INSTITUTE OF SCIENCE & TECHNOLOGY

ASSIGNMENT QUESTIONS FOR EVEN SEM 2025

B.TECH-2ND SEM-CSE-THEORY

PAPER NAME: CHEMISTRY-I
PAPER CODE : BS-CH 201

1. Draw the Band Structure of Solids and the Role of Doping on Band Structures.
2. Describe on Fluorescence and its applications in medicine.
3. Write the variations of s, p, d and f orbital energies of atoms in the periodic table.
4. Write down the synthesis of a commonly used drug molecule. (Any three).
5. Distinguish the ranges of electromagnetic spectrum used for exciting different molecular energy levels in various spectroscopic techniques.
6. Describe major chemical reactions : a) Substitution reaction b) Elimination reaction c) Cyclization reaction

PAPER NAME: MATHEMATICS IIA
PAPER CODE: BS-M 201

1. Two urns contain respectively 5 white, 7 black balls, and 4 white and 2 black balls. One of the urns is selected by the toss of a fair coin and then 2 balls are drawn without replacement from the selected urn. If both balls drawn are white, what is the probability that the first urn is selected?
2. The chance that a doctor will diagnose a certain disease correctly is 60%. The chance that a patient will die by his treatment after correct diagnosis is 40% and the chance of death by wrong diagnosis is 70%. A patient of the doctor who had the disease dies. What is the probability that the disease was diagnosed correctly?.
3. A speaks the truth 8 times out of 10 times. A die is thrown. He speaks that it was 5. What is the probability that it was actually 5?.
4. Two events A and B are such that $P(A) = 0.5$, $P(B) = 0.3$ and $P(A \cap B) = 0.1$. Calculate
5. (a) $P(A|B)$ (b) $P(B|A)$ (c) $P(A|A \cup B)$; (d) $P(A|A \cap B)$; (e) $P(A \cap B|A \cup B)$.
6. Show that $p(AB) \geq P(A) + P(B) - 1$.
7. State and prove Baye's theorem.

PAPER NAME: PROGRAMING FOR PROBLEM SOLVING
PAPER CODE: ES-CS 201

1. What are the different types of operators in C? Explain with examples..
2. Explain the concept of pointers in C. Write a program to swap two numbers using pointers.
3. Write a C program to check whether a given number is prime or not using functions.
4. Discuss different string handling functions in C with examples.
5. Write a C program to find the sum and average of elements in an array.
6. Write a C program to check whether a given number is prime or not using functions.

PAPER NAME: ENGLISH
PAPER CODE: HM-HU 201

1. What are Compounding & Back formation? Give examples.
2. Write short note on i) Blending ii) Clipping
3. What are Redundancies?
4. Suppose you are the administrative head of an educational institution. Write a proposal to the Board of Directors requesting to provide financial aid for setting up language labs in the college.
5. Write a job application to the H.R. of an MNC for the post of "Junior Engineer". Provide your resume with all academic records and experiences if any.
6. Write an essay on i) Books are our best friends ii) Pleasures of reading.
7. Do as directed:-
   - i) I shall comply .....your request. (Insert preposition)
   - ii) He absented from the meeting. (Correct & rewrite)

iii) The man proposes but the God disposes. (Correct & rewrite)
iv) He is too weak to stand. (Turn into complex sentence)
v) As soon as he got the news, he left. (Turn into compound sentence)

8. Use Prefix/Suffix for the following as applicable
9. i) understand ii) Accept iii) Self iv) Build v) Tell

B.TECH-2ND SEM-CSE-PRACTICAL

PAPER NAME: CHEMISTRY -I LAB
PAPER CODE: BS-CH 291

1. Write something about Thin Layer Chromatography.
2. Explain Surface Tension and Viscosity.
3. Discuss about dissolved oxygen present in a water sample.

PAPER NAME: PROGRAMING FOR PROBLEM SOLVING LAB
PAPER CODE: ES-CS 291

1. Write a C program to check whether a given number is even or odd.
2. Write a C program to find the largest and smallest elements in an array.
3. Write a C program to reverse a given number using a loop.
4. Write a C program to find the sum of digits of a given number.
5. Write a C program to count the number of vowels and consonants in a string.
6. Write a C program to find the factorial of a number using recursion.

PAPER NAME: ENGINEERING GRAPHICS & DESIGN
PAPER CODE: ES-ME291

1. A room of building of 1000 m^3 volume is represented by a similar block of 125 cm^3 volume. Find the R.F. and construct a plain scale to measure up to 30m. Measure a distance of 24 m on the scale.
2. Draw the projections of regular hexagon of 30 mm side, having one of its sides in the H.P. and inclined at 60^0 to V.P. and its surface making angle of 45^0 with H.P. .
3. Construct an ellipse by four centre method having major axis 100 mm and minor axis 70 mm.
4. Construct a regular Heptagon about a circle of 100 mm diameter.

PAPER NAME: LANGUAGE LABORATORY
PAPER CODE: HM-HU291

1. Write few lines about your Career Objective.
2. What are the main ideas for a successful Group Discussion (G.D.)?
3. Write in favour and against of "E learning : A substitute for classroom learning."

