

B.TECH-6TH SEM-CSE-THEORY
PAPER NAME: DATABASE MANAGEMENT SYSTEM
PAPER CODE: PCC-CS601

1. Compare Hierarchical, Network, and Relational Data Models.
2. Discuss the various types of JOIN operations in SQL with examples.
3. Explain the Transaction Management process in DBMS.
4. What is Concurrency Control? Explain Timestamp Ordering and Two-Phase Locking Protocol.
5. Explain the concept of Functional Dependency and its role in Normalization.
6. Discuss the differences between File System and DBMS with advantages and disadvantages.

PAPER NAME: COMPUTER NETWORK
PAPER CODE: PCC-CS602

1. Describe the 7 layers of the OSI model with their functions.
2. Explain the architecture of the Internet and the role of ISPs.
3. Compare IPv4 and IPv6 addressing with examples.
4. What is DNS (Domain Name System)? Explain its working and structure.
5. Explain the different types of network topologies with advantages and disadvantages.
6. Discuss how data is transmitted using TCP/IP model.

PAPER NAME: IMAGE PROCESSING
PAPER CODE: PEC-IT601D

1. What is digital image representation? Explain different ways of representing an image with examples.
2. What are sampling and quantization? Explain uniform and non-uniform quantization with suitable examples.
3. Explain neighbourhood of pixels, connectivity (4, 8, m-connectivity), and distance measures in digital images.
4. Explain the image degradation model. Discuss constrained and unconstrained restoration techniques.
5. Explain different image segmentation techniques including edge detection, thresholding, and region-based segmentation.

PAPER NAME: PATTERN RECOGNITION
PAPER CODE: PEC-IT602D

1. What are Gaussian Mixture Models? Explain the Expectation-Maximization (EM) algorithm used for parameter estimation.
2. Explain unsupervised learning and clustering. Discuss criterion functions and hierarchical clustering algorithms.
3. Explain linear discriminant function-based classifiers. Discuss Perceptron and Support Vector Machine (SVM).
4. What is overfitting in pattern recognition? Discuss its causes and methods to avoid it.
5. What is the kernel trick in Support Vector Machines? Explain different types of kernels.

PAPER NAME: HUMAN RESOURCE DEVELOPMENT AND ORGANIZATIONAL BEHAVIOR
PAPER CODE: OEC-IT601B

1. Briefly explain Maslow's Hierarchy of Needs theory.
2. Explain Traditional vis-a-vis Modern view of Conflict.
3. What are Challenges and Opportunities for OB?
4. What are the link between Perception and Decision Making?

5. Write a note on Vroom's Expectancy Theory.
6. What are the Characteristics of Group?

PAPER NAME: RESEARCH METHODOLOGY
PAPER CODE: CS601

1. Describe the complete research process from problem identification to report writing.
2. Explain the different types of research methodologies with examples.
3. What are the various methods of data collection? Discuss their advantages and disadvantages.
4. Explain in detail the process of hypothesis testing with an example.
5. Discuss the role of statistical techniques in research analysis.
6. What are the differences between correlation and regression analysis? Explain with examples.

B.TECH-6TH SEM-CSE-PRACTICAL
PAPER NAME: DATABASE MANAGEMENT SYSTEM LAB
PAPER CODE: PCC-CS691

1. Create a database and implement a table with Primary Key and Foreign Key constraints in SQL.
2. Write SQL queries to demonstrate different types of JOINS (INNER JOIN, LEFT JOIN, RIGHT JOIN, FULL JOIN).
3. Implement a Stored Procedure in SQL to find the sum of salaries of employees in a department.
4. Write SQL queries to perform CRUD (Create, Read, Update, Delete) operations on a database.
5. Explain the concept of Functional Dependency and its role in Normalization. Perform Normalization up to 3NF on a given unnormalized table.
6. Develop an ER diagram for a University Management System and convert it into a relational model.

PAPER NAME: COMPUTER NETWORK LAB
PAPER CODE: PCC-CS692

1. Write a program to implement a simple FTP client-server application.
2. Simulate an ARP (Address Resolution Protocol) request-response mechanism.
3. Implement a program for a simple Chat Application using UDP sockets.
4. Write a program to simulate a Distance Vector Routing algorithm.
5. Develop a simple Firewall application using Python to block specific IP addresses.
6. Implement a program to demonstrate error detection using Hamming Code.

B.TECH-6TH SEM-CE-THEORY
PAPER NAME: CONSTRUCTION ENGINEERING & MANAGEMENT
PAPER CODE: CE(PC)601

1. (a) Define aspect and prospect in building planning. Explain their significance in designing residential buildings.
(b) Discuss the various bye-laws related to ventilation, covered areas, and stair requirements in public assembly buildings.
2. Explain the firefighting arrangements required for a multi-story commercial complex. How does fire protection planning differ for office buildings and auditoriums?
3. (a) What is Critical Path Method (CPM)? Explain its significance in project planning with an example.
(b) Differentiate between PERT and CPM in construction project scheduling.
4. (a) Compare modular construction and precast concrete construction methods. What are their advantages and limitations?
(b) Explain the working and applications of batching plants and ready-mix concrete mixers in large-scale construction projects.

5. (a) What are the different types of construction contracts? Discuss their advantages and disadvantages with suitable examples.
(b) Explain the rights and responsibilities of an engineer and contractor in a construction project.
6. A project consists of the following activities:

Activity	Predecessor	Duration (days)
A	None	5
B	A	7
C	A	6
D	B	4
E	B, C	5
F	D, E	8

- (a) Draw the project network diagram.
- (b) Determine the critical path and the total project duration.

