B.TECH 2ND SEM – CSE

SUB: PROGRAMMING FOR PROBLEM SOLVING

PAPER CODE: ES-CS-201

1. a) What is a Function? Give an example.
   b) What is recursion? Write the difference between recursion and iteration.
   c) Write a program to print the Fibonacci series up to N
2. a) What is string in C?
   b) Explain working principle of any four string function.
   c) What do you mean by calloc() and malloc()?
   d) Write a program to printthe following pattern

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3. a) Explain with example the meaning of explicit and implicit type casting.
   b) Write a note on logical operator in C .
   c) Write a C program to check whether a number is prime or not.
4. a) Briefly describe the different loop control structures in 'C' with syntax, example.
   b) What is the local variable and global variable?
   c) Write a program to print the sum of the following series of n terms
   S= 1+ (1+2)+(1+2+3)+……
5. Write short notes on **any *three*** the followings
   a) Pointer
   b) Switch statement
   c) Actual and formal argument
   d) If else statement
   e) Generation of computer

SUB- CHEMISTRY-I

PAPER CODE: BS-CH-201

1. Define the terms:
   (a) Open system.
   (b) Closed system.
   (c) Isolated system.
   (d) Cyclic system.
2. Write down the first law of Thermodynamics. Derive its mathematical form.
3. Derive heat capacity at constant volume and heat capacity at constant pressure.
4. Derive the relation between enthalpy change and internal energy.
5. What is internal energy? Write down the characteristics of internal energy.
6. Derive the efficiency of a heat engine (cernot cycle).
7. What is entropy? Derive the entropy change in reversible process.
8. Derive the Gibb's-Helmholtz equation.
9. Derive the maximum work done in isothermal end reversible process.

SUB- MATHEMATICS-IIA

PAPER CODE: BS-M201

1. Find the probability distribution (or probability function or p.m.f.) of the number of heads when a fair coin is tossed repeatedly until the first tail appears.
2. A random sample of size 20 from a normal population gives a sample mean of 42 and sample standard deviation of 6. Test the hypothesis that the population mean is 44. State clearly the alternate hypothesis you allow for and the level of significance adopted.
3. State and prove Total Probability Theorem.
4. The probability function of a random variable X is f(x) = k (x-1) (2-x) for $1 \leq x \leq 2$. Determine i) the value of k ii) the distribution function F(x). iii) P $(5/4 \leq X \leq 3/2)$
5. A random variable X has the density function

$f(x) = \frac{a}{x^2+1}$, $-\infty < x < \infty$.

Find (i) a , (ii) the probability that X^2 lies between 1/3 and 1, (iii) the distribution function of X.
6. The probability that a pen manufactured by a company will be defective is 1/10. If 12 such pens are manufactured, find the probability that
(i) exactly two will be defective (ii) none will be defective (iii) at least two will be defective
7. In a large city A, 20% of random sample of 900 school children had defective eye-sight. In another large city B, 5% of a random sample of 1600 children had the same defect. Is this difference between the two proportions significant? Obtain 95% confidence limits for the difference in the population proportions.
8. There are 3 children in a family. Find the probability that all the children are boys, i) if no prior information is available about the children, ii) if it is known that the two eldest are boys, iii) if it is known that at least two of them are boys.

SUB: ENGLISH

PAPER CODE: HM-HU201

A. I was annoyed ..... missing the train. i) of ii) by iii) at iv) on
B. She is not capable ..... doing the work. i) for ii) of iii) in iv) be
C. The work is .....his capacity. I) under ii) above iii)below iv) beyond
D. He was found.....desperately for his life. i)Fights ii) fighting iii) fought iv) fight
E. One who is positive in thinking is:- i) pessimist ii) optimist iii) happy iv) sad.

1. Do as directed.
   a) He tells me the truth. (Make it complex)
   b) The brave alone can deserve the fair. (Turn into negative)
2. Fill in with a supporting verb and with the proper form of the verb within brackets.
   a) ..... you ..... playing football ? (like)
   b) ..... the workmen still ..... your house? (repair)
3. Write a précis of the following passage and add a suitable title.
   The test of the great book is whether we want to read it only once or more than once. Any really great book we want to read second time, even more than that, we want to read it again and again, and every additional time that we read it, we find new meanings and new beauties in it. A book that a person of education and good taste does not care to read more than once is, very probably, not worth much. But we cannot consider the judgement of a individual as final. We may doubt such a judgement. The best if all libraries for a poor man would be a library entirely composed of such great works. Only books which have passed the test of time.

4. You are the Secretary of the Sports Department of your college. The inter-college football tournament is going to be held very shortly. Notify the students about the details of it.
5. Write an essay on :- a) Online games b) Child labour
6. Differentiate the following pairs of words by making sentence –
   a) Sea: See b) Right: Write c) Too: Two d) Weight: Wait

8. Use "much" "most" "little" "some" to fill in the following.
   a)..... of the furniture. B)..... .of the traffic. C).....of the crockery D) .....of my clothing
9. Correct the grammatical errors:
   a) Where you are coming from? b) The fruit taste better. c) It was the higher tree on the mountain. d) One of my friends have come. E) Ten pounds are a lot of money.
10. Give antonyms of these following words: Mandatory, Liberty, Motion, Filthy

B.TECH 2ND SEM – CE

SUB: PROGRAMMING FOR PROBLEM SOLVING

PAPER CODE: ES-CS-201

1. a) What is a Function? Give an example.
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SUB- MATHEMATICS-IIB

PAPER CODE: BS-M202

1. Solve: $y + e^x + x\frac{dy}{dx} = 0$.
2. Solve: $\frac{dy}{dx} + \frac{\sin 2y}{x} = x^3(\cos y)^2$
3. Solve: $x^2\frac{d^2y}{dx^2} + x\frac{dy}{dx} + y = \log x \sin(\log x)$.
4. If f(z) is a analytic, prove that $\left(\frac{\partial^2}{\partial x^2} + \frac{\partial^2}{\partial y^2}\right)|f(z)|^2 = 4|f'(z)|^2$.
5. Evaluate $\int_0^{2\pi} \frac{d\theta}{1+a^2-2a\cos\theta}$, $0 < a < 1$. [Take a complex number z of modulus 1 and amp θ.]
6. Expand the function $f(z) = \frac{1}{(z-1)(z-2)}$ in Laurent's series between the annual region |z|=1, |z|=2.
7. Solve : $\frac{d^2y}{dx^2} - 5\frac{dy}{dx} + 6y = x^2e^{3x}$.
8. For the function defined by f(z) = $\sqrt{|xy|}$, show that the Cauchy-Riemann Equation are satisfied at (0, 0) but the function is not differentiable and analytic at that point.

