R-17   Code : 17CE42E1

B.TECH. DEGREE SUPPLEMENTARY EXAMINATION, JUNE 2023
IV B.Tech II Semester

REPAIR AND REHABILITATION OF STRUCTURES
(Civil Engineering)

Time : 3 hours   Max   Marks: 60

Answer SIX Questions, Choosing ONE Question from each section
All Questions carry equal marks
* * *

SECTION - I

1 (a) Discuss in detail about classification of maintenance.

   (b) How do you consider the structure for repair strategy? Explain in detail.

2 (a) Explain various aspects of inspection.

   (b) Discuss various causes of deterioration of reinforced concrete elements.

SECTION - II

3 (a) Explain the mechanism of corrosion with chemical equations.

   (b) Explain the thermal properties of concrete

4 (a) Explain the effects in the built concrete due to climate factors and chemical action

   (b) Define crack. List out various types of cracks in concrete.

SECTION - III

5 (a) Discuss about development of Polymer concrete and its properties.

   (b) Explain the development of Self-compacting concrete and its properties.

6 (a) What are the different types of fibers used in concrete? Explain the properties of steel fibres.

   (b) What are the properties of Reactive powder concrete? Discuss.

SECTION - IV

7 (a) Define Shotcrete and explain different types of shotcereteing.

   (b) Write a short notes on epoxy injection technique.

8 (a) Discuss the corrosion inhibitors and coatings to reinforcement.

   (b) Explain in detail bout underpinning technique.

SECTION - V

9 (a) Explain the procedure of strengthening of reinforced concrete column with neat sketches.

   (b) How do you assess the damage of concrete structure affected by earthquake? Explain it.

10 (a) Explain the demolition techniques for concrete structures.

   (b) A RCC bridge is under distress showing wide cracks of more than 1 cm, due to some causes such as poor design and detailing, improper cover for rebars, drying shrinkage etc,. As an Engineer how would you repair the bridge and make it functional. Justify your recommendations for the suggestion of remedies.

SECTION - VI

11. (a) Explain the procedure for column jacketing with neat sketches.

    (b) How do you strengthen the heavily corroded reinforced concrete beam?

12 (a) What do you understand by jacketing? And explain beam -column jacketing technique.

    (b) Discuss the methods of improving the shear strengthening of a reinforced concrete beam.

B.TECH. DEGREE ADVANCED SUPPLEMENTARY EXAMINATION, JULY 2023
IV B.Tech II Semester

ADVANCED FOUNDATION ENGINEERING
(Civil Engineering)

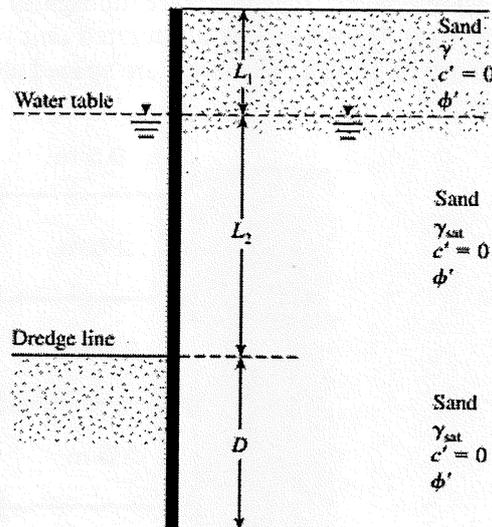Time: 3 hours   Max Marks: 60

Answer SIX Questions, Choosing ONE Question from each section
*All Questions carry equal marks*
* * *

SECTION - I

1   Explain with examples about various uses of sheet piling walls.

2   Refer to Figure 9.10. Given: L=3 m, γ=16.7 kN/m^3 and ϕ^1=30^0. Calculate the theoretical depth of penetration, D, and the maximum moment.

