

INSTITUTE OF SCIENCE & TECHNOLOGY

ASSIGNMENT QUESTION

DIPLOMA-1ST SEM – (CST+EE+ME+CE)-THEORY

PAPER NAME : MATHEMATICS-I

PAPER CODE: MATH-I

Answer the following

1. Show that $7\log \frac{10}{7} - 2\log \frac{25}{24} + 3\log \frac{81}{80} = \log 2$.
2. If the roots of the equation $x^2 - px + q = 0$ differ by unity, then show that $p^2 = 4q + 1$.
3. If α, β are acute angles and $\cos 2\alpha = \frac{3\cos\beta - 1}{3 - \cos 2\beta}$, show that $\tan \alpha = \sqrt{2}\tan \beta$.
4. If $\cos^{-1} x + \cos^{-1} y + \cos^{-1} z = \pi$ show that $x^2 + y^2 + z^2 + 2xyz = 1$.
5. If α, β are the roots of the quadratic equation $2x^2 + x - 1 = 0$, find the equation whose roots are $2\alpha + 1$ and $2\beta + 1$.

PAPER NAME : APPLIED PHYSICS-I

PAPER CODE : APHY-I

1. What do you mean by fundamental units? Give example.
2. Find out the dimension of energy and universal gravitational constant.
Write down the limitations of dimensional analysis.
3. Draw and explain stress-strain diagram.
4. If the volume of a wire remains unchanged when subjected to a tensile strain, show that its poisson's ratio will be $\frac{1}{2}$.
5. If the longitudinal strain produced in a wire be 1%, find the volume strain of the wire. Given poisson's ratio is equal to 0.3.

PAPER NAME : APPLIED CHEMISTRY

PAPER CODE : AICHEM

1. Explain Bohr's atomic model.
2. Write down the electronic configuration of 24^{Cr} and 29^{Cu} .
3. State Aufbau principle and Hund's rule
4. State Pauli Exclusion Principle with one example.
5. What is hydrogen bond? Explain inter and intra molecular H-bonding.

PAPER NAME: COMMUNICATION SKILL IN ENGLISH

PAPER CODE: CS -I

1. Write the full forms of these following abbreviations: SOS, USA, PTO, ATM,.
6. Write a paragraph about the causes of over population and its solution.
- 7.. Write the procedure of a building construction with the help of the following flowchart:
Choose land for construction → framing the base and the structure → finishing of roof → installation of door and window → electrical installation → complete sanitation facilities – Finish of floor - wall plaster and painting.
8. Read the following passage and fill in the blanks with article and preposition.
Time and tides have their own course, their own routine as per nature's rule. They do not wait ___ anyone. A wise man makes ___ best use ___ his time. ___ time once gone never comes back. Time and tide wait ___ none.
9. Write a paragraph about the problem excessive use of smart phone among students.

PAPER NAME: ENGINEERING GRAPHICS

PAPER CODE: EG

SHEET -1 (LETTERING , NUMBERING AND DIMENSION)

1. Write single stroke vertical letter A-Z height 27 mm and ratio 7:4 .
2. Write single stroke vertical number 0-9 height 27 mm and ratio 7:4.
3. Show two type of dimension aligned and unidirectional.

SHEET -2 (ENGINEERING SCALE)

1. As a actual distance of 4 km is shown by a line 8cm long on a map . Draw a plane scale reading in km and hect. m. (i) 5.7km (ii) 3km 3 hect.m. (iii) 220 deca.m. The scale should be long enough to measure 8km.
2. A cube of 5 cm side represent a tank of 1000m³ volume. Construct a scale to measure upto 35m and mark on it – 27m. , 23m, 34m.
3. A map 3m x 2m represent an area of 6000sqkm. Construct a scale to measure km, Hm. And Dm.
4. Distance between two point is 15cm.The real distance between them is 20 km. Draw a scale to measure upto 25 km. and mark on it a distance of 14.7 km.

SHEET -3 (GEOMETRIC CONSTRUCTION)

1. Draw a inscribe circle regular polygon having side 30mm. by general method.
2. Draw a inscribe circle regular pentagon, hexagon and heptagon having circle radius 30mm.

SHEET -4 (ENGINEERING CURVE)

1. Draw an ellipse having major and minor axis are 100mm and 60mm respectively by constant circle , oblong and four centre method.
2. Draw ellipse when distance of focus from directrix is equal to 50mm and eccentricity 2/3.
3. Draw a parabola having base120mm. and vertical height 100mm. by rectangle method.
4. Draw involute of a regular pentagon of side 30mm.

DIPLOMA-1ST SEM – (CST+EE+ME+CE)-PRACTICAL

PAPER NAME :APPLIED PHYSICS-I lab

PAPER CODE :LAPHY-I

1. Determine two wavelength of a monochrome light by Newton's Ring Method.
2. Determine the Hall co-efficient of a semiconductor by four probe Method.
3. Determine the Band Gap of a Semiconductor.
4. Determine the Young's Modules of a rectangular bar issuing flexure beam Method.
5. Determine the specific charge(e/m) of Electron by J.J.Thomson's Method.
6. Determine the value of Plank's constant using photocell

PAPER NAME :APPLIED CHEMISTRY LAB

PAPER CODE :LACHEM

- A. Write down the confirmatory test of Sulphide ion.
- B. Write down the Confirmatory Test of Nitrate ion.
- C. Write down the Confirmatory Test of Copper ion.
- D. Write down the Confirmatory Test of Nickel ion.

