoc wireless sensor networks? [CO5,K2,6M]
   (b) Explain TCP with explicit link failure notification protocol.[CO5,K2,6M]

7. (a) Explain various network and application layer security attacks in detail.[CO6,K2,6M]
   (b) Discuss about wireless fidelity systems.[CO6,K2,6M]

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Narasaraopeta Engineering College (Autonomous)
Kotappakonda Road, Yellamanda (P.O), Narasaraopet- 522601, Guntur District, AP.

Subject Code: R16CC42OE4

IV B.Tech II Semester Regular & Supple Examinations, June-2022

NON-CONVENTIONAL ENERGY RESOURCES (OPEN ELECTIVE-III)

(CSE)

Time: 3 hours **Max Marks: 60**

Question Paper Consists of **Part-A** and **Part-B.**

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. (a) Define the term Solar Constant? [CO1,K1,2M]

(b) What is solar heating?[CO2,K1,2M]

(c) What are the Principles of Wind energy conversion?[CO3,K1,2M]

(d) What are the components of Tidal power plants? [CO4,K1,2M]

(e) Define seebeck effect? [CO5,K1,2M]

(f) What is MHD systems?[CO6,K1,2M]

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. (a) Explain about Measurements of Solar Radiation and sun Shine? **[CO1,K2,6M]**

(b) Discuss the solar Radiation on titled Surfaces? **[CO1,K2,6M]**

3. Discuss the applications of solar energy as active and passive space heating systems? **[CO6,K2,12M]**

4. (a) What are the components of WECS? **[CO3,K1,6M]**

(b) Explain the methods of obtaining energy from Biomass? **[CO3,K2,6M]**

5. Explain the a) Principle of Tidal power b) Advantages and Disadvantages of wave energy? **[CO4,K2,12M]**

6. Explain the following a) Thermo electric power generation b) Advantages of thermo electric power **[CO5,K2,12M]**

7. Describe the following a) Advantages of MHD systems b) International status of MHD power generation **[CO6,K2,12M]**

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Narasaraopeta Engineering College (Autonomous)

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Subject Code: R16CS4203

IV B.Tech II Semester Regular & Supple Examinations, June-2022

SOFTWARE QUALITY ASSURANCE AND TESTING

(CSE)

Time: 3 hours **Max Marks: 60**

Question Paper Consists of **Part-A** and **Part-B.**

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1.

a) What is Software Quality? [CO1,K1,2M]

b) When should testing should be stopped? [CO2,K1,2M]

c) Define Dynamic Testing?[CO3,K1,2M]

d) What is JUNIT ?[CO4,K1,2M]

e) What are the features of testing tools?[CO5,K1,2M]

f) Distinguish between Verification and Validation testing.[CO5,K1,2M]

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. (a) What are the factors affecting the SQA? [CO1,K1,6M]

(b) Explain any two quality standards.[CO1,K2,6M]

3. (a) Describe about "Building a Structured Approach to Software Testing ". [CO2,K2,6M]

(b) Briefly discuss about the economics of SDLC. [CO2,K2,6M]

4. Differentiate between White Box Testing and Black Box Testing. [CO3,K2,12M]

5. What is Software Test Automation? Explain about Win Runner tool with suitable examples. [CO4,K2,12M]

6. Explain Software Testing Process with neat sketch [CO5,K2,12M]

7. (a) Explain different Software Development Methodologies.[CO6,K2,6M]

(b) Discuss about Post-Implementation Analysis.[CO6,K2,6M]

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Subject Code: R16EC4211

IV B.Tech II Semester Regular& Supple Examinations, June-2022

EMBEDDED SYSTEM DESIGN

(ECE)

Time: 3 hours Max Marks: 60

Question Paper Consists of Part-A and Part-B.

Answering the question in Part-A is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. (a) Compare embedded system and general computing system [CO1,K2,2M]
   (b) Differentiate RT level Combinational and Sequential logic design [CO2,K2,2M]
   (c) Explain data path design [CO3,K2,2M]
   (d) Differentiate OTP-ROM and RAM [CO4,K2,2M]
   (e) Explain the applications of RTOS [CO5,K2,2M]
   (f) Mention the differences between semicustom design and full custom design[CO6,K2,2M]

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. (a) Define embedded system and explain the various design metrics of embedded systems [CO1,K2,6M]
   (b) Explain about embedded system design flow [CO1,K2,6M]

3. (a) Design a 3-bit counter that counts the following sequence: 1, 2, 4, 5, 7, 1, 2, ..., This counter has an output "odd" that is one when the current count value is odd. Start from a state diagram, draw the state table, minimize logic, and draw the final circuit. [CO2,K3,6M]
   (b) Explain the process of designing a Custom single-purpose processor [CO2,K2,6M]
4. (a) How Pipelining increases the instruction throughput of Embedded system. [CO3,K2,6M]
   (b) Explain the process of selecting a microprocessor for embedded system design [CO3,K2,6M]

5. (a) Implement full adder operation with a ROM [CO4,K4,6M]
   (b) Explain the process of composing memories into larger ones [CO4,K2,6M]

6. (a) Illustrate the terms: [CO5,K2,4M]
   i. Finite state machines
   ii. Real-time operating system.
   b) Design chocolate vending machine using the FSMD model. [CO5,K3,8M]

7. (a) Explain the significance of Intellectual property cores for embedded system design[CO6,K2,6M]
   (b) Explain the importance of Hardware/Software co-simulation for embedded system design [CO6,K2,6M]

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