# **INSTITUTE OF SCIENCE & TECHNOLOGY**

## ASSIGNMENT QUESTIONS B.TECH-1ST SEM THEORY GROUP-A : CE+ME+CSE+IT GROUP-B : ECE+EE+EEE+AEIE

#### PAPER NAME : PHYSICS-I PAPER CODE : BS-PH-101(For Gr. A)

- 1. What do you understand by the potential energy function V? What are equipotential surfaces?
- 2. Explain the law of conservation of energy and momentum for a mechanical system.
- 3. What are conservative and non-conservative forces?
- 4. Describe the damped and forced oscillation and resonance .
- 5. Explain the phenomenon of interference of light waves.

#### PAPER NAME : CHEMISTRY-I PAPER CODE : BS-CH-101(For Gr. B)

- 1. Deduce schrodinger wave equation.
- 2. Calculate the bond order of  $O_2$ ,  $O_2^+$ ,  $O_2^-$
- 3. Draw Pi-molecular orbital diagram of butadiene molecule.
- 4. Calculate the magnetic moment of  $Mn^{2+}$  system.
- 5. Explain why  $N_2$  molecule is diamagnetic but  $O_2$  molecule is paramagnetic?

#### PAPER NAME : MATHEMATICS PAPER CODE: BS-M101–IA (For CSE & IT)



1. Find the rank of a matrix  $\begin{bmatrix} 1 & 1 & 0 & 1 \end{bmatrix}$ 

$$=\begin{bmatrix} 1 & -2 & 2 \\ 2 & -3 & 6 \\ 1 & 1 & 7 \end{bmatrix}$$

2. Find inverse of **1** 

-2 1 1 -6 1 3

3. Find the eigen values and eigen vectors of the matrix l-12 -2 8.

- 4. Find the rank of  $\begin{bmatrix} 1 \\ 1 \end{bmatrix}$
- 5. Show that  $\sqrt{3}$  is not a rational number.

#### **NAME : MATHEMATICS**

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PAPER CODE: BS-M102-1B (All stream except CSE & IT)

1. Find the rank of a matrix \begin{bmatrix} 1 & 0 & 1 & 0 \\ 2 & 1 & 1 & 1 \\ 1 & 1 & 0 & 1 \end{bmatrix}.

2. Find inverse of \begin{bmatrix} 1 & -2 & 2 \\ 2 & -3 & 6 \\ 1 & 1 & 7 \end{bmatrix}.
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$$-2$$
 1 1  
 $-6$  1 3

3. Find the eigen values and eigen vectors of the matrix  $\begin{bmatrix} -1 & -2 & 3 \\ -12 & -2 & 8 \end{bmatrix}$ 

-1	2	-1	0	
2	4	4	2	
0	0	1	5	
1	6	3	2	

- 4. Find the rank of  $L^{\perp}$
- 5. Show that  $\sqrt{3}$  is not a rational number.

#### PAPER NAME: BASIC ELECTRICAL ENGG.-I 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 in detail the term Magnetic Coupling? What do you understand by polarity of coils?

## B.TECH-1ST SEM -PRACTICAL PAPER NAME : PHYSICS-I LAB

#### PAPER CODE : BS-PH-191 (For Gr. A)

- 1. Discuss the dispersive power of the material of a Prism.
- 2. Explain the phenomenon of Newton's Ring formation for a particular wavelength of incident light wave.
- 3. Discuss the interference pattern in Fresnel's bi-prism.
- 4. Explain Hall effect of a Semiconductor with a particular Hall Coefficient by four probe method.
- 5. Discuss the specific charge (e/m) of electron by JJ Thomson method

## PAPER NAME : CHEMISTRY-I LAB PAPER CODE : BS-CH-191(For Gr. B)

- 1. Define alkalinity of water. Name two acid-base indicators.
- 2. Write down the theory of conductometric titration of strong acid against strong base.
- 3. Define conductance. Draw the conductometric titration curve of strong acid against strong base.
- 4. Define pH. Write down the theory of pH-metric titration.