DIPLOMA-3RD SEM-CST-THEORY
PAPER NAME :DISCRETE MATHEMATICS
PAPER CODE: DMTHS

Answer the following questions:

1. Suppose R is any equivalence relation on A. Show that R^{-1} is also equivalence.
2. Prove the following using mathematical induction. $P(n): 1 + a + a^2 + \dots + a^n = \frac{1-a^{n+1}}{1-a}$, $n \geq 1$
4. What is weighted graph? Write Dijkstra's shortest path algorithm.
5. Find inverse of $= \begin{bmatrix} 1 & -2 & 2 \\ 2 & -3 & 6 \\ 1 & 1 & 7 \end{bmatrix}$.

PAPER NAME: C PROGRAMMING
PAPER CODE: CP

1. Define array. Explain different types of array in detail.
2. State and explain various types of standard function with example.
3. Write a C language program using recursion n terms of Fibonacci series.
4. Write C Program to implement the following pattern:

```
1
2 3
4 5 6
7 8 9 10
```

5. Write a C program to find the H.C.F and L.C.M of two given numbers.

PAPER NAME: DIGITAL LOGIC DESIGN
PAPER CODE: DLD

1. Explain Binary number system.
2. Briefly explain the difference between the octal and decimal number system.
3. What do you mean by – Logic Gates in Digital?
4. What is the difference between Logic symbol and truth table of the different logic gates?
5. Draw the circuit diagram of A/D converter.

PAPER NAME: DATA STRUCTURE
PAPER CODE: DS

1. Insert the following keys into a AVL tree.
64, 1, 44, 26,13,110,89,85,20
Then delete the following keys. 85, 1
2. Explain DFS with suitable example
3. Define the following: Connected graph, Tree, linked list.
4. Write the algorithm for binary search.
5. Convert the following infix to postfix expression - $4+3*10/6+7$

PAPER NAME: COMPUTER ORGANIZATION&ARCHITECTURE
PAPER CODE: COA

- 1) Compare sRAM and dRAM.
- 2) Explain control hazard and explain the solution of the control hazard.
- 3) Describe the difference between hardware and micro program control unit
- 4) Differentiate between paging and framing?
- 5) Explain write-back policy and write-through policy.

PAPER NAME: ELECTRONIC DEVICES AND CIRCUITS
PAPER CODE: EDC

1. What is Diode? Explain its characteristics.
2. Briefly explain the operation of half wave rectifier.
3. What do you mean by – Doping of the Semiconductor?
4. What is the difference between Zener Breakdown & Avalanche Breakdown?
5. Draw the V-I characteristic of a Diode & explain.

DIPLOMA-3RD SEM-CST-PRACTICAL

PAPER NAME: C PROGRAMMING LAB

PAPER CODE: LCP

1. Armstrong number using C.
2. Fibonacci Series using C.
3. Prime number using C.
4. Factorial using C.

PAPER NAME: DIGITAL LOGIC DESIGN LAB

PAPER CODE: LDLD

1. Briefly explain the Boolean - algebra in Digital Electronics.
2. Sketch with neat diagram of Logic Gates for Digital signals?
3. Deduce the difference between Logic symbol and truth table of the different logic gates.
4. Draw & Explain the circuit diagram of A/D converter.
5. Explain the operation of Flash type ADC?

PAPER NAME: DATA STRUCTURE LAB

PAPER CODE: LDS

1. Bubble Sort using C.
2. Stack Push-Pop operation using C
3. Linear Search using C.
4. Binary Search using C

PAPER NAME: ELECTRONIC DEVICES AND CIRCUITS LAB

PAPER CODE: LEDC

1. Briefly explain the operation of half wave rectifier.
2. Briefly 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.
5. Draw the V-I characteristic of a Diode & explain.

DIPLOMA-3RD SEM-EE-THEORY

PAPER NAME: ELECTRICAL CIRCUIT & NETWORK

PAPER CODE:ECN

- (1) State Thevenin Theorem and explain it.
- (2) Determine the Laplace Transform of R-L-C series circuit when step response is applied on its input.
- (3) A function in Laplace domain is given by
$$I(s) = \frac{s+1}{s(s^2+4s+4)}$$
Obtain its Inverse Laplace Transform.
- (4) A capacitor of $5\mu\text{F}$ being charged initially to 10V is connected to a resistance of $10\text{K}\Omega$ in series and is allowed to discharge through it by switching of a switch K. Find the expression of discharging current when step response input is applied in it.
- (5) Determine the condition of Reciprocity and Symmetry in Z-parameter representation.