SUB- CHEMISTRY-I

PAPER CODE: BS-CH-201

10. Define the terms:
    (e) Open system.
    (f) Closed system.
    (g) Isolated system.
    (h) Cyclic system.
11. Write down the first law of Thermodynamics. Derive its mathematical form.
12. Derive heat capacity at constant volume and heat capacity at constant pressure.
13. Derive the relation between enthalpy change and internal energy.
14. What is internal energy? Write down the characteristics of internal energy.
15. Derive the efficiency of a heat engine (cernot cycle).
16. What is entropy? Derive the entropy change in reversible process.
17. Derive the Gibb's-Helmholtz equation.
18. Derive the maximum work done in isothermal end reversible process.

SUB: ENGLISH

PAPER CODE: HM-HU201

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G. She is not capable ..... doing the work. i) for ii) of iii) in iv) be
H. The work is .....his capacity. I) under ii) above iii)below iv) beyond
I. He was found.....desperately for his life. i)Fights ii) fighting iii) fought iv) fight
J. One who is positive in thinking is:- i) pessimist ii) optimist iii) happy iv) sad.

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B.TECH 2ND SEM – ME

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SUB: CHEMISTRY I

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B.TECH 4TH SEM – CE

SUB: NUMERICAL METHODS

Paper Code: M(CS)-401

1. Write down the Newton's Forward Interpolation Formula.
2. Solve the system of equations, by Gauss – elimination method

$$3x_1 + 9x_2 - 2x_3 = 11$$
$$4x_1 + 2x_2 + 13x_3 = 24$$
$$4x_1 - 2x_2 + x_3 = -8$$

Correct up to two decimal places.

3. Obtain an approximate value of $\int_0^1 \frac{dx}{1+x^2}$ by Simpson's One-third rule taking four equal intervals.

4. Find the Lagrange's formula the interpolating polynomial which corresponds to the following data

X	-1	0	2	5
f(x)	9	5	3	15

5. Discuss the Bisection method for finding a root

6. Deduce Simpson's $\frac{1}{3}rd$ rule (from Newton-Cote's quadrature formula).

7. Use Runge-Kutta Method of forth order to compute the numerical values of the differential equation $\frac{dy}{dx} = x^2 + y^2$; y(1)=0, find y at x = 1.3.

8. Construct the diagonal difference table of given data.

X	0	1	2	3	4	5
f (x)	12	15	20	27	39	52

Hence write down the values of $\Delta f(1), \Delta^2 f(3), \Delta^3 f(2),\ \Delta^4 f(0)$

SUB: MATHEMATICS-3

Paper Code: M-402

1. Using Parseval's Identity on Fourier cosine transform show that

$$\int_0^\infty \frac{dx}{(x^2+a^2)(x^2+b^2)} = \frac{\pi}{2ab(a+b)}.$$

2.Find the Fourier Transform of the function

$$f(x) = \begin{cases} 1, & |x| \le a \\ 0, & |x| > a \end{cases}$$

Hence evaluate $\int_{-\infty}^{\infty} \frac{sinsa\ cossx}{s} ds$.

3. For the functions defined by $(z) = \sqrt{|xy|}$, show that the Cauchy-Riemann Equations are satisfied at (0, 0) but the function is not differentiable and analytic at that point.

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5. Expand the function $f(z) = \frac{1}{(z-1)(z-2)}$ in Laurent's series between the annual region |z|=1, |z|=2.

6. Five balls are drawn from an urn containing 4 white and 6 black balls. Find the probability distribution of the number of white balls drawn without replacement.

7. State and prove Total Probability Theorem.

8. Find a power series solution of the equation $x(1-x)\frac{d^2y}{dx^2} - (3x+1)\frac{dy}{dx} - y = 0$, using the Frobenius method.

9. Prove that $\int_0^1 xJ_n(\alpha x)J_n(\beta x)\,dx = \begin{cases} 0 & \alpha \neq \beta \\ \frac{1}{2}[J_{n+1}(\alpha)]^2, & \alpha = \beta \end{cases}$

Where $\alpha\ and\ \beta$ are the roots of $J_n(x) = 0$.

10. Solve $\frac{\partial u}{\partial t} = k\frac{\partial^2 u}{\partial \partial^2}$, $x > 0, t > 0$, if u(0,t) = 0, u(x,0) = e^{-x} , x > 0, u (x, t) is bounded

SUB: FLUID MECHANICS

CODE-CE 401

1. Define viscosity. A plate 0.025mm distant from a fixed plate, moves at 60cm/s and requires a force of 2N/unit area i.e.,$2N/m^2$ to maintain this speed. Determine the fluid viscosity between the plates.
2.A rectangular plane surface is 2m wide and 3m deep. It lies in vertical plane in water . Determine the total pressure and position of centre on the plane surface when its upper edge is horizontal and a) coincides with water surface, b) 2.5m below the free water surface.
3. What is Metacenter and centre of buoyancy?
4. What is stability of a floating body? What is stable and unstable equilibrium?
5. Dereive the expression for velocity potential function and stream function.
6. Express the formula for discharge over a rectangular notch or weir.
7. Find the discharge of water flowing over a rectangular notch of 2m length when the constant head over the notch is 300mm.take coefficient of discharge=0.60.
8. What is water hammer concept? State the factors on which it depends.
9. Differentiate between steady, unsteady,GVF and RVF with examples.
10. What is most economical channel? Express the formula for Rectangular section.