SECTION - II

3   An anchored sheet pile bulkhead is shown in Figure. Let L_1=4m, L_2=9m, l_1=2m, γ=17kN/m^3, γ_{sat}=19kN/m^3 and ϕ^1=34^0.
     i) Calculate the theoretical value of the depth of embedment, D.
     ii) Draw the pressure distribution diagram.
     iii)Determine the anchor force per unit length of the wall. Use the free earth- support method.
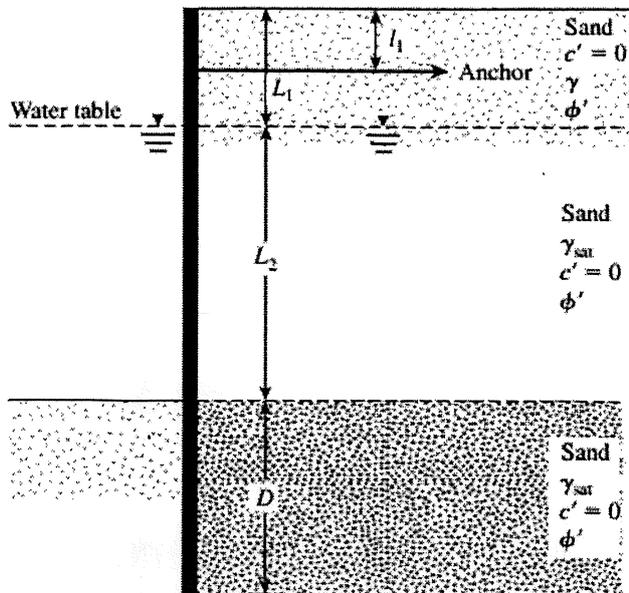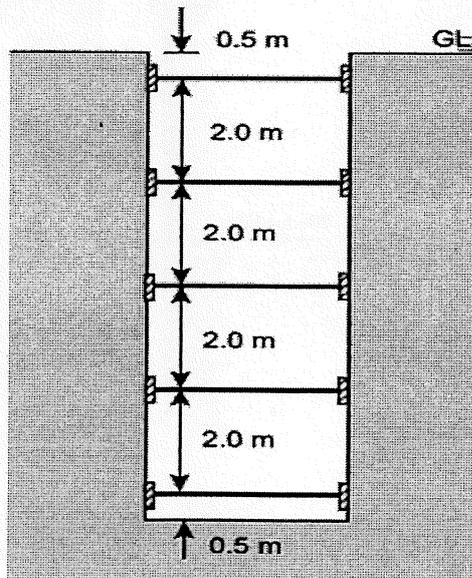
4   Illustrate the procedure for checking the stability of a cantilever sheet pile wall.

SECTION - III

5   A 3.0 m-wide braced excavation (see the figure) is to be made to a depth of 9.0 m in a saturated clay deposit having a saturated unit weight of 17.8 kN/m^3 and undrained shear strength of 30 kPa. The struts are spaced at 3.0 m horizontal intervals. Find the strut forces.

6   Explain with neat diagrams about apparent pressure diagrams for braced cuts in clays.

SECTION - IV

7   Explain the procedure for the design of a raft by conventional method.

8   Explain the procedure for calculating the allowable bearing pressure of mat foundations.

B.TECH. DEGREE ADVANCED SUPPLEMENTARY EXAMINATION, JULY 2023

IV B.Tech II Semester

MACHINE LEARNING
(Civil Engineering)

Time : 3 hours   Max. Marks: 60

Answer SIX Questions, Choosing ONE Question from each section
All Questions carry equal marks
* * *

SECTION - I

1 (a) What is Machine Learning? Explain different perspective and issues in machine learning.

   (b) How to design a learning system?

2 (a) Describe the Find-s algorithm. Explain by taking Enjoy Sport concept and training instance given below.

Sl. No.	Sky Air	temp	Humidity	Wind	Water	Forecast	Enjoy sport
1	Sunny	Warm	Normal	Strong	Warm	Same	Yes
2	Sunny	Warm	High	Strong	Warm	Same	Yes
3	Rainy	Cold	High	Strong	Warm	Change	No
4	Sunny	Warm	High	Strong	Cool	Change	Yes

   (b) Discuss about a Biased Hypothesis Space

SECTION - II

3 (a) What is a decision tree & discuss the use of decision tree for classification purpose with an example.

   (b) Explain about inductive bias in decision tree learning.

4 (a) Construct Decision tree by using ID3 algorithm with the following training examples.

Day	Outlook	Temperature	Humidity	Wind	PlayTennis
D1	Sunny	Hot	High	Weak	No
D2	Sunny	Hot	High	Strong	No
D3	Overcast	Hot .	High	Weak	Yes
D4	Rain	Mild	High	Weak	Yes
D5	Rain	Cool	Normal	Weak	Yes
D6	Rain	Cool	Normal	Strong	No
D7	Overcast	Cool	Normal	Strong	Yes
D8	Sunny	Mild	High	Weak	No
D9	Sunny	Cool	Normal	Weak	Yes
D10	Rain	Mild	Normal	Weak	Yes
D11	Sunny	Mild	Normal	Strong	Yes
D12	Overcast	Mild	High	Strong	Yes
D13	Overcast	Hot	Normal	Weak	Yes
D14	Rain	Mild	High	Strong	No

   (b) What is Decision tree? How to represent the Decision tree?

SECTION - III

5 (a) Draw the perceptron network with the notation. Derive an equation of gradient descent rule to minimize the error

   (b) Explain the concept of a Perceptron with a neat diagram and represent the Boolean functions of AND, OR using perceptron.

6 (a) Write a note on (i) Perceptron Training Rule (ii) Gradient Descent and Delta Rule

   (b) Write an algorithm for back propagation algorithm which uses stochastic gradient descent method. Comment on the effect of adding momentum to the network

SECTION - IV

7 (a) What is Bayes theorem and maximum posterior hypothesis?

   (b) Explain the EM Algorithm in detail.

8 (a) Explain Maximum Likelihood Hypothesis for predicting probabilities.

   (b) Derive an equation for MAP hypothesis using Bayes theorem.

SECTION - V

9 (a) Explain Binomial Distribution.

   (b) Describe K-nearest neighbour learning algorithm.

10 (a) How to estimate hypothesis accuracy?

    (b) Discuss locally weighted Regression.

SECTION - VI

11. (a) Discuss the learning tasks and Q learning in the context of reinforcement learning.