PAPER NAME : ELECTRICAL MACHINE-I

PAPER CODE:EM-I

1. What is the principle of operation of transformer?
2. Why transformer rating is in kVA?
3. Describe the all-day efficiency.
4. Explain the working principle of an autotransformer. What is the advantage and disadvantage of autotransformer? Give application of autotransformer.
5. Describe the open circuit test and short circuit test on transformer.

PAPER NAME: BASIC ELECTRONICS

PAPER CODE: BE

1. What is Diode? Explain its characteristics.
2. Briefly explain the operation of Bridge rectifier.
3. What do you mean by – Doping of the Semiconductor?
4. What is the difference between Zener Breakdown & Avalanche Breakdown?
5. Draw the V-I characteristic of a Diode & explain.

PAPER NAME: PROGRAMMING CONCEPT USING C

PAPER CODE: PCC

1. Enlist the features of C. Explain different data types used in C language?
2. Explain type identifiers in C? Explain in brief structure of C programming?
3. What is operator enlisting all operators used in C? What is data type explain the any four data types used in C language?
4. Explain the difference between '=' and '==' operator explain with example? Write a short note precedence & order of evaluation?
5. Differentiate between relational and logical operators used in C?

PAPER NAME: ELECTRICAL MEASURING INSTRUMENT

PAPER CODE : EMI

1. Draw the circuit diagram and explain the operation of Dynamometer type instruments.
2. What is creeping in an energy meter? How it is minimized?
3. Describe the principal of measurement of power factor using 3-phase dynamometer type power factor meter
4. Define the term
 - a) Accuracy
 - b) Precision
 - c) Resolution
 - d) Noise
 - e) Scale range and scale span
 - f) Least count
5. Describe, with a neat sketch, the construction of a single phase induction type energy meter and explain its working principle.

PAPER NAME: ELEMENTS OF MECHANICAL ENGINEERING

PAPER CODE: EME

1. State the working principle of room air conditioner.
3. Define Second law of thermodynamics. Distinguish between vapor compression system and adsorption vapor system.
4. Explain with neat sketch working principle of Domestic refrigerator with neat sketch.
5. List out the Difference between fire tube and water tube boiler .Explain the working principle of water tube boiler with neat sketch.

DIPLOMA-3RD SEM-EE-PRACTICAL

PAPER NAME: ELECTRICAL CIRCUIT & NETWORK LAB

PAPER CODE:LECN

1. To verify Kirchoff's Current Law and Kirchoff's Voltage Law.
2. To verify conditions for Series and Parallel Resonance.
3. To verify THEVENIN'S network theorems applicable to D.C. circuit.

PAPER NAME : ELECTRICAL MACHINE-I LAB

PAPER CODE:LEM-I

- 1) To control the speed of D.C. shunt motor above & below normal speed & draw the speed characteristics.

- 2) To determine equivalent circuit parameters of single-phase transformer by performing O.C. test and S.C. test.
- 3) To find the performance of a D.C. Series motor by conducting load test & draw the load characteristics.

PAPER NAME: BASIC ELECTRONICS LAB

PAPER CODE: LBE

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.
5. Draw and explain the CB Configuration of BJT.

PAPER NAME: ELECTRICAL MEASURING INSTRUMENT LAB

PAPER CODE : LEMI

- 4) To measure Low resistance by Kelvin's Double Bridge.
- 5) To measure active and reactive power in three phase balanced load by two wattmeter method and observe the effect of Power Factor variation on Wattmeter reading.
- 6) To calibrate single phase Energy meter using resistive and inductive loads.

DIPLOMA-3RD SEM-ME-THEORY

PAPER NAME: ADVANCED STRENGTH OF MATERIALS

PAPER CODE: ASOM

1. A rectangular beam, simply supported over a span of 4m, is carrying a uniformly distributed load of 50 kN/m. Find the dimension of the beam, if depth of the beam section is 2.5 times its width. Take maximum bending stress in the beam section as 60 Mpa.
2. At a point in a stressed element, the normal stress in two mutually perpendicular directions are 45Mpa and 25Mpa both tensile. The complementary shear stress in these directions are 15 Mpa. Determine the maximum and minimum principle stresses.
3. Derive the strain energy stored in a body when the load is suddenly applied.
4. Derive the relation when a circular bar subjected to torque $\tau/R=C\theta/l$.
Where, τ is shear stress, R is radius of circular shaft, l is length of shaft, θ is angle of twist.
5. Derive the deflection of closely coiled helical spring when it is subjected to an axial load.

PAPER NAME: THERMAL ENGINEERING -I

PAPER CODE- TE-I

1. Write a short note on .
A) Bio mass Energy B) Solar distillation
2. A). What are primary and secondary sources of energy.
B). State Kelvin-Planck and Clausius statements on second law of thermodynamics.
3. A) Obtain an expression for general change of entropy of perfect gas in terms of volume and pressure.
B) One Kg of gas expands adiabatically through a volume 1: 5 Initial pressure and temperature of gas are 28 bar and 250 °C respectively. Find the pressure and temperature for gas take $C_p= 1.024$ and $C_v = 0.7135$ KJ/Kg. K .
5. Explain what constant pressure is. Represent the process on P-V and T-S Diagram .Find out the work done and heat transferred during process.