PAPER NAME: ENGINEERING ECONOMICS, ESTIMATION & COSTING
PAPER CODE: CE(PC)602

1. Define demand elasticity and explain its significance in market structure analysis. How do direct and indirect taxes affect aggregate demand and supply in an economy?
2. Explain the different types of costs involved in construction project management. Discuss the importance of break-even analysis and capital budgeting in investment decisions.
3. (a) What are the different methods of estimating earthwork and foundation costs?
(b) Explain the role of BIM (Building Information Modeling) in quantity surveying and estimation.
4. Define rate analysis. Explain its purpose and necessity in civil engineering projects. How do factors such as task work and productivity influence the rate analysis of different construction activities?
5. (a) What are the different types of tenders used in the construction industry?
(b) Discuss the process of bid preparation and evaluation, highlighting the significance of bid process management.
6. A contractor needs to evaluate the valuation of a building with the following details:
Original cost of construction: ₹50,00,000
Age of the building: 10 years
Expected life of the building: 50 years
Scrap value: ₹5,00,000
(a) Determine the depreciated value of the building using the straight-line method.
(b) Calculate the book value of the building after 20 years using the same method.

PAPER NAME: WATER RESOURCE ENGINEERING
PAPER CODE: CE(PC)603

1. Explain the energy-depth relationship in open channel flow with the help of a specific energy diagram.
2. Discuss the necessity and scope of irrigation in India. What are the major techniques and sources of irrigation commonly used?
3. Define Duty, Delta, and Base period. Derive the relationship between them.
4. A crop requires 8 cm of water at an interval of 10 days. The area of the field is 40 hectares. If the duty of water is 1000 hectares/cumec, find the discharge required at the field.
5. Explain Kennedy's theory of canal design. What are the assumptions and limitations of this theory?
6. Describe the water logging problems in irrigation. What are the provisions of drains to prevent water logging?

PAPER NAME: DESIGN OF STEEL STRUCTURE
PAPER CODE: CE(PC)604

1. Discuss the different types of riveted and bolted joints with neat sketches and explain their advantages and disadvantages.
2. Explain the I.S. code provisions for the design of tension members. How are permissible stresses calculated?

3. Describe the design procedure of slab base and gusseted base for steel columns with neat sketches.
4. Design a bolted connection for two plates of 10 mm thickness each to carry a tensile load of 150 kN. Use 20 mm diameter bolts of grade 4.6. Assume permissible stress in bolts = 150 MPa.
5. Explain the concept of curtailment of flange plates in plate girders. Why is curtailment necessary?
6. Describe the design considerations for gantry girders under lateral buckling with reference to I.S. code provisions.

PAPER NAME: FOUNDATION ENGINEERING
PAPER CODE: CE(PE)601B

1. Explain the classification and selection criteria of shallow and deep foundations with suitable examples.
2. Describe different methods of installation of piles and explain the load transfer mechanism in piles.
3. What are the different in-situ tests used for site investigation? Discuss the procedure and significance of the Standard Penetration Test (SPT).
4. A square footing of size 2.5 m × 2.5 m carries a load of 800 kN. The soil has a safe bearing capacity of 200 kN/m². Check the safety of the footing.
5. Explain the design principles of anchored sheet piling with neat sketches.
6. Discuss different ground improvement techniques with applications of geosynthetics and stone columns.

PAPER NAME: STRUCTURAL ANALYSIS-II
PAPER CODE: CE(PE)602B

1. Explain the Moment Distribution Method and apply it to analyze a continuous beam with two spans subjected to point loads.
2. Describe the Slope Deflection Method and its application in continuous beams with a neat example.
3. Discuss the analysis of curved beams with reference to hooks and rings.
4. Explain the concept of Plastic Analysis of structures and derive the collapse load for a simply supported beam with a central point load.
5. Analyze a two-storey, two-bay portal frame subjected to lateral loads using the Approximate Method of Analysis.
6. Explain the Matrix Method of Structural Analysis with emphasis on the Stiffness and Flexibility approaches for beam analysis.

PAPER NAME: SOFT SKILL AND INTERPERSONAL COMMUNICATION-I
PAPER CODE: CE(OE)601A

1. Explain the various types of communication channels with examples.
2. Discuss the importance of technical report writing in business communication.
3. Write a report on "The Role of Organizational Communication in Modern Business."
4. Analyze the poem *Night of the Scorpion* by Nissim Ezekiel.
5. Draft a project proposal for "Green Energy Initiatives in Urban Areas."
6. Prepare the agenda and minutes of a business meeting on "Digital Transformation in Small Enterprises."

B.TECH-6TH SEM-CE-PRACTICAL
PAPER NAME: WATER RESOURCE ENGINEERING LABORATORY
PAPER CODE: CE(PC)693

1. Explain the procedure for delineation of a catchment area manually and using DEM (Digital Elevation Model). What are the advantages of using DEM over manual methods?
2. Describe the Thiessen Polygon and Isohyetal methods for calculating average rainfall over a catchment area. Compare their accuracy with the Arithmetic Mean method.
3. Explain the working principle of a double ring infiltrometer. How is the infiltration rate measured using this device, and what factors affect the infiltration rate?

PAPER NAME: STEEL STRUCTURE DESIGN SESSIONAL
PAPER CODE: CE(PC)694

1. Explain the step-by-step procedure for the design of a factory shed using steel structures. Include the design considerations for purlins, rafters, and columns.
2. Prepare a detailed working drawing of a steel factory shed showing the layout plan, elevation, and sectional view of the structure with proper labeling of components.
3. Write a report on the structural analysis of a steel factory shed, including load calculation (dead load, live load, and wind load) and the selection of appropriate steel sections as per IS codes.

PAPER NAME: QUANTITY SURVEY ESTIMATION AND VALUATION SESSIONAL
PAPER CODE: CE(PC)695

1. Prepare a detailed quantity estimate of a single-storied residential building including the bill of quantities, abstract of quantities, and unit rate of payment as per standard practices.
2. Explain the method of preparing a Bar Bending Schedule (BBS) for a reinforced cement concrete slab with proper illustrations, including the calculation of cutting length, number of bars, and total quantity of steel required.
3. Write a report on the valuation of a property, explaining the concepts of gross income, net income, depreciation, sinking fund, and capitalized value. Include a sample calculation of the valuation of a residential property.

