INSTITUTE OF SCIENCE & TECHNOLOGY
ASSIGNMENT QUESTION FOR ODD SEM 2024
B.TECH- 1ST SEM-CSE- THEORY
PAPER NAME:PHYSICS-I
PAPER CODE: BS-PH-101

1. What are vectors? Describe different types of vectors.
2. Explain the basic ideas of partial differential equations.
3. What is potential energy function? Explain its physical significance.
4. What are conservative and non-conservative forces? Explain.
5. Describe the laws of conservation of energy and momentum.
6. Explain Fraunhofer diffraction at single slit, double slit, and multiple slits (only expressions for max; min, & intensity and qualitative discussion of fringes).
7. Describe Principles and Working of LASER.
8. Explain Plane Polarized Light.

PAPER NAME:MATHEMATICS
PAPER CODE: BS-M-101

1. Find the sum & product of the eigenvalues of the matrix A=$\begin{bmatrix} 2 & 1 & 2 \\ 1 & 3 & 1 \\ 2 & 1 & -6 \end{bmatrix}$

2. If A=$\begin{bmatrix} 4 & 2 & 2 \\ 2 & 4 & 2 \\ 2 & 2 & 4 \end{bmatrix}$, show that $A^2 - 10A + 16.I_3 = 0$. Hence, obtain A^{-1}.

3. Find Determine the rank of the matrix A=$\begin{bmatrix} 1 & 0 & 3 \\ 4 & -1 & 5 \\ 2 & 0 & 6 \end{bmatrix}$

4. Prove that the intersection of two subspace of a vector space V over a field F is a subspace of V.
5. Find the basis and dimension of the subspace W of R^3,where W={(x,y,z)$\in R^3$:x+2y+z=0,2x+y+3z=0}.
6. Prove that the set S={(0,11), (1,0,1), (1,1,0)} is a basis of R^3.

PAPER NAME:BASIC ELECTRICAL ENGINEERING
PAPER CODE: ES-EE-101

1. What are continuous and discrete functions? What are Fixed and Time varying Functions?
2. Explain the terms lumped and distributed networks. What are passive and active networks?
3. What are independent and dependent sources?
4. What do you understand by Step, Ramp, Sinusoidal and Square functions?
5. Explain the concept of Tree, Branch and Tree link.
6. Explain in detail the term Magnetic Coupling? What do you understand by polarity of coils?

B.TECH – 1ST SEM-CSE – PRACTICAL
PAPER NAME:PHYSICS-I LAB
PAPER CODE: BS-PH-191

1. Describe the dispersive power of the material of a prism.
2. Discuss about the procedure to determine the wavelength of a monochromatic light by Newton's ring.
3. Explain about Rydberg constant by studying hydrogen spectrum.

## PAPER NAME:BASIC ELECTRICAL ENGINEERING LAB
PAPER CODE: ES-EE- 191

1. Determination of operating characteristics of Synchronous generator (alternator).
2. Determination of resonance frequency and quality factor of series R-L-C circuit.
3. Determination of Torque –Speed characteristics of separately excited DC motor.
4. Measurement of power in a three phase unbalanced circuit by two wattmeter method.

PAPER NAME:WORKSHOP PRACTICE
PAPER CODE: ES-ME-192

1. What are common materials used for pattern making? Discuss advantages and disadvantages of wooden pattern.
2. Sketch a single point V-tool for turning operation & elaborate geometry of the said tool (HSS).
3. Differentiate between the following –
    i. Tapping and Dieing
    ii. Drilling & reaming
    iii. Counter sinking & counter boring.
4. Make pattern (wooden) for Guide block for sketch considering machining allowance on each side & others (shrinkage, contraction, draft angle) where ever necessary.
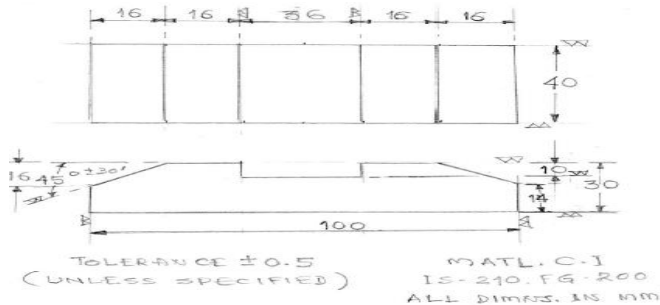
B.TECH-3RD SEM-CSE - THEORY
PAPER NAME:ANALOG & DIGITAL ELECTRONICS
PAPERCODE: ESC-301