### PAPER NAME : BASIC ELECTRICAL ENGINEERING LAB PAPER CODE : BS-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 : ENGINEERING GRAPHICS & DESIGN PAPER CODE : ES-ME-192 (For Gr. B)

- 1. A room of building of 1000 m3 volume is represented by a similar block of 125 cm3 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 600 to V.P. and its surface making angle of 450 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 : WORKSHOP PRACICE**

## PAPER CODE : ES-ME-191 (For Gr. A)

1. What are common materials used for pattern making? Discuss various types of wood cutting tools.

- 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 Describe the process of submerged arc welding stating its advantages and limitations. Discuss the method of underwater welding. What are its advantages and disadvantages?
- 5 Discuss, with the help of neat sketch, the principle of spot welding. Describe various Drilling machine parts.

#### B.TECH-3RD SEM-CSE- THEORY PAPER NAME: ANALOG & DIGITAL ELECTRONICS PAPER CODE: ESC-301

- 1. What is the importance of Operational Amplifier?
- 2. Explain the operation of shunt voltage regulator using transistor.
- 3. Write short note on class B Amplifier.
- 4. Draw the circuit of OPAMP.
- 5. Draw the circuit of monostable multivibrator using. What is the duty cycle of a monostable multivtibrator?

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

- 1. Difference between Von Neumann and Harvard Architecture.
- 2. Differences between Computer Architecture and Computer Organization..
- 3. What are Computer Organization and Architecture?
- 4. Defines the Types of Locality of reference?
- 5. What is Cache Memory? Explain with example.

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

- 1. Analyse the basic operational concepts of computer.
- 2. Compare RISC and CISC architectures.
- 3. Model the flowchart for Booths multiplication algorithm.
  - 4. List out the advantages and disadvantages of micro programmed control.
- 4. Briefly explain the concept of cache memory.

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

1. Find the maxima and minimum value of the function

$$\cos(x-\pi/6)\cos(x+\pi/6)$$
 where  $0 \le x \le \pi$ .

- 2. Every infinite bounded sequence of real numbers has at least one cluster point.
- 3. Verify the validity of the statement  $\lim_{x \to 2} 5x = 10$

4. Evaluate  $\iint \sin(x+y) dxdy$  over  $R: \{0 \le x \le \pi/2, 0 \le y \le \pi/2, x \le \pi/2, 0 \le y \le \pi/2, x \le \pi/$ 

5. Show that f(x)=sinx is continuous for all values of x. What about the continuity of cosx for all real values of x

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

- 1. What is inflation? Differentiate inflation and deflation. Discuss various causes and effects of inflation.
- 2. Explain decision making process in details. Discuss any one estimating model.
- 3. What are the advantages and disadvantages of Net Present Value, Internal Rate of Return, Pay Back Period, Accounting Rate of Return and Profitability Index?

- 4. Define Time Value of Money. Discuss its importance. List out different types of engineering costs.
- 5. What are the difference between risk and return? Give examples of indirect and direct cost and also state their differences.

#### B.TECH-3RD SEM-CSE – PRACTICAL PAPER NAME: DATA STRUCTURE & ALOGORITHM LAB PAPER CODE: PCC-CS-391

- 1. Types of Data Structures and give examples?
- 2. Differentiate Array and Linked List?
- 3. What is Tree Traversal? List different Tree Traversal Techniques?
- 4. Write down the Time complexities of Sorting Techniques.
- 5. Comparison between Quick Sort and Heap Sort?

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

- 1. Implement adder circuits using basic gates.
- 2. Implement the converter circuits using basic gates.
- 3. Implement the working of Multiplexer by using IC 74153.
- 4. Implement the various circuits for ALU, data path and control units.
- 5. Design to 2:4 Decoder

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

- 1. What are different applications of Python? Give examples.
- 2. List and explain different arithmetic operators supported by Python.
- 3. Discuss about their precedence and associatively.
- 4. Write a Python program to print all prime numbers less than 256.
- 5. What are regular expressions? How to find whether an email id entered by user is valid or not using Python're' module.