     (b) Explain about temporal difference learning.

12 (a) What is reinforcement learning? What are the applications of reinforcement learning?

    (b) Write about Q learning algorithm.

B.TECH. DEGREE SUPPLEMENTARY EXAMINATION, JUNE 2023
IV B.Tech II Semester
SOFTWARE ENGINEERING
(Common to CE, EEE & ECE)

Time : 3 hours   Max.Marks: 60

Answer SIX Questions, Choosing ONE Question from each section
All Questions carry equal marks
* * *

SECTION - I

1   (a)   Define Software Engineering. What is the relationship between computer science and software engineering.

    (b)   Briefly explain a layered Systems Approach to the software engineering.

2   Discuss in detail with examples of An engineering approach.

SECTION - II

3   (a)   Discuss about the Spiral model

    (b)   What is unified process? Discuss different phases in the unified process.

4   Explain in detail about the CMMI frame work.

SECTION - III

5   (a)   Describe the process of developing SRS (Software Requirement Process) with use cases.

6   (a)   Discuss about requirement analysis.

    (b)   List the characteristics of requirements and discuss them in brief.

SECTION - IV

7   (a)   what are the different issues in design creation discuss them?

    (b)   Explain characteristics of good design.

8   Explain in detail about function oriented software design

SECTION - V

9   (a)   Illustrate the process of code review .

    (b)   Discuss about internal and external documentation with an example.

10   Explain in detail about block box testing.

SECTION - VI

11. (a)   Discus about tracking progress of the software project.

    (b)   Describe the characteristics of Project Personnel.

12   What are the different phases in Risk Management explain them?

R-17   Code: 17CS4201

B.TECH. DEGREE SUPPLEMENTARY EXAMINATION, JUNE 2023
IV B.Tech II Semester
PYTHON PROGRAMMING
(Common to CE, EEE & ECE)

Time : 3 hours   Max   Marks: 60

Answer SIX Questions, Choosing ONE Question from each section
All Questions carry equal marks
* * *

SECTION - I

1   (a)   How functions defined in python programming. Explain with an example program.

    (b)   What is an exception. Demonstrate exception handling with an example program.

2   (a)   Explain list in python with an example program.

    (b)   Differentiate the following
          (i) List Vs Tuple
          (ii) List Vs Sets
          (iii)Sets Vs Dictionaries

SECTION - II

3   How string defined in python. Discuss about any five string functions in python with an example program.

4   Discuss regular expressions handling in python programming with Street addresses case study.

SECTION - III

5   What is generator. Explain Fibonacci generator with an example program.

6   (a)   How class is defined and instantiated in python programming. Explain with example .program.

    (b)   What is instance variable. How instance variable declared in python class. Demonstrate with an example program.

SECTION - IV

7   Discuss about reading data from text files and writing data to files with an example program.

8   Write a short note on following
    i) Standard Input
    ii) Standard Output
    iii) Standard Error

SECTION - V

9   Define XML. Explain parsing of XML documents.

10   (a)   What can the pickle module store. Explain how data is saved in pickle file.

       (b)   Explain how data is loading from pickle file. Demonstrate with an example program.

SECTION - VI

11.   (a)   Explain directory structure of packaging your python software application.

       (b)   How can you write setup script for python application. Explain with an example.

12   (a)   Write the examples for good package classifiers.

       (b)   Discuss about Creating a Source Distribution and Creating a Graphical Installer.

B.TECH. DEGREE SUPPLEMENTARY EXAMINATION, JUNE 2023

IV B.Tech II Semester

ELECTRICAL DISTRIBUTION SYSTEMS
(Electrical & Electronics Engineering)

Time : 3 hours   Max Marks: 60

Answer SIX Questions, Choosing ONE Question from each section
All Questions carry equal marks
* * *

SECTION - I

1 (a) Explain the following with the help of its characteristics:
i) Residential load   ii) Industrial loads

   (b) What are different types of Loads? Discuss their characteristics.

2 (a) Obtain the relation between the load factor and loss factor

   (b) The load curves of two different categories of loads and system peak load are as follows: Peak load for industrial load: 2000 kW; Peak load for residential load: 2000 kW; System peak load: 3000 kW. What is diversity factor and coincidence factor of the system?

SECTION - II

3   What are the various factors that are to be considered in selecting primary feeder rating? Give a neat sketch of typical primary distribution feeder.

4 (a) Compare the radial, loop and ring main primary distribution systems on the basis of load, reliability of supply and economy.

   (b) Explain about primary feeder loading.

SECTION - III

5   Define distribution transformer. How is the rating of distribution substation decided? Explain.

6   Differentiate Indoor and outdoor substation? How do you analyze a substation service area with 'n' primary feeders?
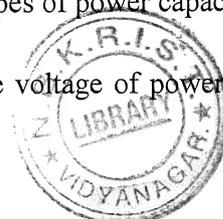
SECTION - IV

7   Prove the power loss due to load currents in the conductors of the 2-phase, 3 wire lateral with multi-grounded neutral is approximately 1.64 times larger than the one in the equivalent 3-phase lateral.