SUB: STRUCTURAL ANALYSIS

PAPER CODE: CE-402

1. What are the steps to be taken for analysis of continuous beams by moment distribution method?
2. Describe the methods for analysis of continuous beams with simple supported ends.
3. What is sway condition? Explain with figure.
4. What are the assumptions followed in portal method?
5. Write down slope deflection equation for a continuous beam with their usual notations
6. State Castigliano's first and second theorem
7. A cantilever beam 7 m long with constant *EI* is subjected to two 45 KN loads, one at 2 m from end & another at free end respectively. Compute deflection at the free end using 'Area Moment Method'
8. What is influence line diagram? Explain with figure.
9. What is Muller Breslau principle?
10. What is determinate and indeterminate structure?
11. How u analyze continuous beam with fixed ends by Moment distribution method.

SUB: SOIL MECHANICS

PAPER CODE: CE-403

1. Define the term plasticity index,liquid limit, plastic limit, shrinkage limit.
2. Discuss about procedure of determination of liquid and plastic limit.
3. Discuss about thixotrophy of cays with graph.
4. Define the following- total unit weight, water content, dry unit weight, saturated unit weight
5. Define permeability and explain Darcy's law.
6. What is compression index and coefficient of compressibility?
7. What is bulking of sand and thixotropic of clay?
8. Explain the textural method of classification of soil.
9. Explain the IS heavy compaction test
10. Explain the Mohr coulomb envelope theory related to shear strength.

B.TECH 4TH SEM – ME

SUB: NUMERICAL METHODS

PAPER CODE: M(CS)-401

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2. Solve the system of equations, by Gauss – elimination method

$$3x_1 + 9x_2 - 2x_3 = 11$$
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Where α and β are the roots of $J_n(x) = 0$.

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SUB: FLUID MECH&HYDRAULIC MACHINES

PAPER CODE: ME401

1. A rectangular channel 2m wide has a discharge of 250 litre/s which is measured by right angled V-notch.Find the position of the apex of the notch from the bed of the channel if maximum depth of water is not to exceed 1.3m. Take C_d=0.62
2. Derive Bernoulli's equation for the flow of an incompressible frictionless fluid from consideration of momentum.
3. Derive the expression for the time required to empty a reservoir fitted with both (i)Rectangular weir (ii) Triangular weir.
4. A rectangular channel 2m wide has a discharge of 250 litre/s which is measured by a right angled V-notch.Find the position of the apex of the notch from the bed of the channel if maximum depth of water is not to exceed 1.3m. Take C_d=0.62

   .
5. The rate of flow of water through a horizontal pipe is 0.25 m^3/s. The diameter of the pipe which is 200 mm is suddenly enlarged to 400mm. The pressure intensity of the smaller pipe is 11.79 N/cm^2,

   Determine: (i) loss of head due to sudden enlargement
   (ii) Pressure intensity of larger pipe
   (iii) Power lost due to enlargement
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   Determine: (i) loss of head due to sudden enlargement
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7. (a) What do you mean by similitude & what are the different types of similarities that must exist between a model & prototype.
   (b) State Buckingham's π theorem.
   (c) The efficiency η of a fan depends on density ρ, dynamic viscosity μ of the fluid,angular velocity ω̃, diameter D of the rotor & the discharge Q.
   Express η in terms of dimensionless parameter.
8. A centrifugal pump having an overall efficiency of 70% delivers 1500 l/m through a pipe 12 cm diameter& 100m long. Calculate the power required to drive the pump if its lift water to height of 22m.The co-efficient of friction for the pipe maybetakenas0.01 (b)Derive the expression of discharge through a rectangular weir.
   (c)Write a short note on Francis turbine.
9. A Kaplan turbine is developes a shaft power of 24650 KW at an average head of 39m. Assuming a speed ratio of 2, Flow ratio0.6, diameter of the boss equal to 0.35times the diameter of the runner & an overall efficiency of 90%.calculate the diameter,speed & specific speed of the runner.

10. A centrifugal pump having an overall efficiency of 70% delivers water 1500 l/m through a pipe 12 cm diameter& 100m long. Calculate the power required to drive the pump if its lift water to height of 22m.The co-efficient of friction for the pipe may be taken as 0.01 .
11. a)Define displacement thickness & momentum thickness in boundary layer flow.
    b) Determine the total pressure and centre of pressure on an isoceless triangular plate of base 8m & altitude 6m when it is immersed vertically in an oil of sp.gr.0.8 The base of the plate coincides with the free surface of oil
12. Explain & state continuity equation in three dimensions.

. Starting with Euler,s equation of motion along a stream line. Obtain Bernoulli,s By its integration.