1. Explain SOP and POS representations for logical functions. Multiply binary numbers 101.01 and 10.1.
2. Explain the working of 4-bit parallel adder using full adders.
3. Draw and explain the working of 4-bit asynchronous counter with timing diagram.
4. Explain the working of JK flip-flop and race around condition.
5. Explain the working of 3×8 decoder with circuit diagram.
6. Draw and explain the working of 4-bit shift left register with a diagram.
7. Draw and explain the logic circuit of 4×1 multiplexer.
8. Explain the operation of full-adder circuit with truth table using basic gates.
9. Draw and explain the working of clocked RS flip-flop with timing diagrams.
10. Draw and explain 4-bit 2's complement adder/subtractor.

PAPER NAME: DATA STRUCTURE & ALGORITHMS
PAPER CODE: PCC-CS-301

1. What are the different types of elementary data organizations? Describe arrays, linked lists, stacks, queues, trees, and graphs with examples of each?
2. What is the purpose of analyzing an algorithm? Why is it important to evaluate the efficiency of an algorithm? Explain with examples?

3. What do Big O (O), Big Theta (Θ), and Big Omega (Ω) notations represent in algorithm analysis? Provide examples of each notation and explain their significance?
4. What is an Abstract Data Type (ADT) for a stack? Define the key operations associated with a stack, including push, pop, peek (or top), and is Empty. Provide pseudocode for each operation?
5. Provide an example of an algorithm where a time-space trade-off is evident. How does this trade-off affect the algorithm's overall performance?
6. Compare the average-case and worst-case time complexities of linear search and binary search. Provide a detailed analysis including the number of comparisons and operations for each case?
7. Describe the operations of a simple queue and their algorithms. Discuss the time complexity of enqueue and dequeue operations in a simple queue implemented using an array or linked list?
8. Describe the algorithm for searching for an element in a singly linked list. Provide pseudocode and analyze its time complexity?
9. Describe the structure of a node in a doubly linked list. How does it differ from a singly linked list node? Include a diagram of the node structure?
10. Write algorithms for insertion, deletion, and searching in a B+ tree. Discuss the time complexity and advantages of B+ trees over B trees, particularly in database indexing and file systems.

PAPER NAME: COMPUTER ORGANIZATION
PAPER CODE: PCC-CS-302

1. How is an instruction decoded during the instruction cycle?
2. What are registers and what role do they play in a computer's architecture?
3. Describe different addressing modes used in computer architecture.
4. What are the essential components and functions of an Arithmetic Logic Unit (ALU)?
5. What is the IEEE 754 standard for floating-point representation, and what are its key features?
6. How is CPU-memory interfacing implemented in a computer system?
7. What are the key differences between static and dynamic memory?
8. What is cache memory, and how does it enhance the performance of a computer system?
9. How is the data path designed to facilitate read and write operations in a computer system?
10. Describe the restoring algorithm for fixed-point division.