B.TECH-4TH SEM-CSE-THEORY

PAPER NAME: DISCRETE MATHEMATICS
PAPER CODE: PCC-CS 401

1. Prove that any group of order 15 is cyclic
2. Prove that a simple graph with n vertices and k components can have at most $\frac{1}{2(n-k)(n-k+1)}$ edges.
3. Prove by mathematical induction $2^{2n} - 1$ is always divisible by 7 for $n \epsilon \mathbb{N}$
4. What is De Morgan's Law in propositional logic? Provide both forms of the law.
5. In a ring R if $x^3 = x$ for all $x \epsilon R$, then show that R is commutative.
6. In a survey of 200 people:

a. 120 like pizza. 100 like burgers. 80 like tacos. 60 like both pizza and burgers. 40 like both burgers and tacos. 30 like both pizza and tacos. 20 like all three: pizza, burgers, and tacos.
b. How many people like at least one of these three foods?

PAPER NAME: COMPUTER ARCHITECTURE
PAPER CODE: PCC-CS 402

1. Explain the Von Neumann and Harvard architectures with a neat diagram.
2. Discuss the different types of addressing modes in a processor with examples.
3. What is pipelining? Explain its types and hazards in detail.
4. Compare RISC vs CISC architectures with advantages and disadvantages.
5. Explain the working of instruction execution cycle with a flowchart.
6. Discuss the role of cache memory and explain different cache mapping techniques

PAPER NAME: FORMAL LANGUAGE & AUTOMATA THEORY
PAPER CODE: PCC-CS 403

1. Explain Moore and Mealy Machines with a proper example.
2. Describe the steps to convert an NFA to an equivalent DFA with an example.
3. Explain Minimization of a DFA using state equivalence methods.
4. What are Regular Expressions? Convert the Regular Expression (0+1)*01(0+1)* into an equivalent NFA.
5. Discuss Chomsky Normal Form (CNF) and convert the grammar S → aSb | ab into CNF.
6. What is Pushdown Automata (PDA)? Construct a PDA for the language {a^n b^n | n ≥ 0}.

PAPER NAME: DESIGN & ANALYSIS OF ALGORITHMS
PAPER CODE: PCC-CS 404

1. Write the definition and impact of Greenhouse Gases.
2. Write the definition of pollutants and what is primary and secondary pollutants.
3. Write the structure & function of Desert ecosystem.
4. Write the Water pollution due to the toxic elements and their biochemical effects.
5. Write the effects of noise pollution.
6. What is Eutrophication and write its causes?

PAPER NAME: BIOLOGY
PAPER CODE: BSC 401

1. Which Ions are called Zwitterions? Write the different types of protein.
2. Write the difference between nucleoside and nucleotide. Give some examples of nucleotide.
3. Explain the mechanism of enzyme action.
4. Give the characteristics of Genetic Codon.
5. Write the steps of Glycolysis process.
6. Explain the two stages of Photosynthesis.

PAPER NAME: ENVIRONMENTAL SCIENCES
PAPER CODE: MC401

1. Write the definition and impact of Greenhouse Gases.
2. Write the definition of pollutants and what is primary and secondary pollutants.
3. Write the structure & function of Desert ecosystem.
4. Write the Water pollution due to the toxic elements and their biochemical effects.
5. Write the effects of noise pollution.
6. What is Eutrophication and write its causes?

B.TECH-4TH SEM-CSE-PRACTICAL

PAPER NAME: COMPUTER ARCHITECTURE LAB
PAPER CODE: PCC-CS 492

1. Write a program to implement addition and subtraction of binary numbers.
2. Implement a multiplication algorithm for signed binary numbers using Booth's Algorithm.
3. Simulate a 4-bit ALU that can perform AND, OR, ADD, and SUBTRACT operations.
4. Write a program to convert a decimal number to IEEE 754 floating-point representation.
5. Implement a cache memory mapping technique (Direct, Associative, Set-Associative).
6. Simulate the working of a simple instruction pipeline with different stages.

PAPER NAME: DESIGN & ANALYSIS OF ALGORITHMS LAB
PAPER CODE: PCC-CS 494

1. Implement Insertion Sort, Bubble Sort, and Selection Sort and compare their time complexities.
2. Write a program for Merge Sort and Quick Sort and compare their performance.
3. Implement Binary Search and Linear Search and compare their execution time.
4. Implement Dijkstra's Algorithm to find the shortest path in a weighted graph.
5. Write a program to implement Floyd-Warshall Algorithm for all-pairs shortest path.
6. Implement Knapsack Problem using Dynamic Programming.

B.TECH-4TH SEM-CE-THEORY

PAPER NAME: INTRODUCTION TO FLUID MECHANICS
PAPER CODE: CE(ES) 401

1. Define viscosity, surface tension, and capillarity. Explain their significance in fluid mechanics with real-life examples.
2. Discuss the stability of submerged and floating bodies. Explain the concept of metacentric height and how it affects the stability of ships and submarines.
3. Derive the Bernoulli equation from Euler's equation of motion and state the assumptions involved. Discuss at least two practical applications of Bernoulli's theorem.
4. A venturimeter is installed in a horizontal pipeline to measure the flow rate of water. The diameter at the inlet is **200 mm**, and the throat diameter is **100 mm**. The pressure difference between the inlet and throat is **3 kPa**. If the coefficient of discharge (CdC_dCd) is **0.98**, determine the discharge of water in the pipeline.
5. Explain the Buckingham π theorem and demonstrate its application in solving a fluid mechanics problem using dimensional analysis.
6. Explain the concept of equivalent pipes. Derive an expression for an equivalent pipe that replaces multiple pipes in series and parallel. Also, discuss how this concept is used in water distribution networks.