#### PAPER NAME: ANALOG & DIGITAL ELECTRONICS LAB PAPER CODE: ESC-391

- 1. Explain the characteristics of full wave rectifier circuit & draw the necessary waveform.
- 2. Briefly explain the characteristics curves of FET with necessary Diagram.
- 3. Explain the input & output characteristics BJT for CE, & CC configuration with neat sketch.
- 4. Draw and explain the basic Logic gates & universal logic gates.

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

- 1. Determine the condition of Reciprocity and Symmetry in Z-parameter representation.
- 2. Calculate the different parameters in h- parameter representation.
- 3. State the Superposition theorem. Explain the steps to solve a problem using this theorem.
- 4. State the Norton's theorem.
- 5. Explain the mesh analysis to find the loop currents in a circuit.
- 6. Explain KVL & KCL with proper example.

## PAPER NAME : ANALOG ELECTRONICS PAPER CODE: PC-EE / EEE-302

- 1. What is the importance of bleeder resistance?
- 2. Explain the operation of shunt voltage regulator using transistor.
- 3. Write short note on colpitt oscillator.
- 4. Draw the circuit of current to voltage converter using OPAMP.
- 5. Draw the circuit of monostable multivibrator. What is the duty cycle of a monostable multivtibrator?

6. What are the differences between the Astable & Bi stable multivibrator?

#### PAPER NAME: ELECTROMAGNETIC FIELD THEORY PAPER CODE: PC-EE/EEE-303

- 1. Find the directional derivative of  $\mathbf{0} = \mathbf{x}^2 \mathbf{y}\mathbf{z} + 4\mathbf{x}\mathbf{z}^2$  at (1,-2,-1) along the direction  $\mathbf{2}\mathbf{i} \mathbf{j} 2\mathbf{k}$ .
- 2. What is diamagnetic material? Derive Langevin's formula for the molecular diamagnetic susceptibility. Why diamagnetic susceptibility is negative?
- 3. What do you mean by Larmor Precession? Define magnetization and show that  $\vec{B} = \mu_* (\vec{H} + \vec{M})$ , the symbols have their usual significance.
- 4. An ac voltage source is connected across the two plates of an ideal parallel plate capacitor. If the applied ac voltage V= V<sub>0</sub> sin *w*t, then verify that the displacement current in the ideal capacitor is equal to the conduction current through the wire.
- 5. Distinguish between polar and axial vector with example.

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

- 1. Given initial velocity v0 & angle of projection  $\theta$  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. Determine the horizontal force P to be applied to a block weighing 2500N to hold it in position, the inclined plane is smooth & makes 300with the horizontal.
- 3. An I- section has the following dimensions in mm units.

Bottom flange	$= 350 \times 100$
Top flange	= 250x50
Web	$= 300 \times 50$

Determine the moment of inertia of the I-section about centroidal x-x axis

Passing through its centreoid & parallel to base.

- 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.

### 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?
- 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. The random variable X is uniformly distributed in (0,1). Find the distribution of Y =-log x

$$\geq 1 - \frac{P(B)}{P(A)}$$
 in general.

5. Prove that p(B/A)

### PAPER NAME: BIOLOGY FOR ENGINEERS PAPER CODE: BS-EE/EEE-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.

#### PAPER NAME : INDIAN CONSTITUTION PAPER CODE: MC-EE/EEE-301

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

## **B.TECH-3RD SEM - EE & EEE – PRACTICAL**

#### PAPER NAME: ELECTRIC CIRCUIT THEORY LAB PAPER CODE: PC-EE/EEE-391

- 1. Transient response in R-L and R-C Network: Simulation/hardware
- 2. Transient response in R-L-C Series & Parallel circuits Network: Simulation/hardware
- 3. Determination of Impedance (Z) and Admittance(Y) parameters of two port network
- 4. Frequency response of LP and HP filters
- 5. Frequency response of BP and BR filters

#### PAPER NAME : ANALOG ELECTRONICS LAB PAPER CODE: PC-EE / EEE-392

- 1. Explain the characteristics of full wave rectifier circuit & draw the necessary waveform.
- 2. Briefly explain the characteristics curves of FET with necessary Diagram.
- 3. Explain the input & output characteristics BJT for CE, & CC configuration with neat sketch.
- 4. Explain the characteristics of full wave rectifier circuit & draw the necessary waveform.