PAPER NAME: MATHEMATICS-III
PAPER CODE: BSC-301

1. Solve the system of equations, by Gauss – elimination method
$$2x_1 + 3x_2 + x_3 = 9$$
$$x_1 + 2x_2 + 3x_3 = 6$$
$$3x_1 + x_2 + 2x_3 = 8$$
2. Find Fourier sine transform of e^{-ax} /x.
3. If there is a war every 15 years on average then find the probability that there will be no war in 25 years .
4. Find the Laplace transform of $4\cos^2 2t$.
5. Show that $p(AB) \geq P(A) + P(B) - 1$.
6. Write down the Newton's backward Interpolation Formula

PAPER NAME: ECONOMICS FOR ENGINEERS
PAPER CODE: HS-MC-301

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-3RD SEM-CSE – PRACTICAL
PAPER NAME:ANALOG & DIGITAL ELECTRONICS LAB
PAPER CODE: ES-CS-391

1. Implement and verification of decoder/de-multiplexer and encoder using logic gates.
2. Implement of 4x1 multiplexer using logic gates.
3. Implement of 4-bit parallel adder using 7483 IC.
4. Design and verify the 4-bit synchronous counter.
5. Design and verify operation of half adder and full adder.
6. Implement RS, JK, T and D flip-flops using NAND & nor gates.
7. Design and verify NAND as a universal gate.

PAPER NAME:DATA STRUCTURE & ALOGORITHM LAB
PAPER CODE: PCC-CS-391

1. How do you implement insertion, deletion, searching, and updating operations on arrays? Provide code examples and analyze the time complexity of each operation.
2. How do you implement insertion, deletion, and inversion operations in a singly linked list? Provide code examples and analyze the time complexity of each operation.
3. How do you implement recursive and non-recursive traversals (in-order, pre-order, post-order) for binary trees? Provide code examples and discuss the differences between the two approaches.
4. Implement a stack using a singly linked list. Write functions for push, pop, and peek.
5. Implement binary search on a sorted array. Write a function to find an element in the array.
6. Write a function to hash a key and handle collisions in a hash table.
7. Implement in-order, pre-order, and post-order traversals of a binary tree using recursion.

PAPER NAME:COMPUTER ORGANISATION LAB
PAPER CODE: PCC-CS-392

1. Implement the 8-to-3 encoder on a test board and provide different active inputs. Verify the outputs against the expected results from the truth table.
2. Design a 4-bit binary adder using full adders.
3. Design a simple ALU capable of performing basic arithmetic operations (addition, subtraction) and logic operations (AND, OR).
4. Design a 4-bit Carry-Look-Ahead Adder (CLA) circuit.
5. Design a system to cascade two 8-bit RAM ICs to increase the data bus width to 16 bits.
6. Design a memory interface circuit that can read from and write to a memory module. Verify correct data transfer.
7. Design a 2-to-4 decoder. Verify its functionality with various input values.

PAPER NAME:IT WORKSHOP
PAPER CODE: PCC-CS-393

1. Write a Python script that uses a while loop to print numbers from 1 to 10.
2. Write a Python script that uses nested loops to print a multiplication table (e.g., 1x1 to 10x10).
3. Write a Python script that uses built-in string methods such as strip(), replace(), find(), and upper().
4. Write a Python script that creates a list of different data types and accesses its elements using indexing and slicing.
5. Write a Python script that demonstrates the use of list methods such as append(), extend(), pop(), and remove().
6. Write a Python script that demonstrates the use of tuple methods such as count() and index().
7. Write a Python script that demonstrates the use of global and local variables within functions.
8. Write a Python script that imports the math and random modules and uses functions from each module.

B.TECH-3RD SEM-CE - THEORY
PAPER NAME:BIOLOGY FOR ENGINEERS
PAPER CODE: CE(BS)301

1. Explain the concept of taxonomic hierarchy.
2. Write a short note on gene mapping
3. Explain the process of glycolysis
4. Write a short note on first and second law of thermodynamics.
5. Discuss two mechanism of enzyme action.
6. Write down the difference between prokaryotes and eukaryotes.
7. Write the difference between Mitosis and Meiosis.
8. Explain the different process of sterilization.
9. Explain the process of Krebs cycle.
10. Explain the process of recombinant DNA technology

