R-17

Code : 17CE42E1

B.TECH. DEGREE EXAMINATION, JULY 2021

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

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SECTION - I

1 (a) Write clearly the scope of maintenance for structural repairs of a buildings.

(b) Explain neatly the different stages of inspection generally conducted for a structure.

2 (a) What are the causes which necessitate the maintenance effects the service and durability of the structure.

(b) Explain in detail the assessment procedure for evaluating a damaged structure

SECTION - II

3 (a) Explain the parameters affecting the quality of concrete construction

(b) .Explain the different steps in the application of quality assurance.

4 (a) Explain the factors Influencing Strength of Concrete?

(b) Define durability of concrete? How much importance should be given for durability in design and construction.

SECTION - III

5 (a) What are the factors affecting properties of fiber reinforced concrete.

(b) List out different types of special concrete and explain clearly the sulphur infiltrated concrete.

6 (a) Explain various methods of producing high strength concrete.

(b) Describe polymer concrete and also write its applications.

SECTION - IV

7 (a) Explain any one of the NDT procedure to assess the quality of concrete

(b) What are the essential parameters for repair materials

8 (a) Explain in detail the cathode protection method used for prevention of corrosion in concrete structures.

(b) Write a short notes for the following (i) Corrosion Inhibitors (ii) Epoxy Injection.

SECTION - V

9 (a) Explain in detail any two corrosion protection methods.

(b) How do you repair and rehabilitate a structure distressed due to fire?

10 (a) Explain the any two methods of strengthening the concrete structures against earthquake.

(b) How do you strengthen a heavily corroded RCC beam in a structure?

SECTION - VI

11 (a) With help of neat sketches explain how you improve the load carrying capacity of columns and beams.

(b) How do you strengthen a heavily corroded RCC beam in a structure?

12 (a) What do you understand by jacketing? Explain the jacking of column with the help of neat sketches.

(b) With simple sketch explain the methods of improving the strength of existing RC column.

R-17 **Code: 17CS42O2**

B.TECH. DEGREE EXAMINATION, JULY 2021

IV B. Tech II Semester

SOFTWARE ENGINEERING

(Civil Engineering)

Time: 3 hours Max Marks: 60

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

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SECTION - I

1 (a) List the Characteristics of a good software?

(b) Define the Software Engineering? What are the challenges of Software Engineering?

2 State and explain An Engineering Approach of Software Development?

SECTION - II

3 (a) Define process. Explain about Incremental model in detail.

(b) Discuss about the SDLC.

4 What is a Software Myths? Explain about different types of myths in software engineering?

SECTION - III

5 (a) Distinguish about Functional and Non Functional requirements?

(b) Write short notes on SRS.

6 What is meant by Win-Win condition in the context of Requirements engineering? Explain with an example?

SECTION - IV

7 (a) Define design. State and explain issues in design creation.

(b) How do you conduct design reviews?

8 (a) Explain the steps of interface design?

(b) Write short notes on Function oriented software design

SECTION - V

9 (a) Define coding? Describe code reviews in detail.

(b) Write short note on Software faults and failures.

10 Explain the differences and similarities between the Internal and External Documentation?

SECTION - VI

11. (a) Explain Risk Management in detail?

(b) Discuss about the need of project plan in modern Software development approach?

12 Discuss about various techniques for effort estimation.

R-17 **Code : 17EE42E1**

B.TECH. DEGREE EXAMINATION, JULY 2021

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

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SECTION - I

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

(b) A feeder supplies 2 MW to an area. The total losses at peak load are 100 kW and units supplied to that area during a year are 5.61 millions. What is the loss factor and average power loss?

2 (a) Discuss about load modeling and its characteristics

(b) Calculate the total energy generated, if the maximum demand on power station is 110MW and the annual load factor is 60%.

SECTION - II

3 Define the terms feeder and Distributor. Explain detail about the design considerations of network type distribution feeder.

4 (a) Explain about primary feeder loading.

(b) State the differences between primary and secondary distribution feeders as regards to voltage used.

SECTION - III

5 Define substation. Derive the percentage voltage drop of a substation service area with 'n' number of primary feeders.

6 Explain the methodology for optimal location of substations and indicate the benefits derived through this approach.

SECTION - IV

7 Define power loss. Prove the power loss due to the load currents in the conductors of single-phase lateral ungrounded neutral case is 2 times larger than one in the equivalent three phase lateral.

8 Define voltage drop. Obtain the expression for the total series voltage drop and total copper loss per phase of a uniformly distributed load. Give the assumption made, if any.

SECTION - V

9 Obtain the sequence impedance equivalent circuit for LL and LG fault. Compare the magnitude of fault current in both cases.

10 Define coordination? Discuss the overall coordination procedure employed for protection of distribution systems

SECTION - VI

11. (a) What is meant by power capacitor? Mention the types of power capacitors

(b) Explain the power factor correction by installing the series capacitor bank

12 Discuss the general procedure to determine the best location of capacitors in distribution system.

R-17

Code: 17ME42E1

B.TECH. DEGREE EXAMINATION, JULY 2021

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

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SECTION - I

1 Outline major components of an automobile and explain the functions of each.

2 (a) Discus different type of cylinder liners.