#### PAPER NAME : NUMERICAL METHODS LAB PAPER CODE: PC-CS-391

- 1. Write a C program to implement Newton forward interpolation.
- 2. Write a C program to implement Trapezoidal rule where f(x) = (1 / (1 + x \* x)).
- 3. Write a C program to implement Gauss Elimination.
- 4. Write a C program to implement Gauss Seidel method.

## B.TECH-3RD SEM-AEIE - THEORY PAPER NAME : MATHEMATICS-III PAPER CODE: BS-M-301

- 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. The random variable X is uniformly distributed in (0,1). Find thtet dtisribution of Y =-log x

5. Prove that  $p(B/A) \ge 1 - \frac{p(B)}{p(A)}$  in general.

#### PAPER NAME : NETWORK ANALYSIS PAPER CODE: PC-EI-301

- 1. Determine the condition of Reciprocity and Symmetry in Z-parameter representation.
- 2. Calculate the different parameters in h- parameter representation.
- 3. State the Superposition theorem. Explain the steps to solve a problem using this theorem.
- 4. State the Norton's theorem.
- 5. Explain the mesh analysis to find the loop currents in a circuit.

## PAPER NAME : SENSORS AND TRANSDUCERS

### PAPER CODE: PC-EI-302

- 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 WSN?
- 5. Explain working principle with neat diagram for flow measurement using Pitot tube.

## PAPER NAME :ANALOG INTIGRATED CIRCUIT PAPER CODE: PC-EI-303

- 1. What is the importance of Operational Amplifier?
- 2. Explain the operation of shunt voltage regulator using transistor.
- 3. Write short note on class A Amplifier.
- 4. Draw the circuit of OPAMP.
- 5. What is the duty cycle of a Monostable Multivtibrator?

#### PAPER NAME : DIGITAL ELECTRONIC CIRCUITS PAPER CODE: PC-EI-304

- 1. Draw the circuit diagram of D/A converter. Explain Flash type ADC with neat sketch.
- 2. Briefly explain the Duality statement in Digital-Electronics.
- 3. Write a short note on: 2's complement.
- 4. What is the difference between Logic symbol and truth table of the different logic gates?
- 5. Briefly explain the difference between the decimal and hexa-decimal number system.

# PAPER NAME : ENVIRONMENTAL SCIENCE

#### PAPER CODE: MC-ES-301

- 1. What is environmental degradation? How can it be prevented?
- 2. Discuss in details the energy resources
- 3. Discuss the basic concepts related to environmental perspective.
- 4. Describe the different laws of limiting factors.
- 5. Describe nitrogen cycle with block diagram.
- 6. Describe the energy flow in the ecosystem.

#### B.TECH-3RD SEM-AEIE - PRACTICAL PAPER NAME : CIRCUIT & NETWORK LAB PAPER CODE: PC-EI-391

- 1. Transient response in R-L and R-C Network: Simulation/hardware
- 2. Transient response in R-L-C Series & Parallel circuits Network: Simulation/hardware
- 3. Determination of Impedance (Z) and Admittance(Y) parameters of two port network

- 4. Frequency response of LP and HP filters
- 5. Frequency response of BP and BR filters

## PAPER NAME : SENSORS AND TRANSDUCERS LAB PAPER CODE: PC-EI-392

- 1. Explain the characteristics of LDR.
- 2. Briefly Explain about the measurement of strain gauge.
- 3. Explain with neat diagram of temperature measurement using AD590 IC sensor.
- 4. Briefly narrate a load cell with tensile & compressive load.

## PAPER NAME : ANALOG CIRCUIT DESIGN LAN PAPER CODE: PC-EI-393

- 1. Explain the operation of half wave rectifier.
- 2. Explain the Biasing of the Semiconductor with neat sketch.
- 3. What is the difference between Zener Breakdown & Avalanche Breakdown?
- 4. Briefly describe the operations of MOSFET and CMOS.

