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Code : 17CE42E1

B.TECH. DEGREE EXAMINATION, JUNE 2022

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) What are the various aspect of inspection of structure?
- (b) Define the terms Repair, Rehabilitation and Retrofitting of Structures.
- 2 (a) Explain the assessment procedure for evaluating the damaged structure.
- (b) Discuss various causes of deterioration of concrete structure.

SECTION - II

- 3 (a) Explain the thermal properties of concrete.
- (b) Explain the mechanism of corrosion with chemical equations.
- 4 (a) Define crack? List out various types of cracks in concrete with sketches.
- (b) Discuss in detail about durability properties of concrete.

SECTION - III

- 5 (a) Discuss about development of slurry infiltrated concrete and its properties.
- (b) Discuss about development of Self-compacting concrete and its properties.
- 6 (a) Write a short notes on geo polymer concrete.
- (b) Discuss the concrete made with industrial waste?

SECTION - IV

- 7 (a) Explain the procedure of ultrasonic pulse velocity test for assessing the quality of concrete.
- (b) Explain the working principle and applications of Rebound hammer test.
- 8 (a) Discuss the corrosion inhibitors and coatings to reinforcement?
- (b) Explain in detail bout shoring and underpinning technique.

SECTION - V

- 9 (a) What are the causes of distress in concrete structure due to corrosion? Explain any one strengthening technique.
- (b) Explain the procedure of strengthening of reinforced concrete column with neat sketches.
- 10 (a) Explain the demolition techniques for concrete structures.
- (b) How do you assess the concrete structure by fire damage? Explain it.

SECTION - VI

11. (a) What is jacketing technique? Explain the procedure for steel jacketing.
- (b) How do you strengthen the heavily corroded reinforced concrete beam ?
- 12 (a) Discuss the various stages of corrosion damage of reinforced concrete.
- (b) Discuss the methods of improving the shear strengthening of a reinforced concrete beam.

B.TECH. DEGREE EXAMINATION, JUNE 2022

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

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SECTION - I

- 1 (a) What is interactive python shell? Explain the significance of indentation in writing python programs.
- (b) Discuss any 5 operations that can be performed on a tuple and lists with an example program.
- 2 (a) What happens if except clause is written without any Exception type? Explain with example.
- (b) Illustrate set comprehensions with an example.

SECTION - II

- 3 Describe the concept of string encode ().
- 4 Write about verbose flag of re package with its usage.

SECTION - III

- 5 Explain how to implement constructor & destructor in python with example source code.
- 6 (a) Define python Iterators. Generate source code to create an Iterator and to stop Iteration.
- (b) Write in detail about python Assert statement.

SECTION - IV

- 7 (a) Discuss about binary files with an example.
- (b) Write a python program to copy contents of a file to another file.
- 8 (a) Explain about reading and writing text files with example.
- (b) Write a python program to write a list to a file.

SECTION - V

- 9 Define XML. Explain about XML Parser Architecture and its types (SAX and DOM)
- 10 Discuss about Serializing JSON and De-Serializing JSON with sample code.

SECTION - VI

11. How can we create a Graphical Installer? Explain with its function.
- 12 Write a procedure to check Your Setup Script for Errors in detail.

B.TECH. DEGREE EXAMINATION, JUNE 2022

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) Classify different types of distribution loads and specify their voltage levels.
(b) Discuss in detail about residential and industrial loads and their respective characteristics.
- 2 (a) Explain the present trend for the future distribution system planning and enumerate the various factors affecting the planning.
(b) For what contribution factor, the coincident factor is equal to contribution factor? Also define contribution and coincident factor.

SECTION - II

- 3 (a) With neat sketch explain the radial type primary feeder.
(b) What are the advantages and disadvantages of radial type primary feeder?
- 4 Explain single line diagram of a simple radial secondary distribution and explain design practice of this system.

SECTION - III

- 5 (a) How do you analyze a substation service area with 'n' primary feeders?
(b) List the procedure to select the location of substation.
- 6 (a) Explain the procedure to fix the rating of a substation.
(b) Compare the four and six feeder patterns of substation service area if they are voltage drop limited.