PAPER NAME:ENGINEERING MECHANICS
PAPER CODE: CE(ES)301

1. Two forces of 100 N and 150 N are acting simultaneously at a point. What is the resultant of these two forces, if the angle between them is 45^0
2. Two forces act at an angle of 120^0.The bigger force is of 40 N and the resultant is perpendicular to the smaller one. Find the smaller force.
3. Find the magnitude of the two forces, such that if they act at right angles, their resultant is $\sqrt{10}$ N. But if they act at 60^0, their resultant is $\sqrt{13}$ N.
4. Find the centre of gravity of a channel section 100mm x 50mm x 15mm.
5. Find the centre of gravity of a T section with flange 150mmx10mm and web also 150mm x10mm.
6. A body consists of a right circular solid cone of height 40mm and radius 30mm placed on a solid hemisphere of radius 30mm of the same material. Find the position of centre of gravity of the body.
7. Find the moment of inertia of a T-section with flange as 150mm x50mm and web as 150mm x50mm about X-X and Y-Y axes through the centre of gravity of the section.
8. A body, resting on a rough horizontal plane, required a pull of 180 N inclined at 30 degree to the plane just to move it . It was found that a push of 220N inclined at 30 degree to the plane just move the body. Determine the wt. of the body and the coefficient of friction.
9. Discuss about i) Parallelogram law of forces, ii) LamisTheorem.iii) Varignon"s principle of moments
10. What is Force. Write down the system of forces and describe it.

PAPER NAME:ENERGY SCIENCE & ENGINEERING
PAPER CODE:CE(ES)302

1. Explain how energy can be classified?
2. Write a short note on Fossil Fuels .
3. Write the advantages and disadvantages of geothermal energy.
4. Write a short note on Biomass Energy .
5. What are the sources of Nuclear Power?
6. Write the advantages and disadvantages of Nuclear energy.
7. Write a short note on Energy stored in Chemical Bonds ?
8. What are the application of solar energy ?
9. Explain cycles in Ecosystem.
10. What are the sources of energy .

PAPER NAME:MATHEMATICS-III
PAPER CODE:CE(BS)302

1. Using principle of inclusion and exclusion, show that for any three sets A, B, and C, n(A U B U C) = n(A) + n(B) + n(C), if they are pairwise mutually disjoint
2. Describe Prims algorithm.
3. Prove that a simple graph with n number of vertices and k number of components can have maximum $\frac{(n-k)(n-k+1)}{2}$ number of edges
4. .Find the minimum and maximum number of edges of a simple graph with 9 vertices and 4 components
5. Prove that in a tree there is one and only one path between every pair of vertices.

PAPER NAME:HUMANITIES-I
PAPER CODE: CE(HS)301

1. What are the main features of technical communication?
2. Differentiate between soft skills and hard skills.
3. What is report? Mention the parts or elements of formal report.
4. Differentiate between Letter and Memo.
5. Write a short note on Leaflets.
6. Write in brief the characteristics of Effective Technical Communication.
7. Differentiate between general and technical communication.
8. Write a job application for the post of "Junior Engineer" to the HR in an MNC. Attach your CV.

PAPER NAME:INTRODUCTION TO CIVIL ENGINEERING
PAPER CODE:CE(HS)302

1. Discuss about the Geological classification of rocks with example.
2. Discuss about different type of important building stones.
3. How does the architecture play a crucial role in civil engineering?
4. a) What is void ratio and porosity of soil? What are the range of these two parameters?
   b) Write down short notes about various types of foundation with neat sketch. Such as, Isolated foundation, Combined foundation, Raft foundation, Grillage foundation, Pile foundation.
5. Discus about different type of special type of brick.
6. Write down short note about the structure and function of a dam.
7. What are turbidity, hardness and chlorination of water?
8. a) What are the key ingredients of a brick? What is kneading?
   b) What is plain, reinforced and prestressed concrete? Give examples of these.
   c) What is shoring in construction? Which member of a building takes the bending moment? What is foundation?
9. Why is civil engineering so important in human life? What are the possible scopes of career?
10. What is void ratio and porosity of soil? What is the range of these two parameters?