8   Derive the expression for power loss of a radial feeder with non uniformly distributed load.

SECTION - V

9   List out the frequently occurring faults on a distribution system and derive the formulae for fault currents.

10   What are the different types of coordination of protective devices? Describe the fuse to circuit breaker coordination.

SECTION - VI

11.   What is a power capacitor? Explain about different types of power capacitors and their applications.

12   Define the rated voltage. Why we need to control the voltage of power system? Explain the methods in detail.

B.TECH. DEGREE ADVANCED SUPPLEMENTARY EXAMINATION, JULY 2023

IV B.Tech II Semester

FLEXIBLE AC TRANSMISSION SYSTEMS
(Electrical & Electronics Engineering)

Time : 3 hours   Max   Marks: 60

Answer SIX Questions, Choosing ONE Question from each section
All Questions carry equal marks
* * *

SECTION - I

1 (a) What is the basic principle of reactive power compensation? And briefly explain the methods to compensate the reactive power?

   (b) What is static VAR system and explain with neat diagram

2 (a) What are the objectives of reactive power compensation in a transmission system?

   (b) Explain the behaviour of an uncompensated transmission line under load.

SECTION - II

3 (a) Why we need transmission interconnections?

   (b) Illustrate the power flow in an AC System.

4 (a) A power of 1600 MW is flowing through two parallel paths having line impedances of 10Ω and 6Ω respectively. The full load capacity of each of the low impedance line is 900 MW. (i) Find the power flow through each of the line, and (ii) How much reactance is to be added in the low impedance line to remove the overloading on the line?

   (b) What are the benefits of FACTS controllers? List different types of FACTS controllers?

SECTION - III

5   Describe the TSC–TCR type VAr generator with necessary diagrams.

6   Explain the mid–point voltage regulation for line segmentation with necessary diagrams and expressions.

SECTION - IV

7   Explain the working of thyristor controlled series capacitor (TCSC). Draw and discuss their V-I operating characteristics in voltage control mode and reactance control mode. Also discuss the applications of TCSC.

8   (a)   Discuss the working of Thyristor Switched Series Capacitor (TSSC)

     (b)   Briefly discuss the GTO thyristors controlled series capacitor.

SECTION - V

9   (a)   What are the advantages of combined shunt and series controller than the individual controllers?

     (b)   Describe the various transmission control capabilities of UPFC

10   Explain the independent real and reactive power flow control of UPFC with diagrams.

SECTION - VI

11.   With a neat diagram, explain the operation and applications of DVR and also discuss the features of DVR.

12   (a)   Explain working principle of unified power quality conditioner (UPQC).

     (b)   What are control strategies of unified power quality conditioner (UPQC).

SECTION - V

9   Explain about the equations for non-dimensional solutions for vertical piles subjected to lateral loads.

10   A steel pipe pile of outside diameter 61 cm and inside diameter 56 cm is driven into a medium dense sand under submerged conditions. The sand has a relative density of 60% and an angle of internal friction of 38°. Compute the ultimate lateral resistance of the pile by Brom's method. The submerged unit weight of the soil γ_b =8.75 kN/m^3.

SECTION - VI

11   (a)   Explain various treatment methods for collapsible soils.

     (b)   Illustrate the procedure for calculating collapse settlement

12   (a)   Explain about various foundation techniques in expansive soils.

     (b)   What are different causes of moisture changes in soils?

B.TECH. DEGREE ADVANCED SUPPLEMENTARY EXAMINATION, JULY 2023
IV B.Tech II Semester

VLSI DESIGN
(Electrical & Electronics Engineering)

Time : 3 hours   Max   Marks: 60

*Answer **SIX** Questions, Choosing **ONE** Question from each section*
All Questions carry equal marks
* * *

SECTION - I

1   (a)   With neat diagrams explain steps involved in CMOS N-well fabrication process.

    (b)   Explain the importance of oxidation in fabrication process. Brief about Dry and Wet Oxidation techniques.

2   (a)   With neat diagrams explain steps involved in CMOS twin-tub fabrication process.

    (b)   Write Short note on i) Lithography ii) Ion Implantation
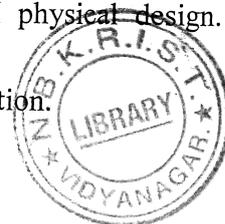
SECTION - II

3   (a)   Derive the expression for Drain Current (I_{DS}) in Linear region.

    (b)   With Mathematical Expressions for MOSFET threshold voltage. List the different parameters affecting threshold voltage.

4   (a)   Draw BiCMOS inverter. Mention the advantage and applications of BiCMOS technology.

    (b)   Draw NMOS Inverter with different pull-up and mention the advantages of each.

SECTION - III

5   (a)   With an example explain the procedure of sheet resistance estimation.

    (b)   Explain VLSI Design flow.

6   (a)   Draw schematic and layout/stick diagrams for 2 input NOR gate.

    (b)   With neat diagrams describe different layout design rules for wires, contacts and transistors for 2μm CMOS technology.

SECTION - IV

7   (a)   Draw schematic and layout diagrams for $Y = \overline{ab + c}$

    (b)   With a suitable example explain Switch Logic.