PAPER NAME :MANUFACTURING PROCESSES-I

PAPER CODE :MP-1

1. How will you obtain neutral, oxidizing and reducing flames using welding torch in gas welding?
Compare the merits and demerits of using A.C and D.C for arc welding.
2. Compare TIG welding with MIG welding. Explain submerged arc welding with neat sketch

3. What do you understand by MIG welding? What are its main advantages?
4. Describe the process of submerged arc welding stating its advantages and limitations.
5. Discuss the method of underwater welding. What are its advantages and disadvantages?

PAPER NAME: FUNDAMENTALS OF ELECTRONICS.

PAPER CODE: FE

1. What are the characteristics of a semiconductor?
2. Briefly explain the difference BJT and JFET.
3. What do you mean by Pinch-off phenomenon?
4. What is the operation of JFET?
5. Draw the circuit diagram of Half wave rectifier & full wave rectifier.

PAPER NAME: ENGINEERING MATERIALS

PAPER CODE: EM

1. Explain the various purposes of heat treatment. What are various methods of heat treatment of steel?
2. What is re-crystallization? Define re-crystallization 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 is it necessary to use lubricants in the press compacting of powders? State the advantages and disadvantages of powder metallurgy.

DIPLOMA-3RD SEM-ME-PRACTICAL

PAPER NAME: ADVANCED STRENGTH OF MATERIALS LAB

PAPER CODE: LASOM

1. To study the Brinell Hardness testing machine and the Brinell hardness test.
2. To study the Rockwell Hardness testing machine and perform the Rockwell hardness test.
3. To study the UTM and perform the tensile test.

PAPER NAME: THERMAL ENGINEERING -I LAB

PAPER CODE- LTE-I

1. To Study Solar Water Heating system
2. To Study Pressure Measurement and its Use
3. Study of Bomb Calorimeter

PAPER NAME: MANUFACTURING PROCESS-I LAB

PAPER CODE- LMP-I

1. Describe about various gas welding processes.
2. Describe about various Arc welding processes.
3. Describe about various Lathe operations.
4. What are the specifications of drill. Write the name of various drilling cutters with figures.

PAPER NAME: FUNDAMENTALS OF ELECTRONICS LAB

PAPER CODE: LFE

1. Briefly explain the operation of Full-wave rectifier.
2. Explain the Rectification Efficiency of a Rectifier.

- Briefly explain the Biasing of the Semiconductor with neat sketch?
- What is the difference between Zener Breakdown & Avalanche Breakdown?
- Briefly describe the operations of MOSFET and CMOS.

PAPER NAME: MECHANICAL ENGINEERING DRAWING LAB

PAPER CODE: LMED

- Sketch neatly sectional front view of a knuckle joint for connecting two 40mm diameter rods. Take other suitable important dimension.
- Draw the front view of a protective type flange coupling by considering any suitable data.
- Sketch neatly sectional front view of a Cotter joint for connecting two 40mm diameter rods. Take other suitable important dimension

DIPLOMA-3RD SEM-CE-THEORY

PAPER NAME: SURVEYING

PAPER CODE: SURV

- Write short notes on i) Magnetic meridian ii) Azimuth iii) Isogonic and Agonic line iv) Local attraction
- Describe about Reciprocal Levelling.
- Describe about horizontal curves and their classification with sketch.
- A steel tape was exactly 30 m long at 20°C when supported throughout its length under a pull of 10kg. A line was measured with this tape under a pull of 15 kg and at a mean temperature of 32°C and found to be 780 m long the cross section area of the tape = 0.03m² and its weight = 0.693kg. $\alpha = 11 \times 10^{-6}$ per °C and E for steel 2.1×10^6 kg/cm². compute the true length of the line if the tape was supported during the measurement at every 30m .
- Write short notes on any *four* of the following :
 - Base line,
 - Tie line,
 - Check line

PAPER NAME: BUILDING MATERIAL& CONSTRUCTION

PAPER CODE: BMC

- What is Admixture? State about their functions.
- Discuss about Louvered door with sketch.
- Write short notes on i) Blast furnace slag cement ii) High alumina cement
- What do you mean by load bearing wall and partition wall?
- What is hydration? Factors affecting hydration of cement.

PAPER NAME: CONCRETE TECHNOLOGY

PAPER CODE:CT

- Describe the factors effecting workability of concrete? Explain Fineness modulus of aggregate?
- What is admixture? Classify admixtures. State its effect on the properties of concrete.
- The field test of cement. Describe Low heat Portland cement.
- What are the factors that influence the strength of cement concrete ? Briefly discuss the effects of water cement ratio and workability on the strength of concrete
- Name some empirical tests to measure workability and explain their suitability?

PAPER NAME: MECHANICS OF STRUCTURE

PAPER CODE: MOS

- Find the total strain energy stored in the bar, when it is subjected to a gradual load of 70 KN. Also find the total strain energy stored in the bar, when the bar is made of uniform cross section of the volume under the same load. Take E=200Gpa.