PAPER NAME: INTRODUCTION TO SOLID MECHANICS
PAPER CODE: CE(ES) 402

1. Explain the basic concepts of stress and strain. Discuss the significance of Hooke's Law and Poisson's ratio in material deformation.
2. Derive the flexure formula for a symmetric beam bending and explain its application. Also, discuss the bending and shear stress distribution in a rectangular beam section.
3. A cantilever beam of length 3m carries a uniformly distributed load of 5 kN/m. Determine the deflection at the free end using the moment curvature relationship.
4. Discuss the method of sections for analyzing determinate plane trusses. Solve for the forces in the members of a simple truss using this method.
5. Explain Mohr's circle for stress analysis. Determine the principal stresses and maximum shear stress for a material subjected to 50 MPa tensile stress in the x-direction and 30 MPa compressive stress in the y-direction.
6. Discuss Euler's buckling theory for columns. Derive the Euler's formula and explain its limitations for practical applications.

PAPER NAME: SOIL MECHANICS-I
PAPER CODE: CE(PC) 401

1. Explain the significance of soil formation and the different types of soil classification.
2. Derive the basic weight-volume relationship for a three-phase soil system and explain its engineering importance.
3. Discuss the various methods for determining the permeability of soil. Compare the Constant Head and Falling Head permeability tests.
4. Explain the concept of seepage analysis in soils. Describe the role of Laplace's equation and flow nets in solving seepage problems.
5. A point load of 50 kN is applied at the ground surface. Calculate the vertical stress at a depth of 3m directly below the load using Boussinesq's equation.
6. Discuss the Mohr-Coulomb failure criterion for soil shear strength. How is the shear strength of soil determined in the laboratory?

PAPER NAME: ENVIRONMENTAL ENGINEERING - I
PAPER CODE: CE(PC) 402

1. Explain the different types of water demand and the factors affecting them.
2. Discuss various sources of water. Compare surface water and groundwater in terms of availability, quality, and sustainability.
3. Describe the physical, chemical, and biological parameters of water quality. Explain the importance of BIS, WHO, and USEPA standards in drinking water quality assessment.
4. Draw a typical flowchart for surface and groundwater treatment. Explain different unit operations involved in water treatment.
5. A city has a present population of 5,00,000 and is expected to grow at an annual rate of 2.5%. Calculate the projected population after 20 years using the geometric increase method.
6. Discuss the engineered systems for municipal solid waste (MSW) management, including methods of reuse, recycling, energy recovery, and disposal.

PAPER NAME: SURVEYING AND GEOMATICS
PAPER CODE: CE(PC) 403

1. Explain the principles and classification of surveying. Discuss different types of errors in chain surveying and their impact on measurements.
2. Describe the principles of leveling. Explain the concept of differential leveling with suitable numerical examples.
3. What are the different types of EDM instruments used in advanced surveying? Explain the working principle and applications of the Total Station.
4. Discuss the concept of photogrammetric surveying. Explain stereoscopic vision, parallax, and relief displacement in aerial photogrammetry.
5. A theodolite is set up at a station, and the following horizontal angles are observed:
   Angle A = 42°30'
   Angle B = 67°15'
   Angle C = 70°45'
   If the sum of the three angles should be 180° in a closed traverse, calculate the error in measurement and suggest possible corrections.
6. Discuss the role of geomatics in civil engineering. Explain how remote sensing and GIS applications contribute to urban planning and disaster management.

PAPER NAME: CONCRETE TECHNOLOGY
PAPER CODE: CE(PC) 404

1. Explain the manufacturing process of cement. Discuss the composition and role of different oxides in cement properties.
2. Describe the classification and physical properties of aggregates. Discuss the importance of sieve analysis, fineness modulus, and specific gravity in concrete mix design.

3. What is workability of fresh concrete? Discuss the factors affecting workability and compare different workability tests such as slump test, vee-bee test, and compacting factor test.
4. Explain the properties of hardened concrete, including compressive strength, tensile strength, stress-strain characteristics, and modulus of elasticity. Discuss the impact of creep and shrinkage on concrete structures.
5. A concrete mix has a water-cement ratio of 0.45, and the weight of cement used is 350 kg/m³. Determine the amount of water required per cubic meter of concrete.
6. Discuss the principles and applications of non-destructive testing methods in concrete structures. Explain the rebound hammer and ultrasonic pulse velocity methods for assessing concrete quality.

PAPER NAME: CIVIL ENGINEERING- SOCIETAL & GLOBAL IMPACT
PAPER CODE: CE(HS) 401

1. Discuss the impact of global warming and steady erosion on sustainability in civil engineering. What measures can be taken to mitigate these effects?
2. Explain the importance of Civil Engineering in shaping and impacting the world. Provide examples of ancient and modern marvels that showcase the evolution of civil engineering.
3. Describe futuristic transportation systems such as Hyperloop and underground sea tunnels. How do these innovations contribute to sustainability and efficiency?
4. Discuss various water purification and wastewater treatment techniques. How do multi-purpose water projects contribute to environmental sustainability?
5. Define the concept of "Intelligent Smart Buildings." How do energy-efficient built environments and security systems contribute to sustainability in civil engineering?
6. Explain the role of Civil Engineering in GDP contribution. How does employment generation in civil engineering projects help in economic growth and sustainable development?