(b) Discus about any three types of heads.

SECTION - II

3 (a) With the help of neat sketch explain the working of A.C. Mechanical pump.

(b) What are the different types of air cleaners? Discus in brief.

4 (a) Explain, with the help of a neat sketch, working of simple single jet carburettor.

(b) Explain about the Super charging and Turbo charging.

SECTION - III

5 Discus in detail the requirements and the functions of an ignition system of an internal combustion engine.

6 (a) What is the necessity of engine lubrication?

(b) Sketch and explain the working of Dry-sump lubricating system.

SECTION - IV

7 (a) What is the necessity for cooling of an engine?

(b) Discus in detail the water cooling system for automotive engines.

8 Explain the working of Constant mesh Gear box. Discuss the advantages of a constant mesh gear box over the sliding mesh type.

SECTION - V

9 (a) What are the objectives of vehicle suspension system?

(b) Sketch and explain the working of Wishbone type suspension system.

10 (a) Explain the terms: i) Caster ii) Camber iii) steering axis inclination.

(b) What is perfect steering? Discus Ackermann steering mechanism.

SECTION - VI

11. With the help of a neat sketch explain the working of a hydraulically operated four wheel brake system.

12 (a) Discus the advantages and limitations of hybrid vehicles.

(b) With a neat sketch explain EV drive train.

R-17 **Code : 17ME4201**

B.TECH. DEGREE EXAMINATION, JULY 2021

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

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SECTION - I

1 (a) List and explain the four pillars of IOT.

(b) Describe about IoT Levels in detail.

2 (a) Explain the various emerging IoT applications.

(b) State and explain about building blocks of IoT.

SECTION - II

3 Describe IoT Application and Deployment Scenarios in Industrial domains with example.

4 Explain the deployment and operational view, resources, services, virtual entities, users in an IoT system by considering a Smart City example.

SECTION - III

5 (a) Explain the generic M2M System Solution with a neat diagram.

(b) Differentiate Machine-to-Machine communication (M2M) and IOT.

6 (a) Write the purpose of SNMP and list out its limitations?

(b) Describe about Software defined networking and virtualization.

SECTION - IV

7 (a) Explain the characteristics of Cloud Computing.

(b) Elaborate Cloud Computing deployment models and Service models.

8 (a) Discuss about public and private environments of Cloud Computing.

(b) Illustrate about deployment of Cloud including example.

SECTION - V

9 (a) Elaborate IOT Design Methodology with near sketch.

(b) State and explain about modules in Python.

10 Explain various control flow statements in Python with examples.

SECTION - VI

11. (a) Explain IoT devices and applications of the devices.

    (b) Discuss Raspberry pi programming and explain with example.

12 (a) Explain Challenges and requirements of IoT device.

    (b) List out the I/O interfaces used in IoT.

R-17

Code : 17EC42E1

B.TECH. DEGREE EXAMINATION, JULY 2021

IV B.Tech II Semester

SATELLITE COMMUNICATION

(Electronics & Communication Engineering)

Time : 3 hours

Max Marks: 60

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

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SECTION - I

1 (a) Elaborate the current trends in satellite communications.

(b) Discuss the satellite applications in 12-30GHz frequency ranges.

2 (a) Demonstrate the necessity of satellite communications in day-to-day life.

(b) Illustrate how uplink and downlink works in any applications of satellite communications.

SECTION - II

3 (a) Illustrate the orbital perturbations.

(b) Determine the lock angles.

4 (a) Elaborate the various aspects of launch vehicles to be considered before a launch.

(b) Estimate the orbital effects in communication systems performance in relation to strength of radio signal.

SECTION - III

5 (a) Review the attitude and orbit control system (AOCS) subsystem.

(b) Illustrate the importance of tracking, command and monitoring subsystem in a satellite system.

6 (a) Justify the role of amplifiers and envelop detectors in communication subsystem.

(b) Interpret the significance of parabolic antenna.

SECTION - IV

7 (a) Derive the equation of FRISS transmission theory.

(b) Explain the concept of noise temperature in satellite link design.

8 (a) List the factors considered for uplink and downlink design.

(b) Synthesize the satellite links for specified C/N ratio.

SECTION - V

9 (a) Distinguish between the characteristics and role of FDMA, CDMA and TDMA techniques in satellite communications.

(b) Discuss briefly how the demand assignment may be implemented in a TDMA network.

10 (a) CDMA require perfect synchronization among all the subscribers. Justify your answer.

(b) Illustrate the generation of third-order intermodulation in FDMA.

SECTION - VI

11. (a) Discuss about satellite based personal communication.

(b) Draw the Earth Station Architecture and explain each subsystems.

12 (a) With suitable block diagram explain the earth station hardware.

(b) Illustrate tracking in satellites using earth station?