## PAPER NAME : DIGITAL CIRCUIT DESIGN LAN PAPER CODE: PC-EI-394

- 1. Explain the operation of Flash type ADC?
- 2. Explain the Boolean algebra in Digital Electronics.
- 3. Sketch with neat diagram of Logic Gates for Digital signals?
- 4. Draw & Explain the circuit diagram of A/D converter.

# B.TECH-3RD SEM-ME-THEORY PAPER NAME: MATHEMATICS-III

## PAPER CODE : BS-M-301

- 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. The random variable X is uniformly distributed in (0,1). Find thtet dtisribution of Y =-log x

$$1 - \frac{P(B)}{P(A)}$$
 in general.

5. Prove that p(B/A)

## PAPER NAME:-BIOLOGY PAPER CODE : BS-BIO-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.

## PAPER NAME : BASIC ELECTRONICS ENGINEERING PAPER CODE : ES-ECE-301

- 1. What is the characteristic of a Semiconductor Diode? Draw the graph of V-I Characteristics of it.
- 2. What are the advantages & Disadvantages of a Half wave Rectifier over Full wave?
- 3. Explain how a Diode can be used as a switch?
- 4. What is capacitor Filter Circuit?
- 5. Draw and Explain the operation of a silicon controlled Rectifier

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

- 1. Given initial velocity v0 & angle of projection  $\theta$  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. Determine the horizontal force P to be applied to a block weighing 2500N to hold it in position, the inclined plane is smooth & makes 300with the horizontal.
- 3. An I- section has the following dimensions in mm units.

Bottom flange= 350x100Top flange= 250x50Web= 300x50

Determine the moment of inertia of the I-section about centroidal x-x axis

Passing through its centreoid & parallel to base.

- 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.

#### PAPER NAME: THERMODYNAMICS PAPER CODE: PC-ME-301

- 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 processes.
- 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/m3. 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 m3 to 0.4 MPa, 0.03 m3. Assuming that the pressure and volume are related by pvn= constant, find the work done by the gas system.

## PAPER NAME : MANUFACTURING PROCESSES PAPER CODE : PC-ME-302

- 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  $\gamma_x = \gamma_0 = \gamma_n$  where  $\gamma_x =$  side rake,  $\gamma_0 =$  orthogonal rake.  $\gamma_n =$  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.

#### **B.TECH-3RD SEM-ME-PRACTICAL** PAPER NAME : PRACTICE MANUFACTURING PROCESSES PAPER CODE : PC-ME-391

- 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 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.
- 4 To prepare corner joint by electric arc welding.

## 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.

## 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 450
- 2. Two forces act at an angle of 1200.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 600, 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.

### 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?

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

- 1. Prove that the number of internal vertices in a binary tree is one less than the number of pendant vertices.
- 2. Apply convolution theorem to find inverse Laplace transform of  $\frac{s}{(s^2+9)^2}$
- 3. What is the solution of the recurrence relation
- 4.  $a_n 6a_{n-1} + 9a_{n-2} = 0$  with initial conditions  $a_0 = 1; a_1 = 6$
- 5. Every subgroup of a cyclic group is cyclic.

6. Show that the set of rational numbers other than 1, Q' forms a group under the binary operation \* defined by a\*b = a + b −ab : a,b ∈ Q.

#### PAPER NAME: HUMANITIES-I PAPER CODE: CE-HS-301

- 1. Write in brief about the characteristics of effective technical communication.
- 2. State difference between general and technical communication.
- 3. Write a job application for the post of Junior Engineer to the HRA in an M.N.C. Attach your c.v.
- 4. Discuss about good manners and positive behaviour for interview.
- 5. Assume that you are the Managing director of Innovation software limited. You have to write a memo to all your sales staff informing them that the company has decided to give an incentive at the rate of five percent to all the sales staff from July 2019.

## 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? 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.

## **B.TECH-3RD SEM-CE-PRACTICAL** PAPER NAME: BASIC ELECTRONICS

#### PAPER CODE: CE-ES-391

- 1. Briefly explain the operation of Bridge rectifier with neat sketch.
- 2. Explain the circuit diagram of Full-Wave rectifier.
- 3. Draw the V-I characteristic of a Diode & explain.
- 4. Draw and explain the CB Configuration of BJT.