2. A rectangular body 400mmx50mmx40mm is subjected to a shear stress of 60 Mpa. Calculate the strain energy stored in the body. Take $C = 80\text{Gpa}$. Define – proof resilience and modulus of resilience.
3. What is frame? Classify frame. Write assumptions taken for forces in the members of a perfect frame.
4. A simply supported beam of 3m span carries two loads of 5KN each at 1m and 2m from the left hand support. Draw the shear force and bending moment diagrams for the beam.
5. An overhanging beam ABC loaded with 4.5 KN/m with whole beam. Distance between A and B is 3m and B to C is 1m. Calculate point contra flexure.

PAPER NAME: HYDRAULICS

PAPER CODE: HDL

1. State the continuity equation and derive its expression. Define the following term:-
a) Specific gravity b) weight density c) compressibility d) surface tension
2. What is Pascal's law? Define the terms gravity force and pressure force.
3. What is hydrostatic pressure? Discuss about absolute pressure and gauge pressure.
4. Discuss about fluid pressure measuring devices.
5. The reading of a barometer is found to be 760mm of Hg. What shall be the atmospheric pressure in N/m^2 and terms of water if specific gravity of Hg is 13.6?

DIPLOMA-3RD SEM-CE-PRACTICAL

PAPER NAME: CIVIL ENGINEERING LAB-I

PAPER CODE: CEL-I

1. Write the determination procedure of Aggregate Impact Value.
2. Write the determination procedure of Aggregate crushing value.
3. Write the determination procedure of specific gravity of aggregate sample.
4. Write the determination procedure of water absorption of aggregate.

DIPLOMA-5TH SEM-CST-THEORY

PAPER NAME: SOFTWARE ENGINEERING

PAPER CODE: SE

1. What is 4Ps of software project management?
2. What is McCall's quality model? Explain the different factor associated with this model?
3. What is the difference between Cohesion and coupling? With proper example explain why a good system requires high cohesion low coupling?
4. What is testing? What is the importance of testing? What are terms related to testing?
5. What is use case diagram? Draw the use case diagram for ATM system.

PAPER NAME :JAVA PROGRAMMING

PAPER CODE: JP

1. Write a program finds the number is prime or not. Example 1003 is prime or not.
2. List any eight controls from java.awt package.
3. Explain use of command line arguments.
4. Explain about try-catch functionality in Exception Handling.
5. Write a Java program using recursion n terms of Fibonacci series.

PAPER NAME :OPERATING SYSTEM

PAPER CODE: OS

1. Explain the process of Deadlock Recovery.
2. Explain Mutual Exclusion.
3. Explain the classical Dining Philosophers problem.
4. How will you check to see if the algorithm can prevent deadlock?
5. What two advantages do threads have over multiple processes?

PAPER NAME: THEORY OF COMPUTATION

PAPER CODE: TOC

1. What is Mealy machine? What is Moore machine? Transforming a Mealy machine into Moore Machine
2. Remove the null productions from the following grammar
S \rightarrow ABAC
A \rightarrow aA / ϵ
B \rightarrow bB / ϵ
C \rightarrow c
3. Explain Chomsky Normal Form. Convert the following grammar into Chomsky Normal Form S \rightarrow S(S) / ϵ .
4. Describe Turing Machine. What do you mean by lossy and lossless decomposition in Turing machine.
5. Give a DFA accepting the string over alphabet Σ 0,1, such that in each string number of 0's divisible by 3 and the number of 1's is divisible by 5.

PAPER NAME: MULTIMEDIA & ANIMATION TECHNOLOGY

PAPER CODE: MAT

- 1) Explain the Animation Technique.
- 2) Explain Nyquist sampling theorem.
- 3) Explain MIDI specification.
- 4) Explain the application of multimedia.
- 5) What is MPEG. Explain with brief.

DIPLOMA-5TH SEM-CST-PRACTICAL

PAPER NAME :JAVA PROGRAMMING LAB

PAPER CODE: LJP

- 1) Java Program to Swap Two Numbers
- 2) Java Program to Check Whether a Number is Even or Odd
- 3) Java Program to Check Whether an Alphabet is Vowel or Consonant
- 4) Java Program to Find the Largest Among Three Numbers

PAPER NAME :OPERATING SYSTEM LAB

PAPER CODE: LOS

1. Addition of two numbers using Linux.
2. Calculate months and days from 98 days using Linux.
3. Greater of three numbers using Linux.
4. Check the number is even or odd using Linux.

PAPER NAME: MULTIMEDIA & ANIMATION TECHNOLOGY

PAPER CODE: LMAT

1. Use of different tools of Photoshop.
2. Use of Color tool of Photoshop.
3. Use of blending modes of Photoshop.
4. Learn Toning Tool, Different Media, Color models.
5. Use of different effects of Photoshop.

DIPLOMA-5TH SEM-EE-THEORY

PAPER NAME: POWER ELECTRONICS & DRIVES

PAPER CODE:PED

- (1) Describe the principal of step-down chopper. Derive an expression for the output voltage in terms of input voltage and duty cycle. State the assumption made.
- (2) Describe single PWM inverter.