B.TECH-3RD SEM-CE – PRACTICAL
PAPER NAME:BASIC ELECTRONICS
PAPER CODE:CE(ES)391

1. Draw and explain the operating principles of CE Configuration of BJT.
2. Briefly explain the operation of a Rectifier with neat sketch.
3. State the operations of Energy-Bands in the Semiconductor. What do you mean by Rectification Efficiency?
4. Draw & Explain the circuit diagram of Full-Wave rectifier.
5. With the help of necessary diagram, explain the operations of Clipping & Clamping circuit
6. Draw the V-I characteristic of a Zener-Diode & explain.

1. Write down the full form of auto CAD? Discuss about the different type of functions key.
2. Discuss about the following command.
   i) offset ii)Copy iii) Mirroriv) Rectangle v) Stretch vi) Block vii) polygon viii) fillet

PAPER NAME:LIFE SCIENCE
PAPER CODE: CE(ES)393

1. How new plant development by tissue culture.
2. Explain mean, mode, median and standard deviation with an example.
3. Explain the process of DNA replication.
4. Write a short note on Ecosystem.
5. Mention Briefly about greenhouse effects.

B.TECH-3RD SEM-ME - THEORY
PAPER NAME:BIOLOGY
PAPER CODE: BS-BIO301

1. Explain the concept of taxonomic hierarchy.
2. Write a short note on gene mapping
3. Explain the process of glycolysis
4. Write a short note on first and second law of thermodynamics.
5. Discuss two mechanism of enzyme action.
6. Write down the difference between prokaryotes and eukaryotes.

PAPER NAME:MATHEMATICS-III
PAPER CODE:BS-M301

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. If there is a war every 15 years on the average ,then find the probability that there will no war in 25 years .
4. Slove $(D^2+4)y=\sin x$.
5. Solve $(x^2 y - 2xy^2)dx + (3 x^2 y - x^3)dy = 0$.

PAPER NAME:BASIC ELECTRONICS ENGINEERING
PAPER CODE:ES-ECE301

1. What is Semiconductor ? Explainits characteristics.
2. Briefly explain the operation of a Full wave rectifier.
3. What do you mean by ZENERDiode as a voltage regulator ?
4. Briefly describe about MOSFET and CMOS.
5. Draw the characteristic of a PIN Photo-Diode & explain.
6. What is the importance of OP-AMP ? Explain briefly
7. Explain the operation of a ENCODER,DE-CODER,FLIP-FLOPS,MULTIPLEXOR & DE-MULTIPLEXOR.
8. What are the difference & advantages & Disadvantages of Intrinsic & Extrinsic semiconductor?
9. Explain the process of Doping of semiconductor.
10. What is Bridge Rectifier? Explain briefly.
11. Explain the operating principle of BJT & JFET.
12. What is the characteristic of a basic communication system ? Explain briefly.

1. Given initial velocity v_0 & angle of projection Θ of a projectile. Find the equation that defines y as a function of x. Eliminate time from the kinematic equation State and prove varignon's Theorem of coplanar forces.
2. An I- section has the following dimensions in mm units.