B.TECH-6TH SEM-ME-THEORY
PAPER NAME: MANUFACTURING TECHNOLOGY
PAPER CODE: PC-ME601

1. What are the difference between jig and fixture.
2. Write the name various types of jig and explain any one of them.
3. What is interpolation in NC system? Explain different types of interpolation..
4. Mention the purpose of miscellaneous functions in part programming. Write any 2 M codes with their application.
5. Write the name different types of locator. Explain any two of them.
6. With neat sketches explain the principal methods used to produce metallic powders in powder metallurgy.
7. What is rapid prototyping . What types of model used in rapid prototyping.
8. What is FMS . Describe about FMS.
9. Describe about GT.

PAPER NAME: DESIGN OF MACHINE ELEMENTS
PAPER CODE: PC-ME602

1. Define Clutch and also types of clutch. State the considerations in Designing of a friction clutch.
2. What is Friction Clutch . Explain Designing Process of Disc or Plate clutch with neat sketch.
3. A plate clutch having a single driving plate with contact surfaces on each sides is required to transmit 125 KW at 1450 rpm . The outer diameter of the contact surfaces is to be 400 rpm . The coefficient of friction is 0.5. (1) Assuming a uniform pressure of 0.19 N/mm^2 ; determine the inner diameter of friction surfaces. (2) Assuming the same Dimensions and the same total axial thrust , determine the maximum torque that can be transmitted and the maximum intensity of pressure when uniform wear conditions have been reached.
4. A cone clutch is to be designed to transmit 7.5 KW at 900 rpm. The cone has a face angle of 12° . The width of the face is half of the mean radius and the normal pressure between the contact faces is not to exceed 0.09 n/mm^2 .Assuming uniform wear and coefficient of friction between the contact faces as 0.2 ,find the main dimensions of the clutch and axial force required to engage the clutch.
5. A flywheel of mass 100 kg and radius of gyration 350 mm is rotating at 720 rpm . It is brought to rest by means of a brake. The mass of the brake drum assembly is 5 Kg . The brake drum is made of cast iron FG 260 having specific heat $460 \text{ J/kg}^\circ \text{C}$. Assuming that the total heat generated is absorbed by the brake drum only. Calculate the temperature rise.
6. Explain Autofrettage and Compounding of Cylindrical shell.
7. A cast iron cylinder of internal diameter 400 mm and thickness 120 mm is subjected to a pressure of 25 N/mm^2 . Calculate the tangential and radial stresses at inner , middle (radius= 150mm) and outer surfaces.

8. A thick cylindrical shell of internal diameter 150mm has to withstand an internal fluid pressure of 50 N/mm². Determine its thickness so that the maximum stress in the section does not exceed 150 MPa.
9. Design a journal bearing for a centrifugal pump running at 1440 rpm. The Diameter of the journal is 100 mm and load on each bearing is 20 KN. The factor ZN/p may be taken as 28 for centrifugal pump bearings. The bearings running at 75° C temperature and the atmospheric temperature is 30° C. The energy dissipation coefficient is 875 W/m². Take diametral clearance as 0.1 mm.
10. A single row deep groove ball bearing operating at 2000 rpm is acted by a 10 KN radial load and 8 KN thrust load. The bearing is subjected to a light shock load and outer ring is rotating. Determine the rating life of the bearing.
11. A bronze spur pinion rotating at 600 rpm drives a cast iron spur gear at a transmission ratio of 4: 1. The allowable static stresses for the bronze pinion and cast iron gear are 84 MPa and 105 MPa respectively. The pinion has 16 standard 20° full depth involute teeth of module 8 mm. The face width of both the gears is 90 mm. Find the power that can be transmitted from the standpoint of strength.
12. A pair of cast iron bevel gears connect two shafts at right angles. The pitch diameters of the pinion and gear are 80 mm and 100 mm respectively. The tooth profiles of the gears are 14 ½ 0 composite form. The allowable static stress for both the gears is 55 MPa. If the pinion transmits 2.75 KW at 1100 rpm, find the module and number of teeth on each gear from the standard point of strength and check the design from the standpoint of wear. Take surface endurance limit as 630 MPa and modulus of elasticity for cast iron as 84 KN/mm².
13. Design 200 involute worm and gear to transmit 10KW with worm rotating at 1500 rpm and to obtain a speed reduction of 12:1. The distance between the shafts is 225 mm.

PAPER NAME: INTERNAL COMBUSTION ENGINES AND GAS TURBINES
PAPER CODE: PE-ME601A

1. Explain briefly Otto cycle with the help of p-v and T-S diagram, and derive an expression for ideal efficiency of Otto cycle.
2. Explain briefly Diesel cycle with the help of p-v and T-S diagram, and derive an expression for ideal efficiency of Diesel cycle.
3. In an Otto cycle, the temperature at the beginning and end of the isentropic compression is 316 K and 596 K respectively. Determine the air standard efficiency and the compression ratio.
4. What is the difference between gas turbine and IC engine.
5. What is the difference between closed gas turbine and open gas turbine.
6. Write down the fuel characteristic of SI and CI engine.
7. What is difference between SI engine and CI engine?