- (3) Explain the working of a single phase full bridge inverter (voltage source type) with RLC under damped type of load. Draw the relevant waveform and comment whether forced commutation is necessary for this type of load, if the inverter circuit mentioned above is constructed with SCR as switching element.
- (4) What is the function of a Cycloconverter. What are the advantages of cycloconverter over an inverter?
- (5) Short Note on DIAC, TRIAC & SCS.

PAPER NAME: MICROPROCESSOR & MICROCONTROLLER

PAPER CODE: MPMC

1. What are the functions of the various components in 8085 microprocessor?
2. Explain the various flags of 8085 microprocessor.
3. Describe the Bus Interfacing in 8086 microprocessor.
4. Draw and explain the architecture of 8085 microprocessor.
5. What do you mean by addressing mode? What are the different addressing modes supported by 8086? Explain each of them with suitable examples.

PAPER NAME: SWITCHGEAR & PROTECTION

PAPER CODE: SP

1. Explain with sketches and their R-X diagrams for the following distance relays.
 - a) Impedance relay
 - b) Mho relay
2. Write a short note on the following.
 - a) Combined leakage and overload protection for transformers.
 - b) Earth-fault protection for transformers.
3. Describe the following system of bus-bar protection.
 - a) Differential protection.
 - b) Fault-bus protection.
4. Write a short note on PT.
5. What is surge diverter? Discuss the construction, principle and working of a valve type arrester.

PAPER NAME :UTILIZATION,TRACTION HEATING &DRIVES

PAPER CODE :UTHD

- (1) What are the various factors which decide the choice of an electric drive for industrial application?
- (2) Discuss the advantages of electric drives. State the component parts of electric drive
- (3) What is meant by the term “adhesive weight”?
- (4) What is meant by stroboscopic effect? How this effect is eliminated in fluorescent tube lightings?
- (5) What is specific energy consumption? Write the factors affecting specific energy consumption.

PAPER NAME: ILLUMINATION ENGINEERING

PAPER CODE:IE

- 1 What is Photometry? What are the different methods to measure luminous intensity? Discuss any one.
- 2 Discuss working principle and application of Lux meter.
- 3 Write short notes on followings:
 - (a) Black body radiation
 - (b) Fluorescent lamp
 - (c) LED
 - (d) LASER
 - (e) Luminance
- 4 What is colorimetric? What are the different colorimetric instruments are there? Discuss any one.
- 5 What is the basic concept of “human eye as an optical system”.

DIPLOMA-5TH SEM-EE-PRACTICAL

PAPER NAME: POWER ELECTRONICS & DRIVES LAB

PAPER CODE:LPED

- 1) To fabricate an op-amp integrator, determine its amplitude, phase relation with input, duration of output pulse compared to input for a square wave input.
- 2) To fabricate with IC-555 - Astable multivibrator & to determine duration of high pulse, low pulse and duty cycle.
- 3) To study fully controlled full wave rectifier using SCR.
- 4) To study DC chopper circuit using SCR.
- 5) To perform speed control of DC series motor using SCR.

PAPER NAME: MICROPROCESSOR & MICROCONTROLLER LAB

PAPER CODE: LMPMC

1. Draw and explain the architecture of 8085 microprocessor.
2. Explain the various Addressing-Modes of 8085 microprocessor.
3. Explain the operations of a Microcontroller.
4. Differentiate between Microprocessor & Microcontroller.
5. Explain different Applications of 8085 microprocessor.

PAPER NAME: SWITCHGEAR & PROTECTION LAB

PAPER CODE: LSP

1. To demonstrate HRC fuse, MCB & ELCB and explain the functions of various components.
2. To Identify the components of MOCB, ABCB, SF6 types of circuit breakers with their specifications.
3. To test percentage Differential Protection of Transformer Using Transformer Differential Relay (Electromagnetic/Microprocessor based).
4. To demonstrate the operation of single phasing preventer by creating single phasing fault for a given 3-ph induction motor with D.O.L. starter.

PAPER NAME: ILLUMINATION ENGINEERING LAB

PAPER CODE:LIE

1. To measure illuminance (daylight & artificial light) at different points of a classroom by Luxmeter & draw – (i) Variation of Illuminance characteristics with distance and (ii) Isolux plot.
2. To study the technical data of different types of lamps available in the market & draw their connection diagram.
3. To study the different lighting accessories, ignitor & electronic ballasts required for different types of lamps – Sodium vapour, Mercury vapour, Metal halide, CFL, Fluorescent lamp.
4. To study the different luminaries available in the market for various types of lamps with their technical specifications, their design consideration, Indian standard recommendation.

PAPER NAME :UTILIZATION,TRACTION HEATING &DRIVES LAB

PAPER CODE :LUTHD

- 1) To determine Illumination of a surface for a Drawing Room by means of lux meter.
- 2) To determine candle power of a lamp in comparison to standard C.P. of lamp by optical bench method.
- 3) To verify the Inverse Square Law and compare the difference in output luminescence of incandescent, fluorescent and compact fluorescent lamps.
- 4) To Study of Sodium vapour lamp, Mercury vapour lamp, CFL with their connections and the technical specification.
- 5) To study of different current collectors used for drawing current from O.H. system for traction (using models and block diagram).