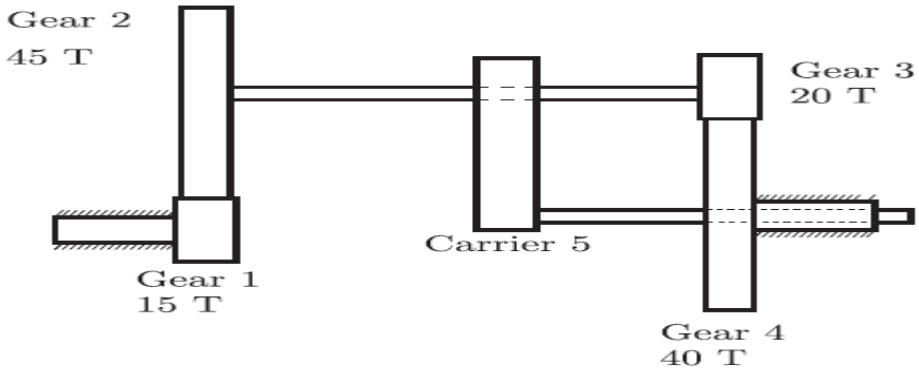
SUB – MECHANISMS

PAPER CODE – ME 402

1. A flat-faced mushroom follower is operated by a uniformly rotating cam. The follower is raised through a distance of 25 mm in 120^0 rotation of the cam, remains at rest for the next 30^0 and is lowered during further 120^0 rotation of the cam. The raising of the follower takes place with cycloidal motion and lowering with uniform acceleration and deceleration. However, the uniform acceleration is 2/3 of uniform deceleration. The least radius of cam is 25 mm which rotates at 300 rpm. Draw the cam profile and determine the values of the maximum velocity and maximum acceleration during rising, and maximum velocity and uniform acceleration and deceleration during lowering of the follower.
2. A flat belt, 8 mm thick and 100 mm wide transmits power between two pulleys, running at 1600 m/min. The mass of the belt is 0.9 kg/m length. The angle of lap in the smaller pulley is 165° and the coefficient of friction between the belt and pulley is 0.3. If the maximum permissible stress in the belt is 2 MN/m^2, find : 1. maximum power transmitted ; and 2. initial tension in the belt
3. A Hooke's joint connects two shafts whose axes intersect at 18^0. The driving shaft rotate at uniform speed of 210 rpm. The driven shaft with attached masses has amass of 60 kg and radius of gyration of 120 mm. Determine the
   I. Torque required at the driving shaft if a steady torque of 180 N.m resists rotation of the driven shaft and the angle of rotation is 45^0.
   II. Angle between the shafts at which the total fluctuation of speed of the driven shaft is limited 18 rpm
   (a) show that Paucellier mechanism can be used to trace a straight line.

   (b) derive analytically the expression of the velocity of the piston of a reciprocating engine.
4. Two gear wheels mesh externally and are to give a velocity ratio of 3. The teeth are of involute formof module 6. The standard addendum is 1 module. If the pressure angle is 18° and pinion rotates at 90r.p.m., find : 1. the number of teeth on each wheel, so that the interference is just avoided, 2. the lengthof the path of contact, and 3. the maximum velocity of sliding between the teeth.

5 A planetary gear train has four gears and one carrier shown in figure below. Angular velocities of the gears are $w1, w2, w3$ and $w4$, respectively. The carrier rotates with angular velocity $w5$.



Derive the relation between the angular velocities of Gear 1 and Gear 4 is $\frac{\omega_1 - \omega_5}{\omega_4 - \omega_5} = 6$

Derive the expression the effect of centrifugal tension on the power transmitted is

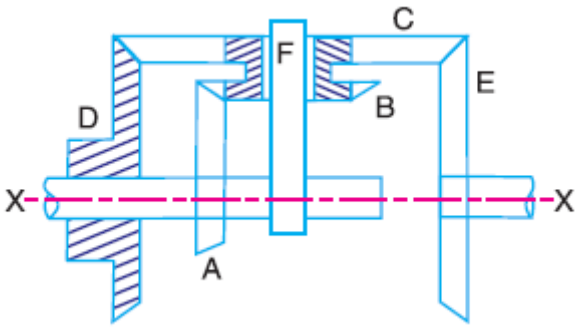
$$P = T1\left(1-\frac{1}{k}\right)v$$

Where, p= power, T1= tension on tight side, v = velocity of belt.

Derive the condition for correct steering

6. An epicyclic gear consists of bevel wheels as shown in Fig. 1. The driving pinion A has 20 teethand meshes with the wheel B which has 25 teeth. The wheels B and C are fixed together and turn freelyon the shaft F. The shaft F can rotate freely about the main axis X X. The wheel C has 50 teeth andmeshes with wheels D and E, each of which has 60 teeth. Find the speed and direction of E when Arotates at 200 r.p.m., if

a. D is fixed, and **2.** D rotates at 100 r.p.m., in the same direction as A.In both the cases, find the ratio of the torques transmitted by the shafts of the wheels A and E, thefriction being neglected



SUB – PRIMARY MANUFACTURING PROCESS

PAPER CODE – ME 403

1. Explain different steps in sand casting process.
2. Compare the relative advantages and dis advantages of hot and cold working.
3. Explain the varies casting defects.
4. What is the function of electrode coating.
5. How to produce seam welded tubes by seam welding.
6. Describe with sketches the principle of wire drawing
7. Explain various forging defect their cause and remedy.
8. Why are clearance and shear angle provided in press tool punch

9. Explain different types of gas flames.
10. Explain with neat sketches the process SMAW and its applications.
11. Explain with neat sketches the process TIG.
12. Explain ultrasonic welding in brief.
13. Explain pressure die casting.
14. Explain different type of centrifugal casting process

B.TECH 4TH SEM – ECE

SUB: VALUE AND ETHICS IN PROFESSION

PAPER CODE: HU401

1. Discuss the role of engineers and technologists in the development of the society.
2. What is pollution? What are the chief causes of pollution?
3. Write a short note on sustainable development.
4. What are the processes of technology transfer? What are the problems of technology transfer?
5. Discuss about the influence on above on an assembly line.
6. Define 'Code of Professional Ethics'. Explain some of the universally accepted codes of professional ethics.
7. Define social values. Describe the concept of a good society in terms of justice, rules of law and democracy.
8. How far can Whistle blowing be treated as a failure of organizational ethics?

SUB-PHYSICS II

PAPER CODE- PH401

1. Write down Maxwell's equations and also their integral form.
2. Write down Schrödinger equation for one dimensional motion of free particle in one dimensional potential box. Find its Eigen function and Eigen energy.
3. Explain probability density.
4. Find the Lagrangian and Lagrange's equation of motion for the electrical circuit containing an inductance L and capacitance C.
5. If the radius of a hydrogen atom is 0.053 nm , find its electronic polarizability.
6. Show that when a dielectric is placed in an electric field , the field within the dielectric becomes weaker than the original field.
7. Find out the number of possible arrangements of 3 particles in 3 cells according to- i) M-B statistics, ii) B-E statistics , iii) F-D statistics.
8. Prove that $[\hat{x}, \widehat{p_x}]$ = iħ. Give its physical significance.

SUB-BASIC ENVIRONMENTAL ENGINEERING & ELEMENTARY BIOLOGY

PAPER CODE: CH401

1. How can you define Biome? What do you mean by environmental impact assessment?
2. What is logistic growth of population? Derive logistic growth rate constant.
3. Prove that in the case of similar growth and decay rates, the half-life time and doubling time become equal.
4. Write down the nitrogen cycle with block diagram.
5. Define food chain .Discuss the grazing food chain with example.
6. What is biodiversity? Describe in-situ conservation of biodiversity.