B.TECH-4TH SEM-CE-PRACTICAL
PAPER NAME: FLUID MECHANICS LABORATORY
PAPER CODE: CE(ES) 491

1. Explain the procedure for the calibration of a notch and an orifice meter. Discuss the importance of these calibrations in fluid flow measurements and compare their applications.
2. Describe the working principle of a centrifugal pump and a reciprocating pump. Conduct a comparative analysis of their performance characteristics, advantages, and limitations in practical applications.
3. Derive the expression for minor losses in pipes due to sudden enlargement and sudden contraction. Explain how these losses affect fluid flow efficiency and suggest methods to minimize them in pipeline systems.

PAPER NAME: SOLID MECHANICS LABORATORY
PAPER CODE: CE(ES) 492

1. **Explain the procedure and significance of the tension test on structural materials.** Discuss the stress-strain behavior of mild steel and HYSD bars and compare their mechanical properties.
2. **Describe the working principle of Brinell and Rockwell hardness tests.** How do these tests help in determining the mechanical properties of ferrous and non-ferrous metals? Provide a comparative analysis of both methods.
3. **Derive the equation for the torsion of a circular bar and explain the significance of the torsion test.** Discuss the effect of torsional stress on mild steel and its applications in structural engineering.

PAPER NAME: ENGINEERING GEOLOGY LABORATORY
PAPER CODE: CE(ES) 493

1. **Describe the classification of rocks based on their origin.** Discuss the key characteristics and identification methods for igneous, sedimentary, and metamorphic rocks in hand specimens.
2. **Explain the significance of geological structures in engineering applications.** Discuss the interpretation of geological maps, including horizontal, vertical, folded, and faulted structures, and their relevance in construction projects.
3. **What are the different types of crystal systems?** Explain with the help of crystal models how crystal structures influence the physical properties of minerals.

PAPER NAME: SURVEYING & GEOMATICS LABORATORY
PAPER CODE: CE(PC) 493

1. **Explain the procedure of conducting a traverse survey using a prismatic compass.** Discuss the computation, error checks, field book preparation, and plotting of the traverse. Also, list the common sources of errors in this method.
2. **Describe the working principle of a Total Station and its applications in surveying.** Explain the process of traversing and leveling using a Total Station and compare its advantages over traditional surveying instruments.
3. **What is digital image classification in remote sensing?** Discuss the different classification techniques used for image analysis and explain how accuracy assessment is performed in digital image classification.

PAPER NAME: CONCRETE TECHNOLOGY LABORATORY
PAPER CODE: CE(PC) 494

1. **Explain the different tests conducted on fine and coarse aggregates.** Discuss the significance of specific gravity, bulk density, percentage voids, and fineness modulus in determining the quality of aggregates.
2. **Describe the process of concrete mix design.** Explain the various workability tests performed on fresh concrete, including slump test, compacting factor test, and Vee-Bee test, along with their importance in practical applications.
3. **What are the different strength tests performed on hardened concrete?** Explain the split-tensile strength test, flexure test, and non-destructive testing (NDT) methods such as the rebound hammer and ultrasonic pulse velocity test. Discuss their applications in assessing concrete quality.

B.TECH-4TH SEM-ME-THEORY
PAPER NAME: MATERIALS ENGINEERING
PAPER CODE: ESME401

1. Explain the various purpose of heat treatment. What are various method of heat treatment of steel
2. What is re-crystallization? Define re-crystalline temperature. Differentiate between hot and cold working.
3. Describe the method of improving the machinability. Explain the term creep and fatigue.
4. Draw the iron carbon diagram and explain.
5. What is powder metallurgy ? Why it is necessary to use lubricants in the press compacting of powders ? State the advantages and disadvantages of powder metallurgy.
6. Write short notes on the following: (i) ultrasonic test (ii) Nitriding (iii) Cyaniding (iv) Induction Hardening (v) radiography test
7. What is corrosion? Explain the different mechanism of corrosion. Discuss the method of preventing corrosion
8. Describe with neat sketch of one common method used for forming plastic sheets.
9. State the thermoplastic & thermosetting plastic.
10. Characteristic and application of ferrous materials and nonferrous material.
11. Classify carbon steel and their uses.
12. What is stainless steel? Classify the difference types of stainless steel with their properties and application.
13. Write the short notes on (a) Free cutting steels and (b) Spring steels.
14. Describe the process of steel making by open hearth process.

PAPER NAME: APPLIED THERMODYNAMICS
PAPER CODE: PCME401

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. What do you understand by the term ' psychrometry'.
4. Define the following: specific humidity, DPT,WBT and absolute humidity.
5. Show Rankine cycle on p-v and T-S diagram and explain the processes involved.
6. Drive the expression for the work done when compression is isothermal and isentropic for reciprocating compressor.
7. 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.