DIPLOMA-5TH SEM-CE-THEORY

PAPER NAME: BUILDING SERVICES & ENTREPRENEURSHIP DEVELOPMENT

PAPER CODE: BSED

1. Write short notes on i) Plain Sedimentation ii) Two pipe system
2. Write short note on following:-
3. Discuss about different types of pipes.
4. Discuss about different types of joints in pipe fittings with neat sketch.
5. What is the general requirement of fire protection?

PAPER NAME: CONTRACT & ACCOUNTS

PAPER CODE: CA

1. What is contract? What are the different types of civil engineering contracts?
2. What are the circumstances under which lowest tender may be rejected? What is supplementing tender?
3. Write notes on:
 - (a) Lump-sum contract
 - (b) Substituted item
 - (c) N.I.T.
4. Write briefly on comparative statement and acceptance of tender.

PAPER NAME: TRANSPORTATION ENGG.-II

PAPER CODE: TE-II

1. State the importance of road transportation in India.
2. What is Indian road congress? State its function.
3. Draw the cross section diagram of a pavement.
4. What are the surveys carried out in a road project?
5. Define camber and state its types.

PAPER NAME: DESIGN OF RCC STRUCTURE

PAPER CODE: DRCCS

1. Determine the moment of resistance of a section of width 250mm depth 310mm and 3 no 12 mm dia as bottom reinforcement. Grade of concrete M20 and grade of steel Fe 415. (limit state design method)
2. A doubly reinforced beam 250x 600mm overall has to resist a factored moment of 210 KN-m. Find amount of steel required on compression and tension side, if cover on the both sides is 50mm. Concrete M15 and mild steel.
3. Determine depth of neutral axis of a section of width 200mm depth 400mm and 3 no 20 mm dia as a bottom reinforcement. Grade of concrete M15 and grade of steel Fe 250.(limit state design method)
4. Determine the moment of resistance of a section of width 250mm depth 310mm and 3 no 12 mm dia as a bottom reinforcement. Grade of concrete M20 and grade of steel Fe 250. (working state design method)
5. A dog-legged staircase is to be designed between intermediate floors of a residential building, within a stair hall having clear dimensions 5 m × 2.5 m. The stair hall has 4 columns at its corners measuring 250 mm × 400 mm each. The beams at the ends may be considered 250 mm × 350 mm each. Consider floor to floor height = 3.3 m, intensity of live load = 3 KN/m² on plan area. Riser 150 mm, width of landing and width of flight both = 1200 mm. Show general arrangement of the stair case and design the flights of the staircase.

PAPER NAME: GEOTECHNICAL ENGG. -II

PAPER CODE: GE-II

1. What is general shear failure, local shear failure and punching shear failure?
2. Draw a neat sketch of a pile load test and Explain the load settlement curve obtained From a pile load Test
3. State the Requisite qualities of Good foundation. Mention the Types of load which are to be taken into consideration of foundation
4. Classify various types of piles based on the type of material used.
5. How piles are classified as per function? Mention the Hiley's formula related to pile foundation. Hints: Hiley formula.

DIPLOMA-5TH SEM-CE-PRACTICAL

PAPER NAME: GEOTECHNICAL ENGG.-II LAB

PAPER CODE: LGE-II

1. Write the determination procedure of natural moisture content.
2. Write the determination procedure of grain size distribution.
3. Write the determination procedure of Atterberg limits (liquid limit, Plastic limit, Shrinkage limit).
4. Write the determination procedure of shear strength.

PAPER NAME: CIVIL ENGINEERING LAB-III

PAPER CODE: LCE-III

1. Write the procedure of coefficient of discharge for a given Venturimeter.
2. Write the procedure of determination of coefficient of friction.
3. Write the procedure of determination of coefficient sharp edge orifice.
4. Discuss about centrifugal and Reciprocating pump.

DIPLOMA-5TH SEM-ME-THEORY

PAPER NAME: FLUID MECHANICS & MACHINERY

PAPER CODE: FMM

1. A) Explain the various types of fluids. State & explain Newton's law of viscosity. What is dynamic viscosity & kinematic viscosity?
B) A plate 0.025 mm distance from a fixed plate, moves at 60 cm/s and requires a force of 2 N per unit area i.e., 2 N/m^2 to maintain this speed. Determine the fluid viscosity between the plates.
2. A) Explain Pascal's law. State & prove Pascal's law of fluid pressure.
B) A Relationship between Bulk Modulus (k) and Pressure (p) for Gas.
C) Describe the different types of fluid flow process.
3. A) Define atmospheric pressure, Gauge pressure, Vacuum pressure & absolute pressure.
B) A U-tube containing mercury has its right limb open to atmosphere & left limb connected to a pipe conveying water under pressure, the difference in level of mercury in the two limbs being 200 mm. If the mercury level in the left limb is 300 mm below the centre line of the pipe, find the Gauge & absolute pressure in the pipeline.
4. A) State Bernoulli's theorem & derive it for the frictionless flow with necessary condition
B) A vertical tapering pipe is 2.5 m long. The dia of the pipe is 25 cm at the top end & the 15 cm at the bottom end. If 40 l/s of the water flows through the pipe, find the difference in pressure between the two ends of pipe, neglect losses.

