R-13 Code : 13CE4202

B.TECH. DEGREE SUPPLEMENTARY EXAMINATION, JULY 2022

IV B.Tech II Semester

ENVIRONMENTAL STUDIES

(Civil Engineering)

Time : 3 hours Max Marks: 60

Answer FIVE Questions, Choosing ONE Question from each section

All questions carry equal marks

* * *

SECTION - I

1 (a) Explain the components of environment.

(b) Discuss the importance of environmental studies.

2 (a) Describe the function of forest ecosystem.

(b) Explain the characteristics of grassland ecosystem.

SECTION - II

3 (a) Discuss the effects of drought.

(b) Explain the uses of forest.

4 (a) Summarize the effects of land degradation.

(b) Discuss the advantages of rain water harvesting.

SECTION - III

5 (a) Explain the effects of soil pollution.

(b) Describe the control measures of water pollution.

6 (a) Identify the human activities contributing to large scale air pollution.

(b) Explain about the causes of Marine pollution.

SECTION - IV

7 (a) Discuss the effects of urbanization on environment.

(b) Explain the effects of industrialization on the quality of environment.

8 (a) Discuss about the importance of sanitation.

(b) Explain the effects of over use of water.

SECTION - V

9 (a) Summarize the salient provisions of environmental protection act.

(b) Discuss the salient features of forest conservation act.

10 (a) Discuss the effect of Mathura refinery on Taj Mahal.

(b) Explain the aim of silent valley movement.

R-13 Code : 13CE42E1

B.TECH. DEGREE SUPPLEMENTARY EXAMINATION, JULY 2022

IV B.Tech II Semester

REMOTE SENSING & GIS

(Civil Engineering)

Time : 3 hours Max Marks: 60

Answer FIVE Questions, Choosing ONE Question from each section

All questions carry equal marks

* * *

SECTION-I

1 (a) Explain the radiation principles including energy of quantum, Stefan-Boltzmann law and Wein's displacement law.

(b) Describe Electromagnetic Radiation interaction with Atmosphere.

2. (a) Briefly explain the energy interaction with atmosphere.

(b) Draw and explain spectral response curves for water, vegetation and soil.

SECTION-II

3 (a) Explain various types of remote sensing satellites. Explain any two satellites with their resolution.

(b) Define platform. Explain about various types of platforms.

4 (a) Differentiate between whisk broom and push broom sensors with neat sketches.

(b) List the spectral, spatial, radiometric and temporal resolutions of IRS – LISS-III sensor. Write its application potential.

SECTION-III

5 (a) What do you understand visual image interpretation? Explain.

(b) Briefly explain image interpretation techniques.

6 (a) Explain the various elements of Image Interpretation.

(b) Define (i) Item key (ii) Subject Key
(iii) Regional Key (iv) Selective key

SECTION-IV

7 (a) Define image enhancement. List various image enhancement techniques and explain in detail.

(b) Explain the basic characters of digital image.

8 (a) Write detailed account on NDVI transformation.

(b) Describe unsupervised classification system.

SECTION-V

9 (a) Explain in detail Data analysis in GIS.

(b) Explain the applications of GIS in hazard mitigation and water shed management.

10 (a) What are the data input methods in GIS?

(b) Explain Briefly discuss the geospatial analysis methods.

R-13 **Code :13EE4217**

B.TECH. DEGREE SUPPLEMENTARY EXAMINATION, JULY 2022

IV B.Tech. II Semester

HIGH VOLTAGE ENGINEERING

(Electrical & Electronics Engineering)

Time : 3 hours Max. Marks :60

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

* * *

SECTION - I

1 (a) Explain cockroft - walton circuit with a schematic diagram.

(b) Explain Electrostatic voltmeter used for measurement of high voltage.

2 (a) Explain the operation of impulse generator.

(b) Explain clearly about electrostatic precipitation.

SECTION - II

3 (a) Explain the principle and construction of an electrostatic voltmeter for high voltages.

(b) Describe in detail how peak AC voltage is measured using Chubb and Fortescue circuit.

4 (a) Explain how and why a sphere gap is used for measurement of high voltage. Explain the factors that influence the measurement using sphere gap.

(b) Briefly explain the factors affecting measurement of voltages using rod gap.

SECTION - III

5 (a) Briefly discuss the various tests carried out the insulator.

(b) Explain the tests performed on the cables?

6 (a) Briefly explain short circuit plant pertaining to testing of Circuit Breaker.

(b) Explain the tests performed on bushings?

SECTION - IV

7 (a) Describe the Schering bridge method of determining the capacitance and loss angle of a dielectric specimen.