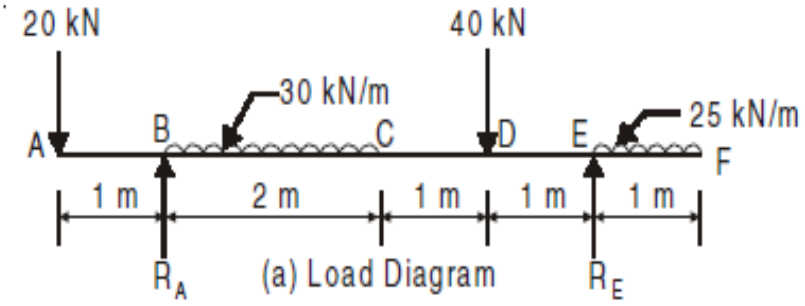
PAPER NAME: FLUID MECHANICS & FLUID MACHINES
PAPER CODE: PCME402

1. The rate of flow of water through a horizontal pipe is 0.25 m^3/s. The diameter of the pipe which is 200 mm is suddenly enlarged to 400mm. The pressure intensity of the smaller pipe is 11.79 N/cm^2,
   Determine: (i) loss of head due to sudden enlargement
   (ii) Pressure intensity of larger pipe
   (iii) Power lost due to enlargement
2. Deduce the Haigen-Poiseuille equation for steady, laminar , fully-developed incompressible flow through a circular pipe in the form $Q= \Pi D^4 X\Delta P/128\mu L$.
3. (a) What do you mean by similitude & what are the different types of similarities that must exist between a model & prototype.
   (b) State Buckingham's π theorem.
   (c) The efficiency η of a fan depends on density ρ, dynamic viscosity μ of the fluid,angular velocity ω, diameter D of the rotor & the discharge Q.
   Express η in terms of dimensionless parameter.
4. Prove that for most economical rectangular channel section,
   (i) Depth of flow = Half of bottom width.
   (ii) Hydraulic radius = Half the depth of flow.
5. (a)State the working principle of a Pelton wheel.
   (b)Derive the expression of discharge through a rectangular weir.
   (c)Write a short note on Francis turbine.
6. A Kaplan turbine is developes a shaft power of 24650 KW at an average head of 39m. Assuming a speed ratio of 2, Flow ratio0.6, diameter of the boss equal to 0.35times the diameter of the runner & an overall efficiency of 90%.calculate the diameter, speed & specific speed of the runner.
7. A centrifugal pump having an overall efficiency of 70% delivers water 1500 l/m through a pipe 12 cm diameter& 100m long. Calculate the power required to drive the pump if its lift water to height of 22m.The co-efficient of friction for the pipe may be taken as 0.01 .
8. Define displacement thickness & momentum thickness in boundary layer flow.

PAPER NAME: STRENGTH OF MATERIALS
PAPER CODE: PCME403

1. What is modulus of section? A rectangular beam, simply supported over a span of 4m, is carrying a uniformly distributed load of 60 kN/m. Find the dimension of the beam, if depth of the beam section is 3.5 times its width. Take maximum bending stress in the beam section as 75 Mpa .
2. Prove that a hollow shaft can withstand higher torque than a solid shaft of same length and weight if the two shafts are the same material
3. Determine the diameter of solid shaft which transmit 740 kW at 350 rpm. The angle of twist must not exceed one degree per meter length and the maximum torsional shear stress is to be limit to 55 N/mm^2 . Assume G=84 kN/mm^2.
4. Derive the equation strain energy store in a body due to shear stress.

5. a weight of 2600N is dropped on a closely helical spring consisting of 60 turns. find the height by which the weight is dropped before by striking the spring so that the spring may be compressed by 220mm and diameter of spring wire is 30mm
6. A closed helical spring has stiffness of 10N/mm. it's when fully compressed, with adjacent coils touching each other is 400mm.The modulus of rigidity of the materials of the spring is $8x10^4$ N/mm^2
7. What is the corresponding maximum shear stress in the spring?
8. Derive an expression for the critical load in a long column when one end is fixed and other end free.
9. Draw BM and SF diagrams for the beam shown in Fig. indicating the values at all salient points and maximum bending moment also show the point of contra flexure



PAPER NAME: METROLOGY AND INSTRUMENTATION
PAPER CODE: PCME404

1. Describe with sketch the construction and use of gear tooth vernier caliper. How is the gear tooth thickness at PCD measured?Explain piezo-electric crystal type microphone with suitable diagram.
2. What is an effective diameter of threads? State its significance. Explain with sketch Measurement of effective diameter by two wire method stating limitation
3. In the measurement of surface roughness, height of 20 successive peaks and valleys measured from a datum are as follows 45, 25, 40, 25, 35, 16, 40, 22, 25, 34, 25, 40, 20, 36, 28, 18, 20, 25, 30, 38. If these measurements were made over a length of 20mm, determine C.L.A and R.M.S value of these.
4. Show that the gauge factor F of a resistance strain gauge is given by
5. $F= 1+ 2\mu +\{(\delta\rho/\rho)/(\delta L/L)\}$
6. Where μ is Poisson's ratio, ρ is the resistivity of the material of wire of strain gauge, and L is the length of the wire.
7. What is comparator? Explain its used and essential parts.
8. A strain gauge is bonded to a beam which is 12cm long and has a cross sectional area of 3.8cm^2 . The unstrained resistance and gauge factor are 220Ω and 2.2 respectively. On the application of load the resistance of the gauge change by 0.015Ω .If the modulus of elasticity for steel is 207GN/m^2 . Calculate
    i. The change in length of the steel beam.
    ii. The amount of applied force to the beam.
9. What do you mean by MML and LML?
10. A 200mm sine bar is to set to an angle of 32°5'6". Find the length of gauge block required using any appropriateset of gauge block.
11. List and explain with neat sketch types of expansion thermometer stating application.
12. The following 10 observations in degree Celsius were recorded when measuring a temperature 41.7 ,42.0, 41.8 , 42.00 42.1, 41.9 , 42.0 , 41.9 , 42.5 ,and 41.8 . Calculate (a) arithmetic mean ,(b) standard deviations , (c) probable error of one reading ,(d) probable error of mean ,(e) range
    i. Differentiate between the "Threshold " and "Resolution" giving suitable examples.
    ii. What is drift? Explain different types of drifts with sketches of input-output relationships in case.
13. Draw block diagram of a closed loop system. Give an example of closed loop system. What are the advantages and disadvantages of closed loop system?
14. Write down the principle of magnetic pick-up type tachometer with the help of neat sketch. States its advantages.
15. Describe with net sketch International prototype meter (Material length standard) stating material composition and limitation.
16. Explain with a neat sketch the working principle of an electromagnetic flow meter.