SECTION - IV

- 7 (a) Derive the expression for voltage drop and power loss in 3-phase balanced system.
(b) A single phase feeder circuit has total impedance $(2+j6)$ ohms, receiving and voltage is 11 kV and current is $40\angle-45^\circ$ Determine:
 - i. P.f of load
 - ii. Load p.f for which the drop is maximum
 - iii. Load p.f for which impedance angle is maximum and also, derive the formula used.

B.TECH. DEGREE EXAMINATION, JUNE 2022

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) Describe various IOT communication models.
(b) Write the differences between Physical design and Logical design.
- 2 (a) Discover the four Maturity levels of IOT in detail.
(b) Explain various IOT Enabling technologies.

SECTION - II

- 3 (a) How does a IOT based home automation system work? Explain.
(b) Explain IOT in healthcare industry.
- 4 (a) Summarize the applications of IOT in Green Environment.
(b) Discuss any five uses of IOT in Energy sector.

SECTION - III

- 5 (a) Write the differences between IOT & M2M.
(b) Explain network function virtualization.
- 6 (a) Discuss the need for IOT Systems Management.
(b) Write the limitations of SNMP.

SECTION - IV

- 7 (a) Write the characteristics of Cloud Computing.
(b) Explain the process of secure communication in Cloud Computing.
- 8 (a) Explain the services of Cloud Computing.
(b) Differentiate public and private environments.

SECTION - V

- 9 (a) Explain IOT design methodology.
(b) Explain packages in Python. Write an example Python program on Packages.
- 10 Explain the following data structures in Python with syntax and example.
a) Lists b) Dictionary c) Tuple d) Set

SECTION - VI

11. (a) Explain the features of raspberry pi.
(b) What are IOT devices? Explain with an example.
- 12 (a) Explain interfaces.
(b) Explain the model of raspberry pi board.

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B.TECH. DEGREE EXAMINATION, JUNE 2022

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) Outline major components of an automobile and explain the functions of each
(b) Discuss different types of cylinder liners.
- 2 (a) What are the functions of engine inlet and exhaust manifolds? Describe their materials and construction.
(b) Describe in detail the function and construction for the i) Cylinder Block ii) Cylinder head iii) Connecting rod and iv) Oil pan.

SECTION - II

- 3 (a) Describe the various fuel supply systems for automotive petrol engines.
(b) With the help of neat sketch explain the construction and working of Electrical fuel pump.
- 4 (a) What are the limitations of simple carburetor? Explain in detail.
(b) Explain about the Supercharging and Turbo charging.

SECTION - III

- 5 (a) Discuss in detail the requirement of an ignition system of an internal combustion system.
(b) Distinguish between battery and magneto ignition system.
- 6 (a) What are the objects of lubricating an engine?
(b) Explain clearly pressure system of lubrication for automotive engines.

SECTION - IV

- 7 (a) What is the necessity for cooling of an engine? Explain in detail.
(b) Name different methods of cooling. Explain in detail the air cooling method.
- 8 (a) What is the necessity of transmission in a vehicle?
(b) Sketch and explain the working of Constant mesh type gear box.

SECTION - V

- 9 (a) Explain in detail the function and construction of a leaf spring with simple sketch.
(b) Discuss the working of a telescopic type of shock absorber.
- 10 (a) Explain the terms i) camber ii) castor and iii) steering axis inclination.
(b) Discuss in detail the Ackerman steering system.

SECTION - VI

11. (a) What are the requirements of automobile brakes?
(b) Draw the layout of a hydraulically operated four wheel brake system and explain its working.
- 12 (a) Draw the neat sketch of Electric vehicle drive train and explain.
(b) What do you know about the hybrid vehicles and summarize?

B.TECH. DEGREE EXAMINATION, JUNE 2022

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) Label the different frequency allocations for satellite services.
(b) State Kepler's three laws of planetary motion and explain their relevance to artificial satellites orbiting the earth.
- 2 (a) Compare LEO, MEO, GEO
(b) Discuss the future trends of satellite communications.

SECTION - II

- 3 (a) Interpret the significance of station keeping.
(b) Solve the i) orbital time period ii) eccentricity for a satellite whose apogee height is 6000 km and perigee height is 2000 km. Assume radius of earth 6378km.
- 4 (a) List out the various orbital parameters of a satellite and discuss them with the help of a diagram.
(b) Derive the Expressions for look angles in both azimuth and elevation directions.