7. Write down the mechanism of the formation of pan
8. Discuss in details the mechanism of ozone layer depletion.
9. Define the terms:
   a. Ventilation co-efficient
   b. Maximum mixing depth
   c. Temperature inversion.

SUB: ELECTROMAGNETIC THEORY AND TRANSMISSION LINES

PAPER CODE: EC 401

1. Give the significance of effective aperture of antenna .
2. What is meant by virtual height in radio wave propagation .
3. What is need for an antenna array? Distinguish: Broadside and End fire array ?
4. Define phase centre of a horn antenna .
5. What is the advantage of using a folded dipole in Yagi array

SUB: DIGITAL ELECTRONICS AND INTEGRATED CIRCUITS

PAPER CODE: EC 402

1. Design the following function using suitable MUX: h
   $F(A,B,C,D)= \Sigma (1,3,4,11,12,13,14,15)$
2. Design a 16:1 MUX using 4:1 MUX
3. Design full substactor using two half substractor
4. Write short notes on weighted and non-weighted codes.
5. Briefly describe JOHNSON counter with proper diagram
6. Explain race around condition of J-K flip-flop. Show how this condition can be avoided?

B.TECH 4TH SEM – CSE

SUB: NUMERICAL METHODS

PAPER CODE: M-401

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. Find the probability distribution (or probability function or p.m.f.) of the number of heads when a fair coin is tossed repeatedly until the first tail appears.
3. Prove that the Chromatic Polynomial is a polynomial.
4. Every subgroup of a cyclic group is cyclic.
5. Every finite integral domain is field.
6. The chromatic polynomial of a tree with n vertices is $x (x-1)^{n-1}$.
7. If x_1 , x_2, …, x_n is a random sample from an infinite population with variance σ^2 , and $\bar{x}$ is the sample mean, show that $\sum_{i=1}^{n} \frac{(x_i-\bar{x})^2}{n}$ is a biased estimator of σ^2 , but the bias becomes negligible for large n. Give an unbiased estimator of σ^2 here.
8. Prove that Kuratowski's Second Graph is not planar.

9. A random sample of size 20 from a normal population gives a sample mean of 42 and sample standard deviation of 6. Test the hypothesis that the population mean is 44. State clearly the alternate hypothesis you allow for and the level of significance adopted.

10. State and prove Lagrange's theorem.

SUB: MATHEMATICS III

PAPER CODE: M-CS-401

1. Write down the Newton's Forward Interpolation Formula.

2. Solve the system of equations, by Gauss – elimination method

$$3x_1 + 9x_2 - 2x_3 = 11$$

$$4x_1 + 2x_2 + 13x_3 = 24$$

$$4x_1 - 2x_2 + x_3 = -8$$

Correct up to two decimal places.

3. Obtain an approximate value of $\int_0^1 \frac{dx}{1+x^2}$ by Simpson's One-third rule taking four equal intervals.

4. Find the Lagrange's formula the interpolating polynomial which corresponds to the following data

X	-1	0	2	5
f(x)	9	5	3	15

5. Discuss the Bisection method for finding a root

6. Deduce Simpson's $\frac{1}{3}rd$ rule (from Newton-Cote's quadrature formula).

7. Use Runge-Kutta Method of forth order to compute the numerical values of the differential equation $\frac{dy}{dx} = x^2 + y^2$; y(1)=0, find y at x = 1.3.

8. Construct the diagonal difference table of given data.

X	0	1	2	3	4	5
f (x)	12	15	20	27	39	52

Hence write down the values of $\Delta f(1), \Delta^2 f(3), \Delta^3 f(2), \Delta^4 f(0)$

SUB : COMMUNICATION ENGINEERING AND CODING THEORY

PAPER CODE: CS401

1. Discuss the elements of communication systems. What are benefits of communication?
2. Draw and explain the circuit of a envelop detector.
3. Draw the circuit diagram of square law diode modulator and detector.
4. What do you mean by double sideband suppressed carrier? Draw the circuit of a balanced modulator.
5. Draw and explain the circuit of a ring modulator.
6. Write advantages and disadvantages of SSB-SC and where we use it.
7. Draw circuit of Costa's receiver and squaring loop.

SUB: FORMAL LANGUAGE AUTOMATA THEORY

PAPER CODE: CS402

1. Let $L = \{w \in \{a, b\}^* : w \text{ does not end in } ab\}$

   (a) Show a regular expression that generates L.

   (b) Show an FSM that accepts L.
2. Let G be a grammar S→0B|1A,A→0|0S|1AA,B→1|1S|0BB
   The given string =00110101
   Find a) The Leftmost Derivation
   b) The Rightmost Derivation
   c) Draw the Derivation Tree
3. Construct the finite automation equivalent to the regular expression

   i) (0+1)*(00+11)(0+1)* ii) 10+(0+11)0*1

4. What is Mealy machine? What is Moore machine? Transforming a Mealy machine into Moore Machine by taking an example by yourself.
5. What is regular expression? What are the identities of regular expression?
6. i) What is Arden's theorem?
   ii) prove that (1+00*1)+(1+00*1)+(0+10*1)*(0+10*1)=0*1(0+10*)*
7. Define Mealy machine and Moore machine.
8. Give a DFA accepting the string over alphabet ∑0,1, such that in each string number of 0's divisible by 5 and the number of 1's is divisible by 3.
9. Describe conversation of NFA to DFA with a suitable example.
10. Explain Chomsky Normal Form. Convert the following grammar into Chomsky Normal Form S -> S(S)/ ϵ.

SUB: COMPUTER ARCHITECTURE

PAPER CODE: CS403

1. Discuss about Flynn's classification of parallel computers.
2. Define systolic array for parallel processing.
3. What is the function of reservation table in pipeline architecture system?
4. Define speed up. What is pipeline?
5. Suppose the time delays of the four stages of a pipeline are t1=60 ns , t2=50 ns , t3= 90 ns , t4= 80 ns respectively and the interface latch has a delay t1= 10 ns , then
   a) What would be maximum clock frequency of the above pipeline?
   b) What is the maximum speed up of this pipeline over that of its non-pipeline counterpart?
6. Difference between WAR and RAW hazards.
7. Use 8bit 2's complement integer to perform
   -43 + (-13)
8. What is meant by pipeline stall?