#### PAPER NAME: COMPUTER AIDED CIVIL ENGINEERING DRAWING PAPER CODE: CE-ES-392

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

### PAPER NAME: BIOLOGY LAB 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.

## **B.TECH-3RD SEM-ECE-THEORY**

PAPER NAME: ELECTRONICS DEVICES PAPER CODE: EC 301

#### b)

- 1. What is Semiconductor? Explain its characteristics.
- 2. Briefly explain the operation of Full wave rectifier.
- 3. What do you mean by Extrinsic- Semiconductor?
- 4. Briefly describe about MOSFET and CMOS.
- 5. Draw the characteristic of a PIN Photo- Diode & explain

### PAPER NAME: DIGITAL SYSTEM DESIGN PAPER CODE: EC 302

- 1. Briefly explain the De Morgan's statement.
- 2. Explain Binary number system.
- 3. Briefly explain the difference between the octal and Hexa- decimal number system.
- 4. What do you mean by Logic Gates in Digital?
- 5. What is the difference between Logic symbol and truth table of the different logic gates?

### PAPER NAME: SIGNALS & SYSTEM PAPER CODE: EC 303

- 1. State and prove Parseval's theorem for energy signal.
- 2. What is Laplace transformation? Draw and explain the working principle of 2-port Networks.
- 3. What is Norton's theorem? Briefly explain it.
- 4. What do you mean by orthogonal and orthonormal signal? Explain briefly.
- 5. Define energy and power signal. Write various forms of Fourier series representation for continuous time periodic signal.

### PAPER NAME: NETWORK THEORY PAPER CODE: EC 304

- 1. What are the applications of Mason Gain Formula?
- 2. What are the Basics of Network parameters?
- 3. What is Initial and Final value theorem?
- Using partial fractions, obtain inverse Laplace transformation of 10<sup>4</sup>

## s(s + 250)

- 5. Find the inverse Laplace transform of the following function
- 6. V(s) = [10(s+4)]/[s(s+3)(s+1)2]

## PAPER NAME: DATA STRUCTURE & ALGORITHM PAPER CODE: ES-CS 301

- 1. What is array? How it is represented in memory?
- 2. Briefly explain the concept of static and dynamic array.
- 3. Write algorithm for linear and binary search in an array.
- 4. Write a brief note on following: a)Pointers and array b) Records
- 5. What is header linked list. Explain with example

### PAPER NAME: PROPABILITY & STATISTICS 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. The random variable X is uniformly distributed in (0,1). Find thet disribution of Y =-log x

$$\geq 1 - \frac{P(B)}{P(A)}$$
 in general.

5. Prove that p(B/A)

#### B.TECH-3RD SEM-ECE-PRACTICAL PAPER NAME: ELECTRONICS DEVICE LAB PAPER CODE: EC391

- 1. Briefly explain the operation of Bridge rectifier with neat sketch.
- 2. State the operations of Doping in the Semiconductor.
- 3. Explain the circuit diagram of Full-Wave rectifier.
- 4. Explain the operations of the frequency response of an Amplifier.

#### PAPER NAME: DIGITAL SYSTEM DESIGN LAB PAPER CODE: EC392

- 1. Sketch with neat diagram of Logic Gates for Digital signals?
- 2. Explain the operation of Flash type ADC?
- 3. Explain the Boolean algebra in Digital Electronics.
- 4. Sketch with neat diagram of Logic Gates for Digital signals?

#### PAPER NAME: DATA STRUCTURE LAB PAPER CODE: ES-CS391

- 1. Explain the representation of polynomial by header list with example.
- 2. What is polish notation? Solve the following arithmetic expression written in postfix notation by using stack.
- 3. Write a brief note on following: a)Priority queue b)Deques
- 4. Write a brief note on following: a)Binary tree b) Complete binary tree

### PAPER NAME: ENVIRONMENTAL SCIENCE PAPER CODE: MC381

- 1. Explain- components of Ecosystem & Ecology.
- 2. What are the Basics of Environmental-science?
- 3. What is Biological classification?
- 4. Describe different types of protein & their function.
- 5. Discuss the relationship between biology & engineering.