(b) What are the electrical methods of discharge detection?

8 (a) List out various techniques for high voltage DC measurement.

(b) What are partial discharges? Explain with a neat diagram the principle of pulse current measurement of partial discharges by straight detection technique.

SECTION - V

9 (a) Explain the Townsend's first and second ionization processes.

(b) Explain briefly suspended particle theory of breakdown in liquid dielectrics.

10 (a) What is Paschen's law? How do you account for the minimum voltage for breakdown under a given 'p X d' condition?

(b) Explain various factors which affect breakdown of gases.

R-13

Code : 13EE4218

B.TECH. DEGREE SUPPLEMENTARY EXAMINATION, JULY 2022

IV B.Tech. II Semester

POWER SYSTEM OPERATION & CONTROL

(Electrical & Electronics Engineering)

Time : 3 hours

Max. Marks :60

*Answer **FIVE** Questions, Choosing **ONE** Question from each section*

All Questions carry equal marks

* * *

SECTION - I

1 (a) Explain the following terms with reference to power plants: Heat input - power output curve, Heat rate input, Incremental input, Generation cost and Production cost.

(b) Constant load of 400 MW is supplied by two 210 MW generators 1 and 2, for which the fuel cost characteristics are given as below:

$$C_1 = 0.05P_{G1}^2 + 18P_{G1} + 27 \quad \text{Rs/hr}$$
$$C_2 = 0.06P_{G2}^2 + 14P_{G2} + 38 \quad \text{Rs/hr}$$

The real power generations of the units P_{G1} & P_{G2} in MW. Find (i) the most economical load sharing between the generators. (ii) The saving in Rs./ day there by obtained, compared to equal load sharing between two generators.

2 (a) Obtain the condition for optimum operation of a power system with 'n' plants when losses considered.

(b) On a system consisting of two generating plants the incremental costs in Rs/ MWh with P_{G1} and P_{G2} are

$$\frac{dC_1}{dP_{G1}} = 0.007P_{G1} + 7.5 \text{ and } \frac{dC_2}{dP_{G2}} = 0.0011P_{G2} + 9.0$$

The system is operating on economic dispatch with PG1 = PG2 = 500 MW and Find the penalty factor of plant 1.

SECTION - II

3 (a) Explain the problem of scheduling hydro - thermal power plants. What are the constraints in the problem?

(b) In a two plant system the thermal station near the load center and a hydro station at remote location . The characteristics of the both stations are $C_1 = (25 + 0.045P_{GT})P_{GT} Rs/hr$ $W_2 = (7 + 0.004P_{GH})P_{GH} m^3/\text{sec}$ and $\gamma_2 = Rs\,4 \times 10^{-4}/m^3$ and B_{22}=0.002MW^{-1} determine the power generated at each station and power received by the load when $\lambda = 55 Rs/MWh$

4 (a) Write the differences in between various methods used in Unit Commitment Problem Solution.

(b) For the cost equations $C_1(P_{G1}) = 0.2P_{G1}^2 + 40P_{G1} + 2455.5 Rs/hr$.
$C_2(P_{G2}) = 0.1P_{G2}^2 + 50P_{G2} + 275.5 Rs/hr$ Determine the , most economical units to be committed to load demand of 4MW also prepare the UC table for load changes in steps of 1MW starting from minimum to maximum load.

SECTION – III

5 (a) State the relation between the voltage, power factor and reactive power in the power system.

(b) What are different methods to control the reactive power?

6 (a) Explain the operation of single machine connected to infinite bus system with help of equations.

(b) Which method is most preferable to compensate the reactive power requirement of the power system?

SECTION - IV

7 (a) Explain the Automatic Load frequency control of single area systems.

(b) Derive the change in frequency and change in tie line power for two area control system.

8 (a) With a neat sketch explain ALFC of multi-control area systems.

(b) Explain the block diagram of two area control.

SECTION - V

9 (a) Justify why the sophisticated control and monitoring through computers need in power system.

(b) Show different configurations of SCADA by suitable diagrams and explain the relative advantages and disadvantages of each configuration.

10 (a) Explain Division of Tasks between Various Control Centers and why is it needed?

(b) What are the various features of SCADA systems?

R-13 Code :13EC4202

B.TECH. DEGREE SUPPLEMENTARY EXAMINATION, JULY 2022

IV B.Tech. II Semester

SATELLITE COMMUNICATION

(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 (a) Write a Short note on origin of satelllite Communications .

(b) Define orbital parameters.