   Bottom flange   = 350x100

   Top flange   = 250x50

   Web   = 300x50

   Determine the moment of inertia of the I-section about centroidal x-x axis Passing through its centreoid& parallel to base.
3. Describe the following
   - i. Cone friction
   - ii. Angle of repose
   - iii. A body resting on a rough horizontal plane, required a pull of 200N inclined at 30^0 to the plane just to move it.It was found that a push of 250 N inclined at 30^0 to the plane just to move it. Determine the weight of the body & the co-efficient of friction.
4. Two bodies weighing 300N & 450N are hung to the ends of a rope passing over an ideal pulley. How much distance the blocks will move in increasing the velocity of system from 2m/s to 4m/s? how much is the tension in the string? Use work energy method.
5. Define moment. Calculate moment of inertia of a quadrant of a circle.
6. What do you mean by the term
   - i. Centre of gravity
   - ii. Moment of inertia
   - iii. Transmissibility of a force
7. State and prove
   - i. Lami,s theorem.
   - ii. Polygon law of forces.
8. A bullet is fired from a height of 20m at a velocity of 60 kmph at an angle of 30^0 upward Neglecting air resistance, find
   - i. Total time of flight
   - ii. Horizontal range of the bullet
   - iii. Maximum height reached by the bullet, and
   - iv. Final velocity of the bullet just before touching the ground.
9. A uniform ladder of weight 350N rests with its upper end against a smooth vertical wall & its foot on the rough horizontal ground making an angle of 45^0 with the ground. Find the force of friction of the ground using the method of virtual work.

1. Discuss the concept of continuum in thermodynamics.
2. Show that work is a path function and not the property of system.
3. Derive the expression for the work done for closed system for all possible proceses.
4. What do you mean by Air-standard cycle? What are the assumptions for the air standard cycles?
5. Derive the expressions for thermal efficiency for Rankine Cycle.
6. A) A mass of 1.5 kg of air is compressed in a quasi-static process from 0.1MPa to 0.7 MPa for which pv= constant. The initial density of air is $1.16kg/m^3$. Find the work done by the piston to compress the air.

   B) A mass of gas is compressed in a quasi-static process from 80 kPa, 0.1 m^3 to 0.4 MPa, 0.03 m^3. Assuming that the pressure and volume are related by pv^n= constant, find the work done by the gas system.

7. In a reheat cycle, the initial steam pressure and the maximum temperature are 150 bar and 550°C respectively. If the condenser pressure is 0.1 bar and the moisture at the condenser inlet is 5%, and assuming ideal processes, determine (a) the reheat pressure, (b) the cycle efficiency, and (c) the steam rate.
8. In a reheat cycle steam at 550°C expands in an h.p. turbine till it is saturated vapour. It is reheated at constant pressure to 400°C and then expands in aI.p. turbine to 40°C. If the moisture content at turbine exhaust is given to be 14.67%, find (a) the reheat pressure, (b) the pressure of steam at inlet to the h.p. turbine, (c) the net work output per kg, and (d) the cycle efficiency. Assume all processes to be ideal.
9. Using an engine of 30% thermal efficiency to drive a refrigerator having a COP of 5, what is the heat input into the engine for each MJ removed from the cold body by the refrigerator? If this system is used as a heat pump, how many MJ of heat would be available for heating for each MJ of heat input to the engine?
10. Two reversible heat engines A and B are arranged in series, A rejecting heat directly to B. Engine A receives 200 kJ at a temperature of 421°C from a hot source, while engine B is in communication with a cold sink at a temperature of 4.4°C. If the work output of A is twice that of B, find
    (i) The intermediate temperature between A and B.
    (ii) The efficiency of each engine.
    (iii) The heat rejected to the cold sink.
11. Two kg of water at 80°C are mixed adiabatically with 3 kg of water at 30°C in a constant pressure process of 1 atmosphere. Find the increase in the entropy of the total mass of water due to the mixing process (c_p of water = 4.187 kJ/kg K).
12. Two bodies of equal heat capacities C and temperatures $T1$ and $T2$ form an adiabatically closed system. What will the final temperature be if one lets this system come to equilibrium (a) freely? (b) Reversibly? (c) What is the maximum work which can be obtained from this system