PAPER NAME: TURBO MACHINERY
PAPER CODE: PE-ME602C

1. The velocity of water at the outlet of a conical draft tube attached to a Francis turbine is 1.6 m/s. The velocity of water at the inlet of the draft tube, which is 5m above the tail race level, is 5.5m/s. If the loss of head due to friction in the draft tube is 40% of the velocity head at outlet of the tube, find the the pressure head at inlet to the draft tube.
2. A hydro Turbine is required to give 25 MW at 45m head and 90 rpm runner speed. The laboratory facilities available, permit testing of 20 KW model at 5m head. What should be the model runner speed & model to prototype scale ratio.
3. A Pelton wheel has a mean bucket speed of 10m/s with a jet of water flowing at the rate of 800 l/s under a head of 35m. The bucket deflects the jet through an angle of 160°. Calculate the power given by water to the runner & hydraulic efficiency. Assume co-efficient of velocity as 0.98
4. For isentropic flow through the nozzle derives the relation
 - i. $dA/A = [M^2 - 1] dV/V$
5. A radial flow hydraulic turbine is required to be designed to produce 25 MW under a head of 16m at a speed of 90 rpm. A geometrically similar model with an output of 30KW & a head of 5m is to be tested under dynamically similar conditions. At what speed must the model run? What is the required runner diameter ratio between the model & prototype & what is the discharge through the model, if its efficiency is 90%.
6. What is an air vessel? Describe the function of the air vessel for reciprocating pump. What is cavitation? How it can be minimized?

PAPER NAME: MICRO PROCESSOR & MICRO CONTROLLER

PAPER CODE: PC-EE 602

1. Explain various addressing modes of a Microprocessor with suitable examples.
2. What is the significance of CISC architecture?
3. Explain the various Functions of 8085 microprocessor.
4. Describe the Bus Architecture of 8086 microprocessor.
5. Draw and explain the details architecture of 8085 microprocessor.
6. What are the functions of the various components in IC?
7. What is the significance of CPU unit?
8. What is the definition of Microcontroller? Explain briefly.
9. Explain the different functions of Microprocessor.
10. What are the different addressing modes supported by 8086?

PAPER NAME: ELECTRICAL MACHINE DESIGN

PAPER CODE: PE-EE601C

1. Describe the design considerations for the primary and secondary windings of a transformer.
2. What is leakage reactance in a transformer? How can it be minimized in the design?
3. Explain the significance of insulation design in transformers and the factors affecting insulation selection.
4. How does rotor design affect the performance of an induction motor? Compare squirrel cage and wound rotor designs.
5. Explain the effect of air gap length on the performance and efficiency of an induction motor.
6. Describe the importance of cooling and ventilation in the design of induction motors.
- 7.

PAPER NAME: INDUSTRIAL ELECTRICAL SYSTEMS

PAPER CODE: PE-EE602C

1. Explain the components of an industrial electrical system.
2. Describe the role and operation of transformers in industrial electrical systems. How do they ensure proper voltage regulation and energy distribution in industries?
3. What is the significance of motor control centers (MCC) in industrial electrical systems?
4. Explain the importance of electrical grounding and earthing in industrial electrical systems.
5. What are the different types of electrical loads typically found in industrial electrical systems? How are these loads classified and managed to ensure optimal system performance?
6. Discuss the different protection schemes employed in industrial electrical systems to prevent faults, overloads, and short circuits. How do circuit breakers, fuses, and relays contribute to system protection?
7. What are variable frequency drives (VFDs), and how do they benefit industrial electrical systems in controlling the speed of motors and enhancing energy efficiency?
8. How does power factor correction improve the efficiency of an industrial electrical system?
9. What methods are used to correct poor power factor, and why is it important for industries to monitor and maintain power factor levels?
10. What are the methods of grounding, and how do they ensure safety in industrial installations?

PAPER NAME: DIGITAL SIGNAL PROCESSING

PAPER CODE: OE-EE601A

1. Derive a PLA programmed table for the combinational circuit that a square a 3 bit number
2. Explain the differences between current C-MOS well and N-MOS Well.
3. What do you mean by CMOS Transmission Gates?
 - i. 2 input AND gate
 - ii. 2 input OR gate
4. What is CSMA? Give its classification.
5. Draw the VTC curve of a simple CMOS inverter circuit and clearly define the different operating regions of NMOS and PMOS?\\

6. What is FT? Explain briefly.
7. What is IDFT? Explain briefly.
8. Explain the differences between current DFT and FFT.
9. What is DTFT? Explain briefly.
10. Why VLSI design flow is often called as cycle? Explain.

PAPER NAME: ECONOMICS FOR ENGINEERS
PAPER CODE: HM-EE-601

1. Short note – Infinite Analysis Period.
2. Short note – ‘ End of the year convention ’.
3. Difference between - Inflation and Deflation.
4. Explain the importance of Index Number.
5. Graphically represent – NPV and IRR.
6. Discuss the uses of Break-Even Analysis.

B.TECH-6TH SEM-EE-PRACTICAL
PAPER NAME: POWER SYSTEM-II LAB
PAPER CODE: PC-EE691

1. Study on the Characteristics of ON load time delay and OFF load time delay Relay.
2. Test to find out Polarity, Ratio and Magnetization testing of CT & PT.
3. Test to find out the Characteristics of Over Voltage / Under Voltage Relay.
4. Study on AC Load Flow Analysis using Newton-Raphson (NR) Method.
5. Study of Different protection of 1- Φ Transformer.
6. Study of Characteristics of Over Current Relay.

PAPER NAME: MICRO PROCESSOR & MICRO CONTROLLER LAB
PAPER CODE: PC-EE692

1. 16-bit Arithmetic Operations for 8086 Microprocessor
2. Sorting an Array using Bubble Sort on 8086 Microprocessor
3. Searching for a Number or Character in a String on 8086 Microprocessor
4. String Manipulations on 8086 Microprocessor
5. Digital Clock Design using 8086 Microprocessor
6. Interfacing ADC and DAC to 8086 Microprocessor
7. Parallel Communication between Two Microprocessors using 8255
8. Serial Communication between Two Microprocessor Kits using 8251
9. Interfacing and Programming to Control Stepper Motor with 8086
10. Programming Using Arithmetic, Logical, and Bit Manipulation Instructions of 8051

B.TECH-6TH SEM-EEE-THEORY
PAPER NAME: POWER SYSTEM-II
PAPER CODE: PC-EEE601

1. What are the function of Substation ? Write the different classification of it.
2. Write short notes on Radial System & Loop System in power system.
3. What do you mean by Earthing ? Write a short note on Earthing (System & Equipment).
4. What is PU System? How it works and how it will be calculated?
5. Write down the Comparison of Different types of Load Flow Method.
6. Short note on Network Model Formulation in Power System.
7. **How many methods uses for the load flow solution?**
8. Short note on Formulation of Y-bus.