2 State Kepler's three laws of planetary motion. Illustrate in each case their relevance to artificial satellites orbiting the earth.

SECTION - II

3 (a) Explain what is meant by frequency reuse and describe briefly two methods by which this can be achieved.

(b) Explain the TTC&M satellite subsystem with a neat diagram.

4 (a) What are the various subsystems in the satellite? Explain the power system.

(b) Describe the TT&C facilities of a satellite communication system. Is these facilities part of the space segment or part of the ground segment of the system?

SECTION - III

5 (a) A transmitter feeds a power of 10W into an antenna which has a gain of 46 dB. Calculate the EIRP in (i) watts (ii) dBW

(b) Explain combined uplink and downlink C/N ratio.

6 Expalin down link analysis for 6/4 x^2 satellite and caluclate C/N ratio.

SECTION - IV

7 Explain the principle behind spectrum spreading and despreading and how this used to minimize interference in a CDMA system.

8 (a) Explain what is meant by *single access* in relation to a satellite communications network. Give an example of the type of traffic route where single access would be used.

(b) What is the function of (i) the burst-code word and (ii) the carrier and bit-timing recovery channel in a TDMA burst?

SECTION - V

9 Explain large earth station antennas.

10 Discuss design consideration for earth station. Draw the block diagram of transmit and receive earth station and explain.

R-13 Code : 13EC42E3

B.TECH. DEGREE SUPPLEMENTARY EXAMINATION, JULY2022

IV B.Tech. II Semester

CELLULAR MOBILE COMMUNICATIONS

(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 (a) Explain in detail the drawbacks of Conventional Mobile Systems.

(b) Describe the Planning of Cellular System.

2 (a) How the system capacities are related with the co-channel interference, and derive the expression for signal to interference ratio?

(b) Distinguish between the permanent splitting and dynamic splitting.

SECTION - II

3 (a) Briefly explain the factors considered for prediction of path loss for a particular mobile radio environment.

(b) Briefly explain the effect of foliage loss in mobile signal propagation.

4 Describe
(a)Foliage loss (b)long distance propagation (c) Cell-site antenna heights

SECTION - III

5 (a) Explain how co-channel interference is measured in real time mobile radio transceivers.

(b) Explain the importance of the antenna height in reduction of co-channel interference.

6 (a) What is titling antenna? How can these antenna patterns reduce the co-channel interference?

(b) Explain space-diversity antennas used at cell site.

SECTION - IV

7 (a) What are the various procedures for efficient spectrum Utilization?

(b) Explain channel assignment & setup channels.

8 (a) Explain in detail about grouping of set-up channels.

(b) Present the concept frequency reuse channels and frequency reuse distance.

SECTION - V

9 Explain Different multiple access schemes.

10 (a) Draw and explain NA-TDMA system architecture.

(b) Draw the external environment of the BSS and explain its functioning in GSM.

R-13 Code : 13EC4201

B.TECH. DEGREE SUPPLEMENTARY EXAMINATION, JULY 2022

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 (a) Explain the human visual perception system in detail with necessary diagrams.

(b) What is meant by pixel?

2 (a) Define an image. List out and explain the various areas of applications of image processing.

(b) Explain about image acquisition.

SECTION - II

3 (a) Explain the use of first derivative for image enhancement by taking a 3×3 region of image using the magnitude of the gradient.

(b) Explain the advantages of 2-D FFT over DFT.

4 Explain the following.
a) Hadamard Transform b) Walsh Transform c) Haar Transform

SECTION - III

5 (a) Explain about image smoothing using Ideal low pass filter.
(b) Explain about local histogram processing.

6 Explain color image processing.

SECTION - IV

7 Explain the procedure for converting colors from RGB to HIS and vice versa.

8 Explain Boundary detection and Boundary Description.

SECTION - V

9 Discuss in detail different types of redundancies occurred in image processing. Explain how Huffmann coding removes the redundancies with the help of an example?

10 Explain Transform Encoding, Redundancies and their removal methods.

R-13 Code : 13ME4201

B.TECH. DEGREE SUPPLEMENTARY EXAMINATION, JULY 2022

IV B.Tech II Semester

AUTOMOBILE ENGINEERING
(Mechanical Engineering)

Time : 3 hours Max Marks : 60

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

SECTION-I

1 What are the main components of an automobile? Describe all of them briefly.

2. (a) With the help of neat sketch, explain combustion chambers in SI engines.
   (b) Discuss different types of cylinder liners. What are their comparative advantages?

SECTION-II

3 (a) Write a short note on air cleaners.
   (b) Explain with the help of a neat sketch working of electric fuel pump.