B.TECH-4TH SEM-ME-PRACTICAL

PAPER NAME: PRACTICE OF MANUFACTURING PROCESSESAND SYSTEMS LABORATORY

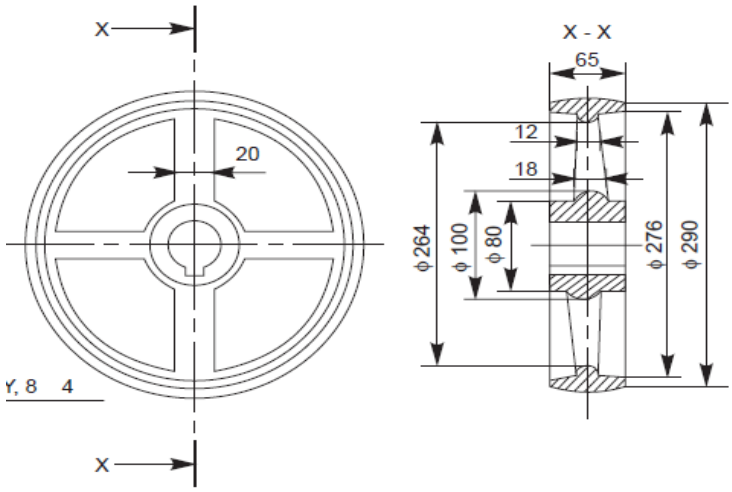
PAPER CODE: PCME491

1. Study the working of logic gates.
2. State the principle of vernier instrument. Explain briefly the construction and use of vernier caliper with a neat sketch.
3. What is an effective diameter of threads? State its significance. Explain with sketch Measurement of effective diameter by two wire method stating limitation
4. The instrument used for measuring surface texture are (i) Tomlinson surface metet (ii)Taylor Hobson Talsurf.
5. How to measure angle by universal bevel protector.
6. What is comparator? Explain its used and essential parts. What do you mean by MML and LML?
7. Draw block diagram of a closed loop system. Give an example of closed loop system. What are the advantages and disadvantages of closed loop system?
8. Explain with a neat sketch the working principle of an electromagnetic flow meter.

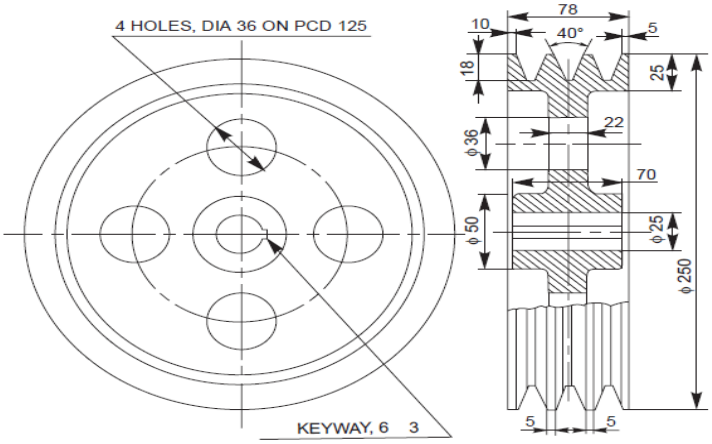
PAPER NAME: MACHINE DRAWING I

PAPER CODE: PCME492

1. Draw the following figure in first angle projection method.



2 Draw the following figure in first angle projection method.



B.TECH-4TH SEM-EE-THEORY

PAPER NAME: ELECTRIC MACHINE-I
PAPER CODE: PC-EE 401

1. Explain the construction and working principle of a DC generator.
2. Derive the EMF equation of a DC generator.
3. What are the different types of DC motors? Explain any one type in detail.
4. Explain the significance of back EMF in a DC motor
5. Explain the working principle of a transformer.
6. Derive the EMF equation of a transformer.
7. What are no-load and load conditions in a transformer? Explain with phasor diagrams.
8. Explain the equivalent circuit of a transformer and its components.

PAPER NAME: DIGITAL ELECTRONIC
PAPER CODE: PC-EE 402

1. Briefly explain the difference between the Binary, octal and decimal number system.
2. What do you mean by Efficiency of Rectification of Bridge Rectifier?
3. What is the difference between Analog signal and Digital signal?
4. Draw & Explain the circuit diagram of Flash type AD converter.
5. What do you mean by DAC & ADC?
6. Briefly explain the De-Morgan's Theorem in Digital Electronics
7. Briefly explain the operation of P-N Junction diode.
8. What do you mean by – Doping of the Semiconductor?
9. Explain Zener Breakdown & Avalanche Breakdown?
10. Briefly Explain on Digital Signal & its characteristics.