B.TECH 4TH SEM – EE

SUB: VALUE AND ETHICS IN PROFESSION

PAPER CODE: HU401

1. State the problems that arise between man and machine in modern era.

2. What is pollution? What are the chief causes of pollution?
3. What do you mean by sustainable development? How does it affect business decisions?
4. What are the processes of technology transfer? What are the problems of technology transfer?
5. Discuss the role of different forms of renewable energy resources to overcome the limits of the world energy resources.
6. What is meant by global warming? What are the main factors of global warming?
7. What do you meant by Collective Bargaining? State the process of Collective Bargaining.
8. How far can Whistle blowing be treated as a failure of organizational ethics?

SUB-PHYSICS

PAPER CODE- PH(EE)401

1. Write down Maxwell's equations and also their integral form.
2. Write down Schrödinger equation for one dimensional motion of free particle in one dimensional potential box. Find its Eigen function and Eigen energy.
3. Explain probability density.
4. Find the Lagrangian and Lagrange's equation of motion for the electrical circuit containing an inductance L and capacitance C.
5. If the radius of a hydrogen atom is 0.053 nm , find its electronic polarizability.
6. Show that when a dielectric is placed in an electric field , the field within the dielectric becomes weaker than the original field.
7. Find out the number of possible arrangements of 3 particles in 3 cells according to- i) M-B statistics, ii) B-E statistics , iii) F-D statistics.
8. Prove that $[\hat{x}, \widehat{p_x}] = i\hbar$. Give its physical significance.

SUB: THERMAL POWER ENGINEERING

PAPER CODE: ME(EE)-411

1. What is a steam boiler? What are the differentiating features between a water tube and a fire tube boiler?
2. Explain the terms forced draught,induced draurght .
3. Explain the working principle of Carnot cycle with vapour representing on P-V and T-s diagram. Why Carnot cycle cannot be used in practical engines?
4. Derive the expression of efficiency of Otto cycle with P-V, T-S diagram.
5. Derive the expression of efficiency of diesel cycle with P-V, T-S diagram.
6. Why lubrication and cooling of I.C. engine components necessary? Explain.
7. Briefly explain the stages of combustion in SI engines elaborating the flame front propagation.
8. Draw a simple type of carburetor and explain its working.
9. A diesel engine has a compression ratio of 15 and heat addition at constant pressure takes place at 6% of stroke. Find the air standard efficiency of the engine. Take γ for air as 1.4
10. Draw a sketch of pintaux nozzle and discuss it merits and demerits.
11. Can one use solid fuels for IC engines? If so how?
12. In an engine working on ideal Otto cycle, the temperature at beginning and compression are 45^0C and 370^0C. Find the compression ratio and air standard efficiency of engine.
13. Prove that for natural draught h=353H[(1/Ta) –{ (m+1)/m}1/Tg]
14. Explain the construction and working of a La Mount boiler with the help of a neat sketch.
15. A boiler generates 500kg/hr of steam at 16 bar and 300^0 C from feed water at 30^0C coal used is 60kg/hr of C.V. 30000kj/kg, find a) equivalent evaporation and b) boiler efficiency.

SUB-BASIC ENVIRONMENTAL ENGINEERING & ELEMENTARY BIOLOGY

PAPER CODE: CH 401

1.How can you define Biome? What do you mean by environmental impact assessment?
2.What is logistic growth of population? Derive logistic growth rate constant.
3.Prove that in the case of similar growth and decay rates, the half-life time and doubling time become equal.
4.Write down the nitrogen cycle with block diagram.
5.Define food chain .Discuss the grazing food chain with example.
6.What is biodiversity? Describe in-situ conservation of biodiversity.
7.Write down the mechanism of the formation of pan
8.Discuss in details the mechanism of ozone layer depletion.
9.Define the terms:
a. Ventilation co-efficient
b. Maximum mixing depth
c. Temperature inversion.

SUB: ELECTRICAL MACHINE I

PAPER CODE: EE 401

1. Discuss a method for 3 phase to 2 phase conversion with transformers.
2. Explain the Scott connection or T-T connection of the transformer.
3. Explain the parallel operation of single phase transformer.
4. Explain the operation of Autotransformer. What is the main advantage and disadvantage of Autotransformer?
5. What is the general working principle of induction motor?
6. Describe the operation of Current transformer and Potential transformer.
7. Explain the speed control of induction motor.

SUB : MEASUREMENT & MEASURING INSTRUMENTS

PAPER CODE: EE 402

1) Write a short note on Digital Frequency meter.
2) Explain how temperature can be measured with the use of Thermistor.
3) Explain type of errors in Electrical measurement.
4) Explain the difference between Dynamometer type wattmeter and induction type wattmeter.
5) Principle of operation Crompton DC potentiometer.
6) What are the limitation of dual beam CRO?
7) What is a LVDT ?
8) Difference between potential transformer & current transformer.
9) Describe the application of AC energy meter.
10) What is phantom loading?

B.TECH 4TH SEM – AEIE

Sub: VALUE AND ETHICS IN PROFESSION

Paper Code: HU401

1. State the problems that arise between man and machine in modern era.
2. What is pollution? What are the chief causes of pollution?
3. What do you mean by sustainable development? How does it affect business decisions?
4. What are the processes of technology transfer? What are the problems of technology transfer?
5. Discuss the role of different forms of renewable energy resources to overcome the limits of the world energy resources.

SUB-PHYSICS II

PAPER CODE- PH (EE)401

1. State Ampere's law and explain its integral form.
2. For a point P(1,3,-2), find corresponding co-ordinates in cylindrical and spherical systems.
3. Derive differential form of gauss law and deduce coulomb's law from gauss law.
4. What do you understand by a dielectric and the dielectric constant of a material? Distinguish between non polar and polar molecules. Give examples.
5. Show that div.curl$\vec{A}$ = 0, where $\vec{A}$is a differentiable vector.
6. Differentiate between electric field and magnetic field. Find the force on a closed current loop placed in a uniform magnetic field.
7. Derive all Maxwell's electromagnetic equations.
8. What are - skin effect, skin depth, and skin power?
9. Calculate the capacitance of a concentric spherical system using Laplace's equation.
10. What is the physical significance of solenoid property?