4 (a) What are the functions of carburetor?
   (b) Draw a simplified sketch of Solex carburetor and explain its working, discussing clearly starting, idling, low speed operation, normal running and acceleration.

SECTION-III

5 (a) What are the function of lubricant system?With neat sketch explain dry pump lubricant system.
   (b) Which types of engines generally employ air cooling systems?

6 (a) What are the characteristics which are considered while selecting a particular lubricant for an automobile engine?
   (b) Make a neat sketch showing the components of a dry sump method of engine lubrication .explain its working.

SECTION-IV

7 (a) Explain clearly the necessity of a transmission in a vehicle.
   (b) What is the function of clutch? Discuss various factors affecting the torque transmission in a clutch.

8 (a) Describe the working of a synchromesh gear box with the help of a sketch.
   (b) Explain the necessity of a differential in an automobile .discuss in detail the construction and operation of the differential.

SECTION -V

9 (a) Sketch the front axle of a car and show how it is connected with the stub axle.

(b) Write an explanatory note on types of rear axle casing.

10 (a) What do you understand from the terms: camber, king pin inclination and castor.

(b) With neat sketch explain the working of hydraulic braking system.

R-13

Code : 13CS4201

B.TECH. DEGREE SUPPLEMENTARY EXAMINATION, JULY 2022

IV B.Tech. II Semester

CLOUD COMPUTING

(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 (a) What is cloud computing? Explain evolution of cloud computing in detail.
(b) What are the advantages of Cloud Computing over the Internet? Explain.

2 (a) Why cloud computing matters?
(b) Who shouldn't be using cloud computing?

SECTION – II

3 (a) Describe Service levels for cloud applications.
(b) Explain about the cloud service development.

4 (a) Why develop web based applications?
(b) Write the pros and cons of cloud service development.

SECTION – III

5 (a) Explain about Cloud computing for the corporation.
(b) Distinguish between Public Cloud and Private Cloud.

6 (a) Explain briefly about various cloud services and their major providers.
(b) Explain about Resource provisioning and Platform deployment.

SECTION – IV

7 (a) Explore online planning and task management.
(b) Explain the major components of the Aneka MapReduce Programming Model with architecture.

8 (a) Briefly explain Amazon web services.
(b) Exploring online scheduling applications.

SECTION – V

9 (a) Write and explain about programming on Amazon AWS and Microsoft Azure.

(b) What is Amazon S3? Explain in detail.

10 How Cloud Computing Collaborates via Blogs and Wikis?

R-13 Code : 13CS4202

B.TECH. DEGREE SUPPLEMENTARY EXAMINATION, JULY 2022

IV B.Tech. II Semester

STORAGE AREA NETWORKS
(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 What is SAN? Justify why we need to connect storages into a network.

2 Explain SAN model for Enterprise Information Processing.

SECTION - II

3 What is Data Center? Explain key characteristics of Center elements.

4 Explain the importance of Backup. How Backup is taken in Client / Server computing?

SECTION - III

5 (a) Explain different data transformation paths found in application systems.

(b) Discuss computer system components in which transformation is implemented .

6 Explain the Cost of Online storage concept.

SECTION - IV

7 Briefly explain about the replication technologies and their roles in ensuring. information availability and business continuity.

8 Describe In Detail "File Systems and Application Performance".

SECTION - V

9 Explain Cluster data Models.

10 Explain the Enterprise Backup Architecture and its policies.

R-13 Code : 13CS42E1

B.TECH. DEGREE SUPPLEMENTARY EXAMINATION, JULY 2022

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 (a) Discuss about the Server System Architecture.

(b) Explain Centralized systems with neat diagram.

2 (a) Discuss in detail about distributes systems.

(b) What is join operation? Explain with suitable examples about join operations.

SECTION - II

3 (a) Discuss the two complementary forms of intraquery parallelism.

(b) Write short notes on handling skew.

4 Discuss about inter Query parallelism and Intra Query Parallelism.

SECTION - III

5 (a) Differentiate between homogeneous and heterogeneous databases.

(b) Discuss about cloud based databases.

6 (a) What is transparency in distributed data storage? Explain with suitable examples.

(b) Discuss in detail about heterogeneous distributed databases.

SECTION - IV

7 (a) Discuss Complex Data Types in Object Databases.

(b) Explain Table inheritance in Object Databases.

8 Write short notes on the following

a) complex data types in object based databases. b) multiset types in SQL

SECTION - V

9 Explain how storage and indexing maintained in ORACLE Data Base.

10 Explain in detail about query processing and optimization.