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B.TECH-6TH SEM-ECE-THEORY

PAPER NAME:CONTROL SYSTEM & INSTRUMENTATION

PAPER CODE:EC601

1. What is a smart transmitter?
2. Explain the working principle of a flow meter?
3. What is the difference between a solenoid valve and a motor-operated valve?
4. What does HART communication protocol mean?
5. Short Note on RTD.
6. What is the difference between a sensor and a transducer?

PAPER NAME:COMPUTER NETWORK

PAPER CODE:EC602

1. Explain the OSI model and TCP/IP model. Compare their layers and functionalities.
2. Describe the different types of transmission media used in computer networks. Compare guided and unguided media.
3. Describe the working of the ARP (Address Resolution Protocol). How is it used in Ethernet networks?
4. What is the role of DNS (Domain Name System) in computer networks? Explain how DNS resolution works.
5. What is the role of a switch in a network? Explain the different types of switches and their operations.

6. What are the different types of network security attacks? Explain the measures used to protect networks from these attacks.

PAPER NAME: INFORMATION THEORY & CODING
PAPER CODE: PE-EC603 D

1. Define self-information.
2. What are the fundamental differences between the self-information & Mutual-information?
3. Define Entropy of the system.
4. What are the requirements of a DMS?
5. Explain the term- channel-capacity & Viterbi-algorithm of decoding.
6. Write short notes on: Manchester coding & Hoffman coding

PAPER NAME: OBJECT ORIENTED PROGRAMMING
PAPER CODE: OE-EC604 C

1. What is the difference between a class and an object in OOP? Provide real-life examples for each.
2. Discuss the concepts of inheritance, polymorphism, and encapsulation with suitable examples. .
3. What is an abstract class? How is it different from an interface in C++?
4. Explain the concept of exception handling in OOP. What are try, catch, and finally blocks?
5. Discuss the role of polymorphism in design patterns. How does polymorphism enhance flexibility in code?
6. Explain the concept of dynamic method dispatch in Java and its importance in implementing polymorphism.

PAPER NAME: ECONOMICS FOR ENGINEERS
PAPER CODE: HS-HU601

1. Short note – Infinite Analysis Period.
2. Short note – ‘ End of the year convention ’.
3. Difference between - Inflation and Deflation.
4. Explain the importance of Index Number.
5. Graphically represent – NPV and IRR.
6. Discuss the uses of Break-Even Analysis.

B.TECH-6TH SEM-ECE-PRACTICAL
PAPER NAME: COMPUTER NETWORK LAB.
PAPER CODE: EC692

1. Execute basic Networking commands
2. Explanation of different types of cables
3. Practically implement the cross – wired cable and straight wired cable using crimping tool
4. The network ip address configuration (classification of address, static and dynamic address)
5. The network ip address configuration (classification ipv4 and ipv6, subnet, super net)
6. Understand different types of network devices (switch, router bridge)
7. Configure and connect the computer in LAN

PAPER NAME: CONTROL SYSTEM AND INSTRUMENTATION LAB.
PAPER CODE: EC691

1. Familiarization with MATLAB control system toolbox and representation of pole zero and transfer function of control system.
2. Determination of transfer function of a given system from its state model and its vice-versa.
3. Determination of impulse & step response for 2nd order under damped system on CRO & calculation of control system specifications for variation of system design.
4. Determination of root Locus from transfer function and evaluation of system parameters like marginal value of gain, frequency etc. of a given control system.

5. Drawing of Nyquist plot and Bode plot from transfer function of a control system and estimation of relative system parameters like gain margin, phase margin etc.
6. Design PI, PD and PID controller for specified system requirements.

B.TECH-8TH SEM-CSE-THEORY

PAPER NAME: INTERNET OF THINGS

PAPER CODE: PEC- CS801E

1. What are the various IoT communication protocols? Compare and contrast MQTT, CoAP, and HTTP.
2. Explain the concept of edge computing. How does it enhance the performance and efficiency of IoT systems?
3. Discuss the importance of security in IoT. Explain the common security challenges and potential solutions in securing IoT devices.
4. Explain What is the concept of Low Power Wide Area Networks (LPWAN)? Discuss the importance of technologies like LoRa and Sigfox in IoT applications.
5. What is cloud computing, and how is it integrated with IoT for data storage, management, and real-time processing?
6. Discuss the ethical concerns in IoT. How does IoT impact data privacy, user consent, and potential surveillance?

PAPER NAME: BIG DATA ANALYSIS

PAPER CODE: OEC- CS801A

1. Explain the concept of big data. Discuss its key characteristics such as volume, velocity, and variety.
2. What is NoSQL? Discuss the different types of NoSQL databases such as key-value stores, document stores, column-family stores, and graph databases.
3. Discuss the role of HDFS (Hadoop Distributed File System) in big data processing. Explain its architecture and how it handles large datasets..
4. What is the importance of data preprocessing in big data analysis? Discuss techniques like data cleaning, data transformation, and data normalization.
5. Describe the ETL (Extract, Transform, Load) process in big data analytics. Discuss the tools and technologies used in ETL pipelines.
6. Discuss the role of cloud computing in big data. Explain how cloud platforms like AWS, Azure, and Google Cloud are used for big data storage and processing.