SUB-BASIC ENVIRONMENTAL ENGINEERING & ELEMENTARY BIOLOGY

PAPER CODE: CH401

1. How can you define Biome? What do you mean by environmental impact assessment?
2. What is logistic growth of population? Derive logistic growth rate constant.
3. Prove that in the case of similar growth and decay rates, the half-life time and doubling time become equal.
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7. Write down the mechanism of the formation of pan
8. Discuss in details the mechanism of ozone layer depletion.
9. Define the terms:

a. Ventilation co-efficient
b. Maximum mixing depth
c. Temperature inversion.

SUB-SENSORS & TRANDUCERS

PAPER CODE: EI 401

1.Explain working principle with neat diagram for flow measurement using Pitot tube.
2. Write a short note on : (i) Hydrometer (ii) Rotameter.
3.(a) Describe the principle of operation of Hall-effect sensor. How can it be used in displacement sensing ?
4. (b) What are Peltier and Seeback effect ? How are they responsible in thermo-emf generation ? Give the list of different types of thermocouples.

SUB-MICROPROCESSOR & COMPUTER ARCHITECTURE

PAPER CODE: EI 402

i. Draw and explain the minimum and maximum mode operation of 8086 microprocessor.
ii. What purpose does the "HLDA" signal serve in an 8085 microprocessor?
iii. Explain the flag register of 8085 & control word register of 8255.
iv. Write a program that adds 16bit data .Store the result and carry in two different register pair.
v. Draw the architecture of 8085 microprocessor

SUB: FIELD THEORY

PAPER CODE: EE 402(EI)

1. State Ampere's law and explain its integral form.
2. For a point P(1,3,-2), find corresponding co-ordinates in cylindrical and spherical systems.
3. Derive differential form of gauss law and deduce coulomb's law from gauss law.
4. What do you understand by a dielectric and the dielectric constant of a material? Distinguish between non polar and polar molecules. Give examples.
5. Show that div.curl$\vec{A}$ = 0, where $\vec{A}$is a differentiable vector.
6. Differentiate between electric field and magnetic field. Find the force on a closed current loop placed in a uniform magnetic field.
7. Derive all Maxwell's electromagnetic equations.
8. What are - skin effect, skin depth, and skin power?
9. Calculate the capacitance of a concentric spherical system using Laplace's equation.
10. What is the physical significance of solenoidal property?

B.TECH 6TH SEM – CE

SUB: PRINCIPLES OF MANAGEMENT

PAPER CODE: HU601

1. Briefly explain the characteristics of services.
2. What is marketing mix? What are the elements of marketing mix? Why these marketing mix elements are important in marketing management?
3. Write a short note on Brand Management. Explain the importance of 'Branding' in marketing.
4. Give a short note on:
(a) Barriers to effective communication
(b) Training and Development
(c) Stress Management
5. How will you classify the levels of management in an organization?

6. Differentiate between Recruitment and Selection.
7. Describe in details the various training methods.
8. Discuss the steps involved in selection process.

SUB: HIGHWAY AND TRANSPORTATION ENGINEERING

PAPER CODE: CE-601

1. Explain the PIEV theory. Draw the line diagram.
2. What is SSD? Explain with relevant formula. What is lag distance and what is breaking distance?
3. (i) Calculate the safe stopping sight distance for design speed of 60kmph for a two way traffic in a two way lane. Assume co-efficient of friction as 0.4 and reaction time of driver is 3 sec.

   (ii) Write down the expression for calculating Overtaking sight distance and state the different parameters.
4. What is superelevation and why it is provided? Design the rate of superelevation for a horizontal curve of radius 450m and speed of 90kmph.
5. The speed of overtaking and overtaken vehicle are 70and 40 kmph respectively on a two way traffic road the average acceleration during overtaking may be assumed as 0.99m/sec^2
6. What are transition curves? Explain summit and valley curve with figures.
7. Explain 'ESWL' briefly explain the graphical method determination of 'ESWL'
8. What are the basic requirements of an ideal highway alignment?
9. Compute the equivalent radius of resisting section of 20cm thick slab given that the radius of contact area wheel load is 15 cm.
10. (i) What are the tests done to judge the toughness, strength and hardness of a highway aggregate?

    (ii) Draw the structure of a flexible pavement showing its different layers.

    (iii) What is the 98th percentile speed of a highway and what is its value?

SUB: DESIGN OF STEEL STRUCTURE

PAPER CODE: CE-602

1.What are the criteria to be followed for the design of structural steel elements?

2.A tie bar 50mm*8mm is to carry a load of 80KN.a specimen of the same quantity steel of cross sectional area 250mm^2 was tested in the laboratory. The maximum load carried by the specimen was 125KN.find factor of safety in the design and the gauge length.

3. What are the conditions used in plastic analysis?

4. Explain with neat sketches the different types of riveted joints used in steel structures

5. What is lower bound and upper bound theorem?

6. Find out the value of plastic modulus for a square of side x bent about a diagonal.

7. An angle ISA 75x75x6 can carry an axial load of 85 KN. It is to be connected to a 10 mm thick plate. Design a suitable riveted connection. Also draw a neat sketch.

8. What are the assumptions followed in the riveted joint theory?

9. Calculate the strength of a20mm diameter bolt of grade 4.6for the case of a lap joint. The main plates to be jointed are 12mm thick.

10. A web of a plate girder consists of 1000x16-mm plate of grade Fe 410 and is to be provided with a splice at a section where the factored shear and bending moment to be restricted by the web are V=1000 KN and M=350 KNm. The flange plate thickness= 50mm each. Design web splice.

SUB: CONSTRUCTION PLANNING AND MANAGEMENT

PAPER CODE: CE-603

1. What do you mean by notice inviting tender?
2. What is the necessary firefighting equipment used in a construction site?
3. Explain about excavators, rollers and dozers.
4. Differentiate between PERT and CPM network.
5. What is event and activity in network? Explain with figure.
6. Write specifications, plan breakdown and prepare network for the project of casting a concrete beam over verandah opening.
7. What is arbitrator? What are his qualifications?
8. What do you mean by building planning? Explain in detail.
9. What is tender form and contract document?
10. What are the steps for project planning, scheduling and controlling?