R-17 **Code : 17CE4204**

B.TECH. DEGREE EXAMINATION, JULY 2021

IV B.Tech. II Semester

BUILDING PLANNING AND CONSTRUCTION TECHNIQUES

(Computer Science & Engineering)

Time : 3 hours Max. Marks :60

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

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SECTION - I

1. a) What are the qualities of good building stones? Discuss.
   b) Explain field and laboratory tests conducted to know the quality of bricks.

2. a) Explain the classification of bricks.
   b) What are the characteristics of good tile? Explain.

SECTION - II

3. a) Differentiate between Fat lime and Hydraulic lime.
   b) Explain the functions of cement ingradients.

4. a) Briefly explain constituents of lime and their importance.
   b) List the various ingredients of concrete and explain their significance.

SECTION - III

5. a) Write about preservation and seasoning of timber.
   b) Explain the benefits of nano-technology in construction industry.

6. a) What are the characteristics of good timber?
   b) Distinguish between stone masonry and brick masonry in detail.

SECTION - IV

7. a) Explain the functions and components of floors.
   b) Explain various types of flat roofs and sloped roofs with neat sketches.

8. a) What are the functions of Arches and Lintels. Give relative merits of Lintels over the Arches.
   b) Enumerate various types of floors. Explain the factors which affect the choice of flooring material.

SECTION - V

9. a) List out the defects in painting and the methods of rectifying these defects.

   b) What are the general materials used for damp proofing and give their characteristics?

10. a) Explain the characteristics of good paint.

    b) What are the general materials used for damp proofing and give their characteristics?

SECTION - VI

11. a) Discuss briefly the various principles of planning buildings. Explain the significance of Aspect and Prospect for residential building.

    b) Briefly explain minimum size requirements of various building components as per NBC.

12. a) Enumerate the documents to be submitted for building plan approval and their significance.

    b) What do you understand by Orientation? Discuss the criteria used in deciding orientation of buildings.

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R-17 **Code : 17CS4201**

B.TECH. DEGREE EXAMINATION, JULY 2021

IV B.Tech II Semester

PYTHON PROGRAMMING

(Common to EEE & ECE)

Time : 3 hours Max Marks: 60

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

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SECTION - I

1 (a) Distinguish between Sets and Dictionaries with suitable examples.

(b) Discuss the List and dictionary comprehensions

2 (a) Explain about various data types supported by Python 3 with suitable example.

(b) Illustrate about Lists and its various operations on list.

SECTION - II

3 (a) Distinguish between Strings and Bytes with suitable example

(b) Write a python program that checks the ten and one positions of a given number using regular expressions.

4 (a) illustrate Regular expression with an example

(b) Write a python program that checks the phone number pattern using regular expressions.

SECTION - III

5 (a) Discuss various functions in python with an example.

(b) Write a Python program to find the factorial of number using functions.

6 (a) Define a class and an object with suitable example.

(b) Write a Python program to compute Fibonacci using class with iterator.

SECTION - IV

7 (a) Discuss various file stream types supported by Python

(b) Write a Python program to read and write file contents from File1 to File2 without using close().

8 (a) Distinguish between text file and binary file with an example

(b) Discuss the following stream with an example.
i. open() ii. seek() iii. read()

SECTION - V

9 (a) Write a Python program to search from root to child element of an XML document

(b) Write about Serializing objects in Python

10 (a) Write a Python program to write and read the Serialize object using Pickle file

(b) Write a Python program to save data into JSON format

SECTION - VI

11. (a) Discuss the process of adding your own software to the package index

(b) Explain about the following.

i. Checking Your Setup Script for Errors

ii. Additional files with a Manifest

12 (a) Write the steps involved in creating a source distribution

(b) What are examples for good package classifiers?

B.TECH. DEGREE EXAMINATION, JULY 2021

IV B.Tech. II Semester

FREE AND OPEN SOURCE SOFTWARE

(Computer Science & Engineering)

Time : 3 hours Max. Marks :60

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

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SECTION - I

1 (a) Compare and contrast between proprietary software and open source software.

(b) Discuss five open source software's in brief.

2 (a) Describe who can create open source software.

(b) Explain where I get open Source software.

SECTION - II

3 (a) How to configure and build a Linux kernel?

(b) List out various components of developing software in Linux environment? Briefly discuss about them?

4 Explain the following Unix commands with examples:
a) pwd b) man c) find d) cp e) ls f) rm

SECTION - III

5 (a) Discuss about disk cloning in Linux?
(b) Elaborate on various Linux Shells?

6 (a) What is pipe? Explain the "tar" command with example.

(b) Explain all backup commands with suitable example.

SECTION - IV

7 Explain about Moodle and Wordpress.

8 Discuss the following FOSS applications.
a) Mozilla Firefox b) Android

SECTION - V

9 (a) How do you retrieve and format data in MySQL database?
(b) Explain the data manipulation statements in MySQL. Explain with suitable examples.

10 (a) Explain data types in PHP with appropriate examples.

(b) Explain different types of operators in PHP with suitable examples.

SECTION - VI

11. What is the open source software licensing policy? List its applications.

12 Explain some of the technical infrastructures required for open source software development.