# PAPER NAME:MANUFACTURING PROCESSES
PAPER CODE:PC-ME302

1. a) Define cutting speed, feed and depth of cut including their units in case of shaping machine.
   b) Find the time required on a shaping machine for completing one cut on a plate 200mmx300mm if the cutting speed is 10mm**/** unit. The return to cutting time ratio is 2:3. Assume approach =50mm, over travel =25mm, allowance on either side of the plate width =5mm and feed/ cycle = 1mm.Explain various types of chips.
2. Define rake angle , clearance angle , cutting edge angle, inclination angle and nose radius.
3. How to specify a lathe. Describe various lathe parts.
4. Proved $\gamma_x=\gamma_o=\gamma_n$ where γ_x = side rake, γ_0= orthogonal rake. γ_n= normal rake.
5. a) Draw and levelling geometry of drilling cutter.
   b) Find the time required on a shaping machine for completing one cut on a plate 200mmx300mm if the cutting speed is 10mm**/** unit. The return to cutting time ratio is 2:3. Assume approach =50mm, over travel =25mm, allowance on either side of the plate width =5mm and feed/ cycle = 1mm.
   c) What are the different between up milling and down milling.
8. a) How is tool life defined? State the factor effecting tool life.
   b) Explain briefly the term cutting speed, feed and depth of cut.
     c)different between orthogonal cutting and oblique cutting.
7. a) Explain briefly varies tool wear.
   b) State the factor on which the value of shear angle depend.
   c) During state turning of a 24 mm diameter of steel bar at 300 rpm with an HSS tool, a tool life of 9 min. was obtained. When the same bar was turned at 250 rpm the tool life increase to 48.5 min. what will be the tool life at 280 rpm?
8. A) Describe varies characteristic of cutting tool material.
   b) Explain various function of cutting fluid.
   c) Give the specification of lathe.
9. a) With neat sketches describe up milling and down milling.
   b) Calculation cutting time for cutting 250mm long key way using end mill of 40mm diameter having 10 cutting teeth. The depth of key way is 6.5 mm, feed/ tooth is 0.25 and cutting speed is 48mm /min.

Assume approach and over travel distance as half of the diameter of the cutter and a depth of cut 5.2mm/pass.

10. a) Specify the 250x25x27WA46L4V17 notation of a grinding wheel.
    b) compare between internal and external center less grinding.
    c) Describe various types of bond used in grinding wheel.

B.TECH-3RD SEM-ME – PRACTICAL
PAPER NAME:PRACTICE OF MANUFACTURING PROCESSES
PAPER CODE:PC-ME391

1. Name and explain four operations that can be performed on a lathe machine. Write function of lead screw and feed rod of a lathe machine.
2. Explain working principle of lathe machine. Explain the term cutting speed, feed, depth of cut, in relation to turning.
3. To prepare job by lathe machine figure given below.
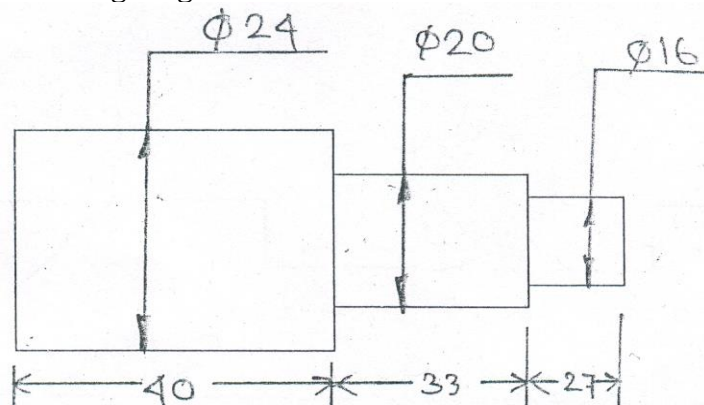
4. Why are welding positions so important in butt welding? What are the different position consider as most important. State the difference between AC welding and DC welding.
5. Write short note any two
       I.   Welding cables
       II.   Electrode holder
       III. Ground clamp
       IV.   Touch and with draw
6. To prepare corner joint by electric arc welding.