8   (a)   Differentiate Floor-planning and Placement in VLSI physical design. Briefly explain both processes.

    (b)   Elaborate the steps involved in Power and Delay estimation.

SECTION - V

9   (a)   Design a circuit for odd Parity Generator.

     (b)   Design a 4 bit binary counter,

10   (a)   Differentiate Full custom, Gate array and PLDs with respect to ASIC design.

     (b)   Explain the construction and working of typical CPLD.

SECTION - VI

11. (a)   Explain various steps involved in programming FPGA/CPLD.

     (b)   Explain different capture tools and techniques.

12   (a)   Explain path sensitization to find stuck-at-faults.

     (b)   With a neat diagram explain the BIST.

B.TECH. DEGREE SUPPLEMENTARY EXAMINATION, JUNE 2023
IV B.Tech II Semester

INTERNET OF THINGS
(Mechanical Engineering)

Time : 3 hours   Max.Marks:60

Answer SIX Questions, Choosing ONE Question from each section
All Questions carry equal marks
* * *

SECTION - I

1   (a)   What is Internet of Things (IoT)? What are components required to design IoT Device and which device we called IoT device explain with example.

    (b)   Discuss about various Enabling Technologies in IoT.

2   With the help of neat diagrams, describe the levels of IoT with example of each.

SECTION - II

3   Explain the implementation of IoT technology in following areas:

          (i) Smart Parking (ii)Smart Lightening

          (iii) Emergency response (iv) smart roads in smart cities

4   Describe how the environment can be more protected with the help of IoT technology in the following categories:

          (i) Air pollution monitoring (ii) Noise pollution monitoring

          (iii) Forest fire detection (iv) River flood detection

SECTION - III

5   (a)   Mention the communication protocols used for M2M local area networks.

    (b)   Explain the differences between Machines in M2M and Things in IOT.

6   (a)   Draw the structure of Open flow Switch and justify it.

    (b)   What are the limitations of SNMP and describe the basic requirements for network operator?

SECTION - IV

7   (a)   Compare cloud computing and Distributed computing.

    (b)   Name any two security challenges associated with cloud in today's digital scenario.

8   (a)   How many types of deployment models are used in cloud? Which one is best and why?

    (b)   Discuss the principles of security in cloud computing.

SECTION - V

9   (a)   Explain the various control Flow Statements in python and write the difference between a python Module and package.

10   (a)   What is the difference between procedure-oriented programming and object-oriented programming?

     (b)   Explain about handling an exception with example.

SECTION - VI

11.   (a)   What is an IoT device and explain its building blocks with neat diagram?

     (b)   Explain in detail about Exemplary Device: Raspberry Pi.

12   (a)   How Raspberry Pi differs with Arduino?

     (b)   Explain and how to develop the Python Programming on raspberry Pi.

B.TECH. DEGREE ADVANCED SUPPLEMENTARY EXAMINATION, JULY 2023

IV B.Tech II Semester

AUTOMOBILE ENGINEERING
(Mechanical Engineering

Time : 3 hours   Max Marks: 60

Answer SIX Questions, Choosing ONE Question from each section
All Questions carry equal marks
* * *

SECTION - I

1   (a)   What are the functions of the following?
        (i) Piston (ii) Connecting Rod (iii) Crank shaft (iv) Cylinder (v) Lubricants

    (b)   Describe the working of T head and L-head type combustion chambers.

2   (a)   Explain in detail about Rear wheel drive layout of an Automobile.

    (b)   Distinguish between dry liners and wet liners.

SECTION - II

3   (a)   How turbocharger is different from supercharger?

    (b)   Explain the working of an air cleaner with a neat sketch.

4   Describe the working of Simple carburetor with a neat sketch and also mention its merits and demerits.

SECTION - III

5   (a)   Write the functions of various components available in ignition system.

    (b)   Discuss in brief about grading phenomenon of lubricating oils.

6   Briefly explain the Magneto ignition system with a neat sketch and also mention its merits and demerits.

SECTION - IV

7   What are the different types of clutches used in an Automobile? Explain any one of them with a neat sketch.

8   (a)   Differentiate air cooling system and water cooling system in an Automobile.

     (b)   Illustrate the working of synchromesh gear box with a neat sketch.

SECTION - V

9   (a)   Explain the importance of the following,
           (i) Caster, (ii) Camber, (iii) Tow- in and (iv) Toe- out.

     (b)   Elucidate the working of Rigid axle suspension system with a neat diagram.

10   (a)   List out the merits and demerits of Power steering.

     (b)   Explain the Ackerman steering gear mechanism with the help of neat layout.

SECTION - VI

11.   Discuss about hydraulic braking system and also mention its merits & demerits.

12   (a)   Distinguish between air braking system and pneumatic braking system.

     (b)   Hybrid vehicles are more advantageous than conventional vehicles. Justify.

B.TECH. DEGREE ADVANCED SUPPLEMENTARY EXAMINATION, JULY 2023
IV B.Tech II Semester

INTERNET OF THINGS
(Mechanical Engineering)

Time : 3 hours   Max.Marks:60

Answer SIX Questions, Choosing ONE Question from each section
All Questions carry equal marks
* * *

SECTION – I

1 (a) What are the components required to design IoT device and which device we call IoT device. Explain with examples.