PAPER NAME: E-COMMERCE AND ERP

PAPER CODE: OEC- CS802A

1. Explain the concept of E-Commerce. Discuss the different types of e-commerce models such as B2B, B2C, C2C, and C2B with suitable examples.
2. Discuss the various advantages and disadvantages of implementing ERP systems in an organization. What are the key challenges in ERP system implementation?
3. What is E-Commerce security? Discuss the importance of ensuring security in e-commerce transactions. Explain various security mechanisms like SSL, firewalls, and encryption used in e-commerce.
4. Discuss the role of Customer Relationship Management (CRM) in e-commerce. How does CRM help businesses in improving customer satisfaction and retention?
5. What is the role of a Payment Gateway in e-commerce? Explain how payment gateways work and their importance in securing online transactions.
6. What is the importance of Business Intelligence (BI) in ERP? Discuss how ERP systems integrate BI tools for better decision-making and data analytics.

B.TECH-8TH SEM-CE-THEORY

PAPER NAME: PROFESSIONAL PRACTICE, LAW & ETHICS

PAPER CODE: CE(HS)801

1. Discuss the professional ethics and responsibilities of engineers in the construction industry. Include the importance of conflict of interest, confidentiality, and whistleblowing in your answer.
2. Explain the different types of contracts used in construction management with suitable examples. Describe the essential elements of a valid contract as per the Indian Contract Act, 1872.
3. Describe the procedure of Arbitration in dispute resolution. Highlight the role of arbitrators, the significance of the Arbitration and Conciliation Act, 1996, and the methods of enforcement of arbitral awards.
4. Write short notes on the following:
 - a) Collective Bargaining
 - b) Minimum Wages Act, 1948
 - c) Workmen's Compensation Act, 1923
 - d) Industrial Disputes Act, 1947
5. A contractor is awarded a construction project with a contract value of ₹50,00,000. The payment terms specify that the contractor will receive ₹12,00,000 as an advance payment and the remaining amount will be paid in equal monthly installments over 12 months. Calculate the monthly installment amount and the total amount paid after one year.
6. Define Intellectual Property Rights (IPR). Explain the process of obtaining a patent in India and the importance of patent protection in the construction industry.

PAPER NAME: PAVEMENT MATERIALS AND DESIGN
PAPER CODE: CE(PE)801 D

1. Explain the different types of piles used in foundation engineering with neat sketches. Discuss the advantages and disadvantages of each type.
2. Describe the static and dynamic formulae used for determining the load-carrying capacity of piles. Derive the dynamic formula with assumptions.
3. What is Negative Skin Friction in piles? Explain its causes and effects on the load-carrying capacity of piles. Suggest methods to reduce its impact.
4. Write short notes on the following:
 - a) Under-reamed piles
 - b) Pile cap
 - c) Converse Labarre Formula
 - d) Efficiency of Pile Groups
5. A square pile group of 9 piles, each of diameter 300 mm, is embedded in clay soil with an undrained cohesion of 100 kN/m². The pile length is 10 m, and the adhesion factor is 0.7. Calculate the ultimate load-carrying capacity of the pile group considering both skin friction and end bearing.
6. Discuss the construction procedure and settlement characteristics of drilled piers with suitable diagrams.

PAPER NAME: DEEP FOUNDATION
PAPER CODE: CE(OE)801 C

1. Discuss the different types of road construction materials and their suitability based on economic, environmental, and social aspects. How does life cycle analysis help in the selection of materials?
2. Explain the various methods of soil stabilization with suitable examples. Discuss how cement, lime, and bitumen are used as stabilizing agents.
3. Describe the significance of aggregate gradation in flexible and rigid pavements. Explain Rothfutch's method and Critical sieve method of aggregate gradation.
4. Differentiate between Crumb Rubber Modified Bitumen and Polymer Modified Bitumen. How does the addition of modifiers improve the performance of bituminous mixes?
5. Numerical Question:
 A soil sample tested for CBR gave the following results:
 Load at 2.5 mm penetration = 500 kg
 Load at 5.0 mm penetration = 700 kg
 The standard load for 2.5 mm penetration is 1370 kg and for 5.0 mm penetration is 2055 kg.
 Calculate the CBR value for the soil sample.
6. Discuss the construction details, functions, and property characterization of Geo-Synthetic materials in pavement construction. How are they used in improving the stability of pavements?

PAPER NAME: EARTHQUAKE ENGINEERING
PAPER CODE: CE(OE)802 B

1. Explain the different types of seismic waves generated during an earthquake. Discuss the process of earthquake measurement and the instruments used.
2. Describe the Power Spectral Density Function of Ground Motion. How does it help in predicting earthquake response?
3. Derive the equation of motion for a Single Degree of Freedom (SDOF) system subjected to earthquake ground motion. Also, explain the Duhamel Integral solution for the response of the SDOF system.
4. What is Response Spectrum Analysis? Discuss the significance of the Response Spectrum in earthquake-resistant design.
5. A building has a mass of 1000 kg and is modeled as an SDOF system with a natural frequency of 5 Hz. Calculate the maximum displacement if the ground acceleration during the earthquake is 0.3g.
6. Discuss the concept of base isolation technique in earthquake-resistant design. Explain its advantages and limitations with neat sketches.