PAPER NAME: ADVANCED MANUFACTURING PROCESSES

PAPER CODE: AMP

1. Explain Magnetorheological abrasive flow finishing process with suitable diagram.
2. What is Laminated Object Manufacturing? Explain the process with sketches.

3. Describe with neat sketch the working principle of Electro discharge machining (EDM)?
4. Describe with neat sketch the working principle of Laser beam machining (LBM)?
5. Write down the advantages wire cut EDM over conventional EDM.

PAPER NAME: MEASUREMENT & CONTROL

PAPER CODE: MC

- (1) Define open loop and closed loop control system with proper example.
- (2) Describe with block diagram the functional elements of a general measurement system.
- (3) Describe with block diagram the measurement & control system for heating a room at specific temperature.
- (4) Explain the working principle of stroboscopic tachometer.
- (5) Sketch & explain the working principle of a Rota meter. Why it is called variable area flow meter?

PAPER NAME :POWER ENGINEERING

PAPER CODE: PE

1. Describe Carnot cycle with gas with the help of P-V and T-S diagram and deduce a formula for its thermal efficiency.
2. Derive the efficiency of Dual cycle with p-v and T-S diagram. Write short note on scavenging and supercharging.
3. A petrol engine working on Otto cycle has a maximum pressure of 50 bar. Heat supplied is 1000KJ/KG. If the pressure ratio during compression 12.286, find the compression ratio and also ration of peak temperature to inlet temperature. Take $p_1=1$ bar and $T_1=27^\circ\text{C}$
4. List out the Difference between fire tube and water tube boiler .Explain the working principle of water tube boiler with neat sketch.
5. Explain the purpose of reheating steam. Show the flow of a reheat cycle. Draw T-S diagram of a reheat cycle

PAPER NAME : AUTO MOBILE ENGINEERING

PAPER CODE: AE

1. Draw the flow path showing the diesel flow from fuel tank to combustion chamber.
2. Discuss the detail the constructional feature of a clutch plate .Explain clearly the function of each major components of the clutch plate.
3. What are the common types of steering gears? Describe any one in detail with the help of simple sketch.
4. Explain the clearly the necessity of gear box for the transmission in a vehicle.
5. Draw the layout diagram of an air brake system with all units.

DIPLOMA-5TH SEM-ME-PRACTICAL

PAPER NAME: FLUID MECHANICS& MACHINERY LAB

PAPER CODE: LFMM

1. Determination of co-efficient of discharge of venturimeter.
2. Determination of co-efficient of discharge of orifice meter.
3. Performance test on single acting centrifugal pump.

PAPER NAME: ADVANCED MANUFACTURING PROCESS LAB

PAPER CODE :LAMP

1. Discuss the mechanism of material removal for Abrasive jet machining (AJM). State their limitations.
2. Explain with a neat sketch the operation of the canned cycle G81 as per ISO.
3. Describe with neat sketch the working principle of Electro discharge machining (EDM)?

4. Describe with neat sketch the working principle of Laser beam machining (LBM)?
5. Write down the advantages wire cut EDM over conventional EDM.

PAPER NAME: MEASUREMENT & CONTROL LAB

PAPER CODE: LMC

1. Speed Measurement by using Stroboscope / Magnetic / Inductive Pick Up.
2. Measurement of flow by using Rotameter.
3. Calibration of given LVDT.
4. Temperature control using Thermal Reed switch & Bimetal switch.
5. Temperature measurement using Thermocouple.

PAPER NAME :POWER ENGINEERING LAB

PAPER CODE: LPE

1. To study the Cooling system of IC engine
2. To Study of Four Stroke diesel engine
3. To study the constructional detail and working principle of four stroke petrol

PAPER NAME : AUTO MOBILE ENGINEERING LAB

PAPER CODE: LAE

1. To study and prepare report on the constructional details, working principles and operation of the following automotive clutches:
 - a. Coil – Spring clutch
 - b. Diaphragm spring clutch
 - c. Double disk clutch
2. To study and prepare report on the constructional details, working principles and operation of the following automotive transmission systems:
 - a. Synchromesh – four speed range
 - b. Transaxle with dual speed range
 - c. Four wheel drive and transfer case
 - d. Steering column and floor shift- lever
3. To study and prepare report on the constructional details, working principles and operation of the following automotive tyres & wheel:
 - a. Various types of bias and radial plies tyres
 - b. Various types of wheels

PAPER NAME : C PROGRAMMING LAB

PAPER CODE: LCP

1. Define array. Explain different types of array in detail.
2. State and explain various types of standard function with example.
3. Write a C language program using recursion n terms of Fibonacci series.
4. Write C Program to implement the following pattern:

```
1
2 3
4 5 6
7 8 9 10
```
5. Write a C program to find the H.C.F and L.C.M of two given numbers.