   (b) Elaborate Logical design of IoT.

2 (a) What are the main challenges of IOT?

   (b) Describe the IoT architecture.

SECTION – II

3 (a) Consider a smart office automation system. Explain the pros and cons of using IoT technologies, devices and solutions.

   (b) What is Smart Irrigation? Explain.

4   Explain the applications of IoT in various fields with suitable examples.

SECTION – III

5 (a) How does M2M communication work? Explain.

   (b) Discuss application layer protocols in IoT.

6 (a) Elaborate SDN and NFV for IoT.

   (b) Explain network and operator requirements in IoT.

SECTION – IV

7 (a) Describe different Cloud Service Models.

   (b) Explain several services of Cloud Computing.

8 (a) Discuss the architecture of Cloud Computing.

   (b) What are the major roles of Cloud Computing in IoT?

SECTION – V

9   (a)   Why is Python becoming indispensible in IoT industry? Explain.

     (b)   Elaborate Python data types.

10 (a)   Explain IoT design methodology.

     (b)   Discuss Python file handling.

SECTION - VI

11.   Construct the design of smart home with Raspberry Pi and other hardware devices with a neat sketch.

12 (a)   Outline the architecture of Raspberry Pi.

     (b)   Illustrate the design issues for Raspberry Pi interfaces.

B.TECH. SUPPLEMENTARY DEGREE EXAMINATION, JUNE 2023
IV B.Tech. II Semester

DIGITAL IMAGE PROCESSING
(Electronics & Communication Engineering)

Time : 3 hours   Max. Marks :60

*Answer **FIVE** Questions, Choosing **ONE** Question from each section*
All Questions carry equal marks
* * *

SECTION – I

1.   Demonstrate the fundamental steps involved in digital image processing with neat sketch.

2.   (a)   Discuss about image sampling and quantization.
     (b)   List the applications of digital image processing.

SECTION – II

3.   Summarize how Fourier transforms are useful in digital image processing and explain the following properties
       i)   Separability   ii) Scaling   iii) Rotation

4.   Enumerate about Haar transform and its properties. Derive the Haar transform matrix for N=4.

SECTION – III

5.   Elucidate about Histogram Processing and equalization.
     Describe about Image Sharpening filters in frequency domain

6.   (a)   Explain about color fundamentals
     (b)   With the help of block diagram explain about full-color image processing

SECTION – IV

7.   (a)   Discuss about algebraic approach to image restoration
     (b)   Derive an expression for inverse filtering and mention its limitations.

8.   (a)   Examine edge formulation and its detection with neat diagrams.
     (b)   Describe Region merging and region splitting technique for image segmentation.

SECTION – V

9.   (a)   What is the need for image compression? Explain.
     (b)   Classify redundancies and how image redundancies can be eliminated?

10. (a)   Write the significance of channel encoder and decoder in an image compression model.
     (b)   Discriminate lossy and lossless compression techniques

B.TECH. DEGREE ADVANCED SUPPLEMENTARY EXAMINATION, JULY 2023

IV B.Tech II Semester

DIGITAL IMAGE PROCESSING
(Electronics & Communication Engineering)

Time : 3 hours   Max   Marks: 60

Answer SIX Questions, Choosing ONE Question from each section
All Questions carry equal marks
* * *

SECTION - I

1 (a) Explain the fundamental steps involved in digital image processing with a neat block diagram.

   (b) Describe the false contouring effect in gray scale resolution with suitable example.

2 (a) Demonstrate the reasons behind the occurrence of checkerboard effect in spatial resolution.

   (b) Elaborate the digital image acquisition process using 2D imaging plane with neat sketch.
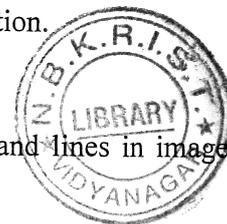
SECTION - II

3 (a) Examine the periodicity and conjugate symmetry properties of 2D–DFT.

   (b) Determine the DFT Kernel of order N = 4.

4 (a) State and prove the separability and conjugate symmetry properties of 2D DFT.

   (b) Develop the Hadamard transform matrix for N=4.

SECTION - III

5 (a) Demonstrate the following gray level transformations with an example,
        (i) Image negative.   (ii) Contrast stretching

   (b) Examine the role of linear and non-linear filters for image smoothing in spatial domain enhancement.

6 (a) Illustrate the steps in frequency domain enhancement of an image with a neat block diagram.

   (b) Interpret the role of Laplacian operator in frequency domain image enhancement.

SECTION - IV

7 (a) Discuss about the role of order statistics filters in image restoration.

   (b) Illustrate the concept of wiener filtering in image restoration.

8 (a) Illustrate the techniques used in detection of isolated points and lines in image segmentation.

   (b) Outline the basic adaptive thresholding in image segmentation.

SECTION - V

9   (a)   Examine the Huffman coding with an example in Error-Free compression.

       (b)   Examine the process of lossy predictive coding technique in image compression.

10   (a)   Examine the process of lossless predictive coding with neat schematics.