B.TECH-8TH SEM-ME-THEORY
PAPER NAME: POWER PLANT ENGINEERING
PAPER CODE: PE-ME801B

1. A) Explain the different types of draught applied in power plant. Why artificial draught is preferred in power plant.
 B) How the fan or blower in forced draught differently installed as compared to induced draught system & why? State three advantages of mechanical draught.
2. A) Define boiler efficiency. When is boiler efficiency termed as overall efficiency of the boiler plant?
 B) A boiler generates 9 kg of steam per kg of coal burnt at a pressure of 12 bar, from feed Having temperature of 80^oc. The efficiency of boiler is 85%, factor of evaporation is 1.25,& Specific heat of steam at constant pressure is 3.3KJ/KgK. Calculate:
 - i) Degree of superheat & temperature of steam generated
 - ii) Calorific value of coal in kj/kgk
 - iii) Equivalent evaporation in kg of steam per kg of coal
3. A) What is circulation ratio? Mention the range of circulation ratio. Derive relationship ratio between CR & TDF.
 B) A chimney of height 42m. is used for producing a draught of 25mm. of water. The temperatures of ambient air & flue gases are 290^oc respectively. The coal burnt in combustion chamber contains 85% carbon, 3% moisture & remaining ash. Neglecting losses & assuming the values of burnt products equivalent to the volume of air supplied & complete combustion of fuel. Find the percentage of excess air supplied.
4. A) Derive an expression for the maximum blade efficiency in a single stage impulse turbine.
 B) In a single stage impulse turbine, the mean dia of the blade ring is 1m & the rotational speed is 3500r.p.m. The steam is ejected from the nozzle at 250m/s & the nozzle angle is 30^o. The blades are equiangular. If the friction loss in the blade is 19% of the kinetic energy corresponding to the relative velocity at the inlet to the blades, what is the power developed when the axial Thrust is on the blade is 90N.
5. A) Define speed ratio, blade velocity coefficient, blade efficiency & stage efficiency in connection with steam.
 B) The following data refer to a particular stage of a parson's reaction turbine:
 Speed of the turbine = 2500r.p.m.; Mean dia of the rotor is 1.5m;
 Stage efficiency = 85%; Blade outlet angle = 25^o; Speed ratio = 0.8.
 Determine the available isentropic enthalpy drop in the stage.
6. A) What is necessity of coal storage? Discuss the different methods used for coal storage at plant. What do you mean by diversity factor? What is the consideration for selecting a site for thermal power plant.
 B) The peak load on a 60 MW power station is 45 MW. It supplies power through four transformers, whose connected loads are 17, 12, 9 & 10 MW. The maximum demand on the transformer is 20, 16, 12 & 8 MW respectively. If annual load factor is 50% & the plant is operating for 68% of the period in a year, find out the following:
 - i) Average load on station
 - ii) Energy supplied per year
 - iii) Demand factor
 - iv) Power station use factor

PAPER NAME: PROCESS PLANNING AND COST ESTIMATION
PAPER CODE: PE-ME802H

1. What are roles of suppliers and customer in JIT system
2. What are steps for ISO 9000 registration .
3. Describe the five step road map for implementing six-sigma.
4. What are requirement for planning preventive maintenance?
5. Write short note on (a) Total Productive maintenance (b) breakdown maintenance.
6. How the standard time of maintenance is calculated. Define motion study .state the different charts which are used for motion study.
7. How work measurement is done?.
8. Write a short note on Gantt chart and Line balancing. What do you mean by dispatching ? Describe the importance of follow up section .
9. Define production control. What are different techniques of production technique..State the functions Estimating Department .Explain inventory management.
10. Write a short note on Automated guided vehicles systems.
11. Write a short notes on (a) Margin of safety , (b) Angle of incidence
12. Explain the different material handling equipments.

PAPER NAME: ENERGY CONSERVATION AND MANAGEMENT
PAPER CODE: OE-ME 801E

1. Write a short Note on primary and Secondary sources of energy with essential example.
2. Draw typical model of Energy Action Plan in India
3. What is life Cycle Costing? What is the formula and why we require life cycle costing?
4. What is the significance of an energy policy?
5. What are the base line data that an audit team should collect while conducting detailed energy audit?
6. Write down the steps involved in 'Energy management Strategy and also state the Procedure for creating the energy audit report
7. Write a short notes on (1) Methods of Improving the of Power factor (2) Heat Wheels
8. Write a Short Notes (a) Waste heat Exchanger (b) Heat Pipe (C) Industrials Insulation

PAPER NAME: INDUSTRIAL POLLUTION AND CONTROL
PAPER CODE: OE-ME 802D

1. What is Water Pollution? Drive the Sources Of Water Pollution.
2. Write down the Effects of Water Pollution.
3. What is air pollution? Where does air pollution come from?
4. What effect does air pollution have on food, crops, forests and biodiversity?
5. What is the role of air quality monitoring in air quality management?
6. What is noise pollution? Write down types of noise pollution in details.
7. Write down Effects of Noise Pollution on Human Health.
8. Write down Prevention of Noise Pollution

B.TECH-8TH SEM-EE-THEORY
PAPER NAME: UTILIZATION OF ELECTRIC POWER
PAPER CODE: PC-EE 801

1. Explain the working of an incandescent lamp with a diagram.
2. Compare the working principles of CFL and LED lamps.
3. Define luminous flux, luminous intensity, and illumination with their SI units.

4. Explain the laws of illumination and their significance.
5. Compare resistance heating, induction heating, and dielectric heating.
6. Describe the construction and working of an electric arc furnace.

PAPER NAME: ADVANCED ELECTRIC DRIVES
PAPER CODE: PE- EE 801C

1. Short notes on Current Control of Voltage Source Inverter (VSI).
2. Short notes on Current Control of Current Source Inverter (CSI).
3. What is Selected Harmonic Elimination ?
4. Write different Transformations and Reference Frame Theory in Electric machine drives.
5. What do you mean by Diode Rectifier with Boost Chopper ?
6. Write down the comparison of vector control (FOC), V/F control and DTC.

PAPER NAME: SENSORS AND TRANSDUCERS
PAPER CODE: OE-EE 801D

1. Write a short note on: Industrial Relay system.
2. State the difference between measurement and instrumentation?
3. Describe different components of sensor system?
4. What are the fundamental features of various wireless sensor Networks?
5. Explain working principle with neat diagram of a Transducer.
6. What are the characteristics of smart-cities? What is the importance of sensor nodes?
7. What is Graded-index Fiber? Write its advantages.
8. Draw & Explain the working principle of Light -Emitting-Diode.
9. Briefly explain the differences between the core & cladding by using neat sketch.
10. What are the various Instrumentation Techniques in optical?