PAPER NAME: ELECTRICAL AND ELECTRONICS MEASUREMENT
PAPER CODE: PC-EE 403

1. Why secondary of C.T should not be open?
2. With neat figure explain the working of an ac potentiometer..
3. Explain type of errors in Electrical measurement.
4. How do you measure current and voltage using potentiometer?.
5. Explain the difference between Dynamometer type wattmeter and induction type wattmeter.
6. Draw the circuit diagram of a Wheatstone bridge and derive the conditions for balance.
7. What are the limitation of dual beam CRO?
8. Difference between potential transformer & current transformer.
9. Explain how insulation resistance of a cable can be measured with a help of Loss of charge method?.
10. Derive the balance equation for AC bridges.

PAPER NAME: THERMAL POWER ENGINEERING
PAPER CODE: ES-ME 401

1. What is difference between SI engine and CI engine?
2. Derive the efficiency of Otto cycle with P-V and T-S diagram.
3. Derive the efficiency of Diesel cycle with P-V and T-S diagram.
4. Write down the fuel characteristic of SI and CI engine.
5. What is the difference between water tube and fire tube boiler?
6. Derive the boiler mounting and accessories in details.
7. What is the significance of drought in boiler practice?
8. A chimney is 28 m high and the temperature of the hot gas in the chimney is 3200C. the temperature of outside air is 230C and the furnace is supplied with 15 kg of air per kg of coal burnt. Calculate draught in mm of water.
9. What is the difference between gas turbine and IC engine.
10. What is the difference between closed gas turbine and open gas turbine.

PAPER NAME: VALUES AND ETHICS IN PROFESSION
PAPER CODE: HM-EE401

1. Briefly explain the need of Engineering Ethics.
2. Explain Heinz's Dilemma.
3. What are Engineers' responsibility towards safety and risk for sustainable development?
4. What are the difference between Morals,Values and Ethics?
5. Write a note on Utilitarianism.
6. What are the Principles of Harmony?

B.TECH-4TH SEM-EE-PRACTICAL

PAPER NAME: ELECTRIC MACHINE-I LABORATORY
PAPER CODE: PC-EE 491

1. Determination of the characteristics of a separately excited DC generator.
2. Study of methods of speed control of DC motor
3. Determination of the characteristics of a DC motor
4. To determination of speed of DC series motor as a function of load torque
5. Polarity and ratio test of single phase transformers.

PAPER NAME: DIGITAL ELECTRONICS LABORATORY
PAPER CODE: PC-EE 492

1. To verify the truth tables for all logic fates – NOT, OR ,AND, NAND, NOR ,XOR and XNOR using CMOS Logic gates
2. Implement and realize Boolean Expressions with different Logic Gates
3. Implement Half Adder, Full Adder, Half Sub tractor and Full sub tractor by using different digital ICs
4. Realization of parallel and serial full-adder using ICs (IC- 74LS83)
5. To implement encoder (IC-74147), decoder (IC-74138), multiplexer (IC-74151) and demultiplexer (IC-74138).
6. Construct a Single digit Decade Counter (0-9) with 7 segment display (74LS90)
7. To construct 2 bit parity generator and checker & 2 bit comparator by using logic gates.
8. To verify the Truth Table of SR, D, JK and T Flip-flops (IC-74LS76)
9. To construct binary synchronous and asynchronous counter.
10. To design programmable up / down counter.

PAPER NAME: ELECTRICAL AND ELECTRONIC MEASUREMENT LABORATORY
PAPER CODE: PC-EE 493

1. Measurement of 3-phase reactive power using single wattmeter.
2. Measurement of 3 phases power with 2 wattmeters.
3. Calibration and testing of single phase electronic energy meter.
4. Measurement of low resistance by kelvin's double bridge
5. Measurement of medium resistance wheatstone bridge

PAPER NAME: THERMAL POWER ENGINEERING LABORATORY
PAPER CODE: ES-ME 491

1. Study of steam generators (boiler) and turbines.
2. Load test on 4 stroke petrol engine.
3. Load test to find 4 stroke of a diesel engine.
4. Heat balance test on a four – stroke diesel engine.
5. Valve timing diagram for a four stroke diesel engine

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: DISTRIBUTED SYSTEM
PAPER CODE: PEC-IT601B

1. Describe the architectural models of Distributed Systems (Client-Server, Peer-to-Peer, etc.).
2. Explain in detail the Lamport and Vector Clocks with examples.
3. What is Mutual Exclusion? Compare different mutual exclusion algorithms in Distributed Systems.
4. Explain different types of Communication in Distributed Systems (Message Passing, RPC, RMI).
5. Discuss Distributed Deadlock Detection Techniques. Discuss how data is transmitted using TCP/IP model.
6. Compare different Distributed File System models (NFS, HDFS, Google File System).

PAPER NAME: PARALLEL AND DISTRIBUTED ALGORITHMS
PAPER CODE: PEC-IT602A

1. Describe the different parallel programming models (Shared Memory, Message Passing, Data Parallel, Hybrid).
2. Explain the working of Distributed Mutual Exclusion Algorithms (Ricart-Agrawala, Maekawa's Algorithm).
3. Discuss the different parallel sorting algorithms (Parallel Merge Sort, Bitonic Sort).
4. Compare and contrast Centralized and Decentralized Load Balancing Techniques.
5. What are DAG (Directed Acyclic Graph) models in parallel computation? Explain with an example.
6. Explain the concept of Dataflow Architectures and their advantages in parallel computing.