SECTION - III

- 5 (a) Discuss in detail about attitude control of a satellite systems.
(b) With a neat sketch, explain Telemetry, Tracking and command subsystem
- 6 (a) Identify the purpose of thermal control for satellite?
(b) Explain in detail about Spin Stabilization method with neat diagrams.

SECTION - IV

- 7 (a) Derive the equation of basic transmission theory.
- (b) Derive the expression for system noise temperature of a satellite link.
- 8 (a) What is satellite link equation? Derive the expression for it.
- (b) Synthesize the satellite links for specified C/N ratio.

SECTION - V

- 9 (a) Summarize the pre-assigned FDMA with neat diagram.
- (b) Calculate the bitstream on both Transmitter and receiver side using the Direct sequence CDMA.
- 10 (a) CDMA require perfect synchronization among all the subscribers. Justify your answer.
- (b) Distinguish between TDMA, FDMA and CDMA techniques.

SECTION - VI

11. (a) Summarize the types of earth stations.
- (b) Draw the different types of antenna mounts used at earth station? Explain.
- 12 (a) Draw the general configuration of an earth station and explain each block.
- (b) How the satellites are tracked using earth station?

B.TECH. DEGREE EXAMINATION, JUNE 2022**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) Describe in detail about multiple access techniques.
(b) Write short notes on error control.
- 2 (a) Describe about the various characteristics of wireless networks.
(b) Explain in detail about IEEE 802.11 standard.

SECTION - II

- 3 Explain in detail about the various generations of cellular systems.
- 4 (a) Write short notes on Cellular concepts.
(b) Describe in detail about Hiper access.

SECTION - III

- 5 (a) Compare ad hoc wireless networks and cellular networks.
(b) What are the advantages and disadvantages of ad hoc wireless networks?
- 6 Explain in detail about the classifications of MAC protocols.

SECTION - IV

- 7 (a) Write short notes On-demand routing protocols.
(b) Explain in detail about routing protocols with efficient flooding mechanism.
- 8 Describe in detail about the various classifications of routing protocols.

SECTION - V

- 9 Explain in detail about frameworks for ad hoc wireless networks.
- 10 Write short notes on the following :
 - (a) Issues and challenges in providing QOS in Ad hoc wireless
 - (b) MAC layer solutions for QOS

SECTION - VI

11. Elaborate the need for energy management in Ad hoc wireless networks.
- 12 Explain in detail about the various transmission power management schemes.

B.TECH. DEGREE EXAMINATION, JUNE 2022

IV B.Tech. II Semester**BUILDING PLANNING AND CONSTRUCTION TECHNIQUES**
(Common to CSE & IT)

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 different stages of manufacturing of bricks?
(b) List out the composition of good brick earth and explain clearly any one in detail.
- 2 (a) What are ceramic materials? Name some of important ceramic materials.
(b) Discuss in detail the manufacture operations of clay tiles.

SECTION - II

- 3 (a) Explain clearly the different varieties of lime.
(b) Clearly write the different properties of lime.
- 4 (a) Explain in detail the functions of cement ingredients.
(b) Enumerate the laboratory tests for cement and explain any one test in detail.

SECTION - III

- 5 (a) Explain the different ways of classification of timber.
(b) Discuss in detail the factors effecting the strength of timber.
- 6 (a) Draw clearly the typical sketches showing English bond and Flemish bond.
(b) Discuss clearly the importance of Fly ash and Silica fume in construction field.

SECTION - IV

- 7 (a) Classify various types of lintels and discuss clearly their relative use.
(b) Briefly explain the requirements of a good staircase.
- 8 (a) Explain the procedure of constructing of Mosaic flooring.
(b) Compare merits and demerits of flat roofs.

SECTION - V

- 9 (a) Explain in detail the characteristics of good paint.
(b) Write a short notes on distempers and distempering.
- 10 (a) Explain various methods used for damp proofing course.
(b) Discuss the various types of plaster finishes.

SECTION - VI

11. Give the classification of buildings as per National Building Code (NBC) and explain any two classification in detail.
12. Define the plan of a building. What are the factors affect the planning of a residential.