B.TECH-3RD SEM-EE - THEORY
PAPER NAME:ELECTRIC CIRCUIT THEORY
PAPER CODE:PC-EE 301

1. State Maximum Power Transfer Theorem. Explain it.
2. State Thevenin's theorem. Explain it.
3. State Norton's Theorem. Explain it.
4. State Superposition Theorem. Explain it.
5. State Millman's Theorem. Explain it.

PAPER NAME:ANALOG ELECTRONICS
PAPER CODE:PC-EE 302

1. What is the importance of Diode? Briefly explain.
2. Explain the operation of Field Effect transistor.
3. Write short note on Crystal oscillator.
4. Differentiate between BJT & FET.
5. What are the differences between the Half wave Rectification over Full wave Rectification?

PAPER NAME:ELECTROMAGNETIC FIELD THEORY
PAPER CODE:PC-EE 303

1. Describe the circular cylindrical coordinate system and spherical polar coordinate system.
2. Explain the differential length, area and volume in Cartesian coordinate systems.
3. Discuss about Laplace's and Poisson's Equation in Electrostatics.
4. Describe Biot- savart law and Ampere's circuital law in magnetostatics.
5. What is Faraday's law of Electromagnetic Induction? Discuss the principle of transformer and motional-emf?

PAPER NAME:ENGINEERING MECHANICS
PAPER CODE:ES-ME 301

1. Define moment. Calculate moment of inertia of a quadrant of a circle.
2. What do you mean by the term Centre of gravity & Transmissibility of a force.
3. State and prove Lami's Theorem.
4. State and prove Polygon law of forces.
5. Describe the following coulomb friction & Angle of friction.

PAPER NAME:MATHEMATICS-III
PAPER CODE:BS-M 301

1. Find Fourier sine transform of e^{-ax} /x.
2. Write down the Newton's forward Interpolation Formula. Explain It.
3. Find the Laplace transform of $4\cos^2 2t$.
4. Show that $p(AB) \geq P(A) + P(B) - 1$.
5. Write down the Newton's backward Interpolation Formula. Explain It.

PAPER NAME:BIOLOGY FOR ENGINEERS
PAPER CODE:BS-EE301

1. Explain the concept of taxonomic hierarchy.
2. Write a short note on gene mapping.
3. Explain the process of glycolysis.
4. Write a short note on first and second law of thermodynamics.
5. Discuss two mechanism of enzyme action.

B.TECH-3RD SEM-EE – PRACTICAL
PAPER NAME:INDIAN CONSTITUTION
PAPER CODE:MC-EE 301

1. Describe the fundamental rights & duties in Indian Constitution.
2. Difference between Fundamental right and duties.
3. Describe the power & function of president as per Indian Constitution.
4. Discuss the role & functions of the collector in a district administration.
5. Write the importance of municipalities in the local administration.

PAPER NAME:ELECTRIC CIRCUIT THEORY LABORATORY
PAPER CODE:PC-EE 391

1. Transient response of R-L and R-C network: simulation with software & hardware
2. Transient response of R-L-C series and parallel circuit: simulation with software & Hardware.
3. Determination of Impedance (Z) and Admittance (Y) parameter of two-port network: simulation & hardware.
4. Frequency response of LP and HP filters: simulation & hardware.

PAPER NAME:ANALOG ELECTRONICS LABORATORY
PAPER CODE:PC-EE 392

1. Study of ripple and regulation characteristics of full wave rectifier with and without capacitor filter.
2. Study of Zener diode as voltage regulator.
3. Study of characteristics curves of B.J.T & F.E.T .
4. Construction of a two-stage R-C coupled amplifier & study of it's gain & Bandwidth.

PAPER NAME:NUMERICAL METHODS LABORATORY
PAPER CODE:PC-CS 391

1. Find the $\sqrt{17}$ using Newton Raphson method.
2. Find the root of the equation 3x = 1+cosx using bisection method.
3. Find the root of the equation 2x-logx10 = 7 using Iteration method.
4. Show that Real parts of an analytic function satisfies Laplace equation.
5. Write a formula for trapezoidal rule.