B.TECH-8TH SEM-EEE-THEORY
PAPER NAME: DIGITAL SIGNAL PROCESSING
PAPER CODE: PC-EEE 801

1. Discuss the operations of LTI System. What do you mean by DSP?
2. What are different components of ADE?
3. Explain the fundamental difference between the FFT & DFT.
4. Explain Transfer Function. What is DFT?
5. What is the fundamental difference between ASP & DSP?
6. Explain various Digital signal processing techniques.

PAPER NAME: ADVANCED ELECTRIC DRIVES
PAPER CODE: PE- EEE 801B

1. Short notes on Current Control of Voltage Source Inverter (VSI).
2. Short notes on Current Control of Current Source Inverter (CSI).
3. What is Selected Harmonic Elimination ?
4. Write different Transformations and Reference Frame Theory in Electric machine drives.
5. What do you mean by Diode Rectifier with Boost Chopper ?
6. Write down the comparison of vector control (FOC), V/F control and DTC.

PAPER NAME: SENSORS AND TRANSDUCERS
PAPER CODE: OE-EEE 801D

1. Write a short note on: Industrial Relay system.
2. State the difference between measurement and instrumentation?
3. Describe different components of sensor system?
4. What are the fundamental features of various wireless sensor Networks?
5. Explain working principle with neat diagram of a Transducer.
6. What are the characteristics of smart-cities? What is the importance of sensor nodes?
7. What is Graded-index Fiber? Write its advantages.

8. Draw & Explain the working principle of Light –Emitting-Diode.
9. Briefly explain the differences between the core & cladding by using neat sketch.
10. What are the various Instrumentation Techniques in optical?

B.TECH-8TH SEM-EEE-PRACTICAL
PAPER NAME: DIGITAL SIGNAL PROCESSING LAB
PAPER CODE: PC-EEE 891

1. Determine the various sequences of different signals
2. Z-transform of various sequences
3. Study of convolution theorem
4. Discrete Fourier transform
5. Inverse Discrete Fourier transform(IDFTS)
6. Demonstrate sampled sinusoidal signal/sampling of a Analog signal.

B.TECH-8TH SEM-ECE-THEORY
PAPER NAME: FIBRE OPTIC COMMUNICATION
PAPER CODE: PE-EC801 B

1. What are the characteristics of a Optical-Fiber?
2. What is FDM? Explain briefly.
3. States the difference between Power signal and Energy signal.
4. Describe different characteristics of core & cladding related to optical-Fiber.
5. What are the fundamental features of Step-index & Graded-index optical-Fiber?
6. Explain working principle with neat diagram for WDM.
7. Explain the differences between Numerical-Aperture and optical fibre.

PAPER NAME: MIXED SIGNAL DESIGN
PAPER CODE: PE-EC802 A

1. Explain the differences between current FT and FFT.
2. Why VLSI design flow is often called as cycle? Explain.
3. Briefly explain the Differential Fourier Transformation.
4. Explain the fundamental operations and theorems of Z-Transformation.
5. What is DTFT? Explain briefly.
6. Briefly explain the working principle of a Hydrometer.

PAPER NAME: INTERNET OF THINGS(IOT)
PAPER CODE: OE-EC803 A

1. Define the Internet of Things (IoT). Discuss its components, architecture, and how they work together to enable IoT applications.
2. What is the role of communication protocols in IoT? Discuss common IoT communication protocols like MQTT, CoAP, and HTTP. Compare their features.
3. What is IoT security? Discuss the security challenges in IoT, including data privacy, authentication, and access control, and how these challenges are addressed.
4. Describe the role of cloud computing in IoT. Discuss how cloud platforms are used to store, manage, and process IoT data..
5. What are the applications of IoT in different domains such as healthcare, smart cities, agriculture, and industrial automation? Provide specific examples.
6. What is the role of a gateway in IoT? Explain how IoT gateways facilitate communication between IoT devices and the cloud.

PAPER NAME: ORGANIZATIONAL BEHAVIOR
PAPER CODE: OE-EC804A

1. What is Job Analysis? Explain its methods and the process of job design.
2. Explain the process of recruitment and selection. Discuss the different sources of recruitment.

3. What is Employee Motivation? Explain the theories of motivation (Maslow, Herzberg, McGregor).
4. Discuss the concept of Performance Management. What are the tools used in performance appraisal?
5. What is Training and Development? Discuss the methods of training and its importance for organizational growth.

B.TECH-8TH SEM-AEIE-THEORY

PAPER NAME: POWER PLANT INSTRUMENTATION

PAPER CODE: PE-EI 801

1. Write some applications of pressure measurements.
2. Write the principle of operation of an ionization gauge.
3. Write the advantages of DCS.
4. Write is the principle of McLeod gauge.
5. Discuss the types of thermal conductivity gauges.
6. Give the advantages pressure measurement using bellows.

PAPER NAME: DIGITAL IMAGE PROCESSING

PAPER CODE: OE-EI 801

1. What is image segmentation? Discuss various techniques for image segmentation such as
2. Thresholding, edge detection, and region-growing.
3. Describe the process of image enhancement in the spatial domain. Discuss the various types of filters used for image enhancement.
4. What is histogram equalization? Discuss its purpose and how it is used to enhance the contrast of an image.
5. Explain the different types of image transforms, such as Discrete Cosine Transform (DCT), Discrete Fourier Transform (DFT), and Wavelet Transform, and their applications in image compression.
6. What is the Hough Transform? Explain its application in detecting shapes such as lines and circles in images.
7. Discuss the various image compression techniques. Compare lossy and lossless compression methods with examples and applications.

PAPER NAME: PROJECT MANAGEMENT & ENTREPRENEURSHIP

PAPER CODE: HM-HU 801

1. What are the social responsibilities of manager?
2. Short note on MBO.
3. Differentiate between centralization and decentralization of authority.
4. Describe the essential characteristics of supervisor.
5. Discuss about the characteristics of an effective leader.
6. Describe the strategies of decision making.