       (b)   Illustrate the underlying steps in image compression using transform coding with neat schematics.

SECTION - VI

11.   (a)   Discuss about Luminance, Radiance, Brightness and Trichromatic Coefficients.

       (b)   What is meant by pseudo color image processing and analyze the process of intensity slicing method with an example.

12   (a)   Demonstrate RGB model with a neat a diagram.

       (b)   Examine the color slicing and color compliment techniques in full color image processing

B.TECH. DEGREE ADVANCED SUPPLEMENTARY EXAMINATION, JULY 2023
IV B.Tech II Semester

JAVA PROGRAMMING
(Electronics & Communication Engineering)

Time : 3 hours   Max Marks: 60

Answer SIX Questions, Choosing ONE Question from each section
All Questions carry equal marks
* * *

SECTION - I

1 (a) What feature of Java makes it platform independent and portable?

   (b) Is Java a robust language? Justify your answer.

2 (a) Differentiate between a class and object.

   (b) What is inheritance? Explain different forms of inheritance with suitable program segments and real world example classes.

SECTION - II

3 (a) What is the purpose of constructor in Java programming?

   (b) Explain about File Input & Output Stream.

4 (a) How to create a package? Explain with example.

   (b) Can inheritance be applied between interfaces? Justify your answer.

SECTION - III

5 (a) Describe the following methods related to String
        i) replace() ii) compareTo() iii) charAt()

   (b) Write a program to implement the Fibonacci series using for loop control structure.

6 (a) What is JDBC? Describe different types of JDBC drivers.

   (b) Write about driver manager class for database connectivity.

SECTION - IV

7 (a) Write a program to illustrate the use of multiple catch blocks for a try block.

   (b) What is the difference between a thread and a process?

8 (a) Explain about Applet Life Cycle.

   (b) What are the various layout managers used in Java?

9   (a)   Explain how a package and package member can be imported?

      (b)   Explain the Exception Handling with suitable example.

10   (a)   How to creating a Frame window from Applet.

      (b)   Write short notes on Menu Bars And Menus.

SECTION – V1

11   (a)   List the difference between Event class and Listener Interface.

      (b)   What is an event? What are important features of event driven programming? How Events are handled?

12   (a)   Explain Interfaces with suitable example.

      (b)   Write notes on :
                (i)   Key event classes
                (ii)   Handling mouse events
                (iii)   Inner classes
                (iv)   Adapter classes

B.TECH. DEGREE SUPPLEMENTARY EXAMINATION, JUNE 2023

IV B.Tech. II Semester

ADVANCED DATABASE MANAGEMENT SYSTEMS
(Computer Science & Engineering)

Time : 3 hours   Max. Marks :60

*Answer **FIVE** Questions, Choosing **ONE** Question from each section*
All Questions carry equal marks
* * *

SECTION - I

1   Explain in detail centralized systems with neat diagram.

2   What is Query processing? Explain various steps in query processing with neat diagram.

SECTION - II

3   Discuss about Interquery parallelism and Intraquery parallelism.

4   Illustrate in detail Query optimization.

SECTION - III

5   Explain in detail homogeneous and heterogeneous databases.

6   (a) Discuss about distributed data storage in databases.

    (b) Explain about distributed transactions in databases.

SECTION - IV

7   Explain in detail complex datatypes in object databases.

8   (a) Discuss about Table inheritance in object databases.

    (b) Write briefly persistent programming languages.

SECTION - V

9   Explain storage and indexing maintenance in ORACLE database.

10   Illustrate database design and querying.

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B.TECH. DEGREE SUPPLEMENTARY EXAMINATION, JUNE 2023
IV B.Tech. II Semester

WIRELESS NETWORKS
(Common to CSE & IT)

Time : 3 hours   Max. Marks :60

*Answer **SIX** Questions, Choosing **ONE** Question from each section*
All Questions carry equal marks
* * *

SECTION - I

1   (a)   Explain briefly about Multiple access techniques in wireless networks.

     (b)   Outline the significance of error control in computer networks.

2   (a)   Discuss about Computer Network Architecture.

     (b)   What is the need of IEEE 802 Standard and classify them?

SECTION - II

3   Illustrate in detail about different generation of cellular systems.

4   (a)   Elaborate the Concept of Cellular.

     (b)   Explain in detail about the Cellular Architecture.

SECTION - III

5   Discuss in detail about Issues in Designing a MAC protocol.

6   (a)   List the major advantages of the ad hoc wireless Internet.

     (b)   Explain the Classifications of MAC Protocols.
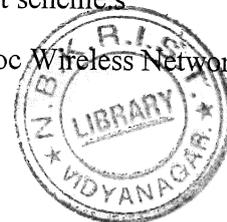
SECTION - IV

7   Summarize the Issues in Designing a Routing Protocol for Ad Hoc Wireless Networks.

8   (a)   Outline about the Hierarchical Routing Protocols.

     (b)   Briefly explain the Power-Aware Routing Protocols.
SECTION - V

9   Explain the Issues and Challenges in Providing QOS in Ad Hoc Wireless Networks.

10   (a)   Describe about MAC Layer Solutions.