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: PROJ-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) (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) (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 explane 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. Explane any two of them.
6. With neat sketches explain the prinicipal 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 J/kg $^\circ$ 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/mm^2 .Determine its thickness so that the maximum stress in the section does not exceed 150 MPa.
9. Desgin a jounal 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 $^\circ$ C temperature and the atmospheric temperaturic is 30^0 C. The energy dissipation coefficient is 875 W/m^2 .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 20^0 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 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 gears from the standard point of strength and check the dsign from the standpoint of wear . Take surface enduranace 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 160^0.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?
7. A centrifugal pump is to discharge 0.215 m^3/s at a speed of 1500 rpm against a head of 30m. The impeller diameter is 300mm,its width at outlet is 50mm, & manometric efficiency is 75 %. Determine the vane angle at the outer periphery of the impeller.
8. Define & explain hydraulic efficiency, mechanical efficiency & overall efficiency of a turbine.
9. Explain the specific speed of turbine. Draw the performance characteristic curve of Pelton turbine, Francis turbine, Kaplan turbine

PAPER NAME: HUMANITIES-II (OPERATION RESEARCH)
PAPER CODE: HM-HU601

1. What is Operations Research (OR)? Explain its importance and applications.
2. Explain the graphical method for solving linear programming problems with two decision variables.
3. Use the graphical method to solve the following LP problem
4. Max Z $=2x_1+x_2$
   i. Subject to the constraints i) $x_1+2x_2 \leq 10$ ii) $x_1+x_2 \leq 6$ iii) $x_1-x_2 \leq 2$
   iv) $x_1-2x_2 \leq 1$ $x_1, x_2 \geq 0$
5. Anita Electric company produces two products P_1 and P_2. Products are produced and sold on a weekly basic. The weekly production cannot exceed 25 for product P_1 and 35 for product P_2 because of limited available facilities. The company employs total of 60 workers. Product P_1 require 2 men-weeks of labour while P_2 require 1 man-week of labour. Profit margin of $P_1$is Rs.60 and on P_2 is Rs.40. Formulate this problem as an LP problem and solve that using the graphical method.
6. Use simplex method to solve the following LP problem:
   i. MaxZ=3x1+5x2+4x3 Subject to $2x_1 + 3x_2 \leq 8$
      a. $2x_2 + 5x_3 \leq 10$
      b. $3x_1 + 2x_2 + 4x_3 \leq 15$; $x_1, x_2, x_3 \geq 0$
7. Write down the Newton's backward Interpolation Formula.

B.TECH-6TH SEM-ME-PRACTICAL
PAPER NAME: MECHANICAL ENGINEERINGLABORATORY (DESIGN) II
PAPER CODE: PC-ME 691

1. To study the impact testing machine and perform the izod impact tests.
2. Why impact test is required for material testing? What is notch sensivity?
3. To study the fatigue testing machine and perform rotating beam fatigue test.
4. What is fatigue life? Write short note endurance limit.
5. To study the impact testing machine and perform the charpy impact tests.
6. What is impact energy? Write use of impact properties?

B.TECH-6TH SEM-EE-THEORY
PAPER NAME: POWER SYSTEM-II
PAPER CODE: PC-EE601

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.

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: HM601

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.

PAPER NAME: MICRO PROCESSOR & MICRO CONTROLLER
PAPER CODE: PC-EEE 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-EEE601B

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.

PAPER NAME: INDUSTRIAL ELECTRICAL SYSTEMS
PAPER CODE: PE-EEE602C

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: DATABASE MANAGEMENT SYSTEM
PAPER CODE: OE-EEE601B

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: ECONOMICS FOR ENGINEERS
PAPER CODE: HM601

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-EEE-PRACTICAL

PAPER NAME: POWER SYSTEM-II LAB
PAPER CODE: PC-EEE691

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.
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PAPER NAME: MICRO PROCESSOR & MICRO CONTROLLER LAB
PAPER CODE: PC-EEE692

1. 16-bit Arithmetic Operations for 8086 Microprocessor
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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-agorithm 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.
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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 preffered 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 80^0c. 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 height42m.is used for producing a draught of 25mm.of water. The temperatures of ambient air & flue gases are 290^0c respectively.The coal burnt in combustion chamber contains 85% carbon, 3% moisture & remaining ash.Neglecting losses & assuming the values of burnt products euquivalent to the volume of air supplied & complete combustionof 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 is30^0.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 =25^0; Speed ratio=0.8.
   Determine the available isentropic enthalpy drop in the stage.
6. A) What is necessity of coal storage? Discuss the different method s 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. 7How 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 managnment.
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 Play 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 ?
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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?
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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: ARTIFICIAL INTELLIGENCE

PAPER CODE: OE-EC804A

1. What is Artificial Intelligence? Discuss the history and evolution of AI. How does AI differ from traditional computing?
2. Describe the concept of knowledge representation in AI. Discuss different methods such as semantic networks, frames, and rule-based systems.
3. What are the different types of learning in AI? Discuss supervised, unsupervised, and reinforcement learning with examples.

4. What is natural language processing (NLP)? Discuss its various components like tokenization, stemming, and named entity recognition (NER).
5. What is an expert system? Describe its components and how expert systems are built. Discuss the role of inference engines in expert systems.
6. Discuss the various types of neural networks, including feedforward neural networks, convolutional neural networks (CNNs), and recurrent neural networks (RNNs).

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.

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PAPER CODE: HM-HU 801

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