     (b)   Categorize Network Layer Solutions.
SECTION - VI

11.   Enumerate the classification of Energy management schemes

12   (a)   What is the Need for Energy Management in Ad Hoc Wireless Networks?

     (b)   Explain System Power Management Schemes.

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B.TECH. DEGREE ADVANCED SUPPLEMENTARY EXAMINATION, JULY 2023

IV B.Tech. II Semester

SOFTWARE TESTING AND QUALITY ASSURANCE
(Common to CSE & IT)

Time : 3 hours   Max. Marks :60

Answer SIX Questions, Choosing ONE Question from each section
All Questions carry equal marks
* * *

SECTION - I

1   (a)   Discuss the role of a recordkeeper.

    (b)   What is a CFG? Give a detailed CFG representation for openfiles(). Assume the number of nodes are 1-21.

2   (a)   Discuss the importance of code review rework and validation.

    (b)   Give the process for generating test input data for control flow testing.

SECTION - II

3   (a)   Explain why the presence of data flow anomaly does not imply that execution of the program will definitely produce incorrect results.

    (b)   Explain the difference between control flow – based testing and domain error-based testing.

4   (a)   Compare the two major techniques namely **Control Flow Based Path Selection** and **Data Flow Based Path Selection** for generating test data.

    (b)   Identify some difficulties in applying the concept of domain testing to actual program testing.

SECTION - III

5   (a)   Discuss the advantages and disadvantages of top-down and bottom-up approaches to integration testing.

    (b)   Explain the difference between requirement testability and software testability.

6   (a)   List the differences between unit testing and integration testing.

    (b)   Discuss how do you model a test design process.

SECTION - IV

7   (a)   What are the components of a test automation infrastructure? What is the role of a test automation framework administrator.

      (b)   What is beta testing? Who conducts and why?

8   (a)   Develop evaluation criteria for the selection of a defect tracking tool.

      (b)   Discuss the metrics for tracking system test.

SECTION - V

9   (a)   Give the objectives of acceptance testing.

      (b)   Discuss about the factors that influence software reliability.

10   (a)   What is software quality? Explain in detail.

      (b)   Give the applications of software reliability.

SECTION - VI

11.   (a)   Explain the ISO 9001:2000 requirements document for quality assurance

      (b)   Give the idea of a test process and give the importance to improve a test process.

12   (a)   Discuss the five different views of software quality.

      (b)   Briefly explain the five maturity levels in the CMM model.

B.TECH. DEGREE ADVANCED SUPPLEMENTARY EXAMINATION, JULY 2023
IV B.Tech II Semester

BASICS OF TRANSPORTATION ENGINEERING
(Common to CSE & IT)

Time : 3 hours   Max   Marks: 60

Answer SIX Questions, Choosing ONE Question from each section
All Questions carry equal marks
* * *

SECTION - I

1   (a)   Briefly outline the main features of various road patterns commonly in use. Explain with sketches the star and grid pattern.

    (b)   Explain how the master plan is prepared and the road development programme is phased.

2   (a)   What are the various methods of classifying roads? Briefly outline the classification based on location and function as suggested in the Nagapur Road Plan.

    (b)   Compare the characteristic features of different modes of transportation.

SECTION - II

3   (a)   Calculate the minimum sight distance required to avoid a head on collision of two cars approaching from opposite directions at 80 and 40 kmph. Assume a reaction time of 1.5 seconds, coefficient of friction of 0.6 and a brake efficiency of 40 per cent, in either case.

    (b)   Write short notes on:
i) Width of formation
ii) Right of way

4   (a)   A two lane road with design speed 80Kmph has horizontal curve of radius 480m. Design the rate of super elevation for mixed traffic. By how much should the outer edges of the pavement to be raised with respect to the center line, if the pavement is rotated with respect to the center line and width of the pavement at the horizontal curve is 7.5m

    (b)   Explain the role of pavement surface characteristics in highway geometric design.

SECTION - III

5   (a)   Write Short notes on
i) No passing Zone Markings
ii) Turn Markings
iii) Object Markings

    (b)   Write Short notes on
i) Stop and Give-Way Signs
ii) Prohibitory Signs
iii) No Parking and No stopping Signs

6   (a)   What are the various types of traffic markings commonly used? What are the uses of each?

    (b)   Explain With neat sketches of Informatory Signs.

7 (a) What are the functions of Rails and Sleepers?

   (b) What are the requirements and functions of Ballast?

8 (a) What are the components of Permanent Way? Explain.

   (b) What are various types of Gauges of Railway network? Explain.

SECTION - V

9 (a) How Airports are classified based on various aspects?

   (b) Describe the different types of airport terminals and their functions.

10 (a) What are the different types of flights and how are they classified?

    (b) What is air transportation and how does it differ from other modes of transportation?

SECTION - VI

11. (a) Write short note on
         i) Uses and Effects of tides at harbor
         ii)Requirements of good port

     (b) Write short notes on
         i) dolphins
         ii) jetties
         iii)Fenders

12 (a) How is the location of a harbour determined and what factors are considered in the selection process?

    (b) What is water transportation and what is its importance in the transportation industry?