SUB: PRESTRESSED CONCRETE

PAPER CODE: CE-604B

1. What is Gantt chart? What is milestone chart?
2. Define aspect, prospect and roominess.
3.Describe briefly:- a) Sheepfoot Roller b) Excavators
4. Differentiate between PERT and CPM network.
5. What is event and activity in network? Explain with figure.
6. Write specifications, plan breakdown and prepare network for the project of casting a concrete beam over verandah opening.
7. What do you mean by security deposit? What is earnest money?
8. What do you mean by building planning? Explain in detail.
9. What is tender form and contract document?
10. What are the steps for project planning, scheduling and controlling?

SUB: HUMAN RESOURCE MANAGEMENT

PAPER CODE: CE605B

1. Explain the skills required for a successful HR manager.
2. What are the major principles of wages and salary administration?
3. What are the broad objectives of performance appraisal?
4. Explain the steps of HRP process.
5. Define collective bargaining? Discuss the features of collective bargaining?
6. What are the causes of industrial dispute?
7. What do you mean by Management by Objectives (MBO)?
8. What do you mean by the concept of workers participation Management?

B.TECH 6TH SEM – ME

SUB: PRODUCTION & OPERATIONS MANAGEMENT

PAPER CODE- HU-611(ME)

1. What do you mean by PART? State the steps involved in PART process.

2. Define Production. What are the characteristics of production system? Explain three levels of management decision with example.

3. Give a short note on:

(d) Always Better Control (ABC)

(e) Gantt Chart

(f) FNSD analysis

4. Explain crashing of project network with an example.

5. In the table given below a list of activities for a project with the optimistic, pessimistic, and most likely times are given develop a network diagram for the project activities. Calculate the probability of finishing the project in 30 days.

Activity	t_0	t_m	t_p
1-2	3	6	9
1-3	7	10	19
2-4	5	8	11
3-5	13	13	22
4-5	4	6	14
4-6	4	5	6
5-6	6	6	18

SUB: IC ENGINE AND GAS TURBINES

PAPER CODE: ME 601

1. Explain the working principle of Carnot cycle with vapour representing on P-V and T-s diagram. Why Carnot cycle cannot be used in practical engines?
2. Derive the expression of efficiency of Otto cycle with P-V, T-S diagram.
3. Derive the expression of efficiency of diesel cycle with P-V, T-S diagram.
4. Why lubrication and cooling of I.C. engine components necessary? Explain.
5. Briefly explain the stages of combustion in SI engines elaborating the flame front propagation.
6. A diesel engine has a compression ratio of 15 and heat addition at constant pressure takes place at 6% of stroke. Find the air standard efficiency of the engine. Take γ for air as 1.4
7. Draw a sketch of pintaux nozzle and discuss it merits and demerits.
8. Can one use solid fuels for IC engines? If so how?
9. Explain the various alternative fuels for an IC engine.
10. Explain the effect of various engine variables on SI engine knock.
11. List the field application of gas turbines.
12. List out the advantage and disadvantages of gas turbine over I.C. engine.
13. Draw a simple type of carburetor and explain its working.
14. In an engine working on ideal Otto cycle, the temperature at beginning and compression are 45^0C and 370^0C. Find the compression ratio and air standard efficiency of engine.

SUB- MACHINING PRINCIPLE & MACHINE TOOLS

PAPER CODE – ME-602

1. State the conditions under which use of positive and negative rake angles are recommended.
2. Explain various types of chips.
3. Define rake angle , clearance angle , cutting edge angle, inclination angle and nose radius.
4. Explain how you have to improve the machinability.
5. Proved $\gamma_x=\gamma_o=\gamma_n$ where γ_x = side rake, γ_0= orthogonal rake. γ_n= normal rake.
6. 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.

9 a) Describe the region of heat generation in metal cutting with figure.
b) What are the factors influence the cutting temperature?
c) During orthogonal machining with a cutting tool having a 12^0 rake angle, the chip thickness is measured to be0.44mm, the un cut thickness being 0.18 mm. determine shear plane angle and shear strain. 5+5+5

10 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?

SUB: MACHINE DESIGN

CODE- ME603

1. Define Clutch and also types of clutch. State the considerations in Designing of a friction clutch.
2. Define Brake. Classify the types of brakes and state the factors depend upon the brake capacity.
3. Explain the theory of pivoted block brake with long shoe .
4. A pair of straight bevel gears connecting two shafts at right angle has pinion teeth 24 , and gear teeth 48 . The module at outside diameter is 6 mm and face width 50mm . The gears are made of grey cast iron FG 220 . The pressure angle is 20^0. The gear teeth generated . The pinion speed is 300 rpm. Taking a service factor of 1.5 , and FOS 2 . Find (1) Beam Strength of the tooth ,(2) Static strength of the tooth, (3) Wear Load .
5. A flywheel of mass 100 kg and radius of gyration 350 mm is rotating at 720 rpm . It is brought to rest by means of a brake. The mass of the brake drum assembly is 5 Kg . The brake drum is made of cast iron FG 260 having specific heat 460 J/kg $^\circ$ C . Assuming that the total heat generated is absorbed by the brake drum only. Calculate the temperature rise.
6. Explain Autofrettage and Compounding of Cylindrical shell.
7. A cast iron cylinder of internal diameter 400 mm and thickness 120 mm is subjected to a pressure of 25 N/mm^2 . Calculate the tangential and radial stresses at inner , middle (radius= 150mm) and outer surfaces.
8. A thick cylindrical shell of internal diameter 100mm has to withstand an internal fluid pressure of 25 N/mm^2 .Determine its thickness so that the maximum stress in the section does not exceed 130 MPa.

9. Desgin a jounal bearing for a centrifugal pump running at 1440 rpm. The Diameter of the journal is 100 mm and load on each bearing is 20 KN. The factor ZN/p may be taken as 28 for centrifugal pump bearings. The bearings running at 75 ^{o} C temperature and the atmospheric temperaturic is 30^{0} C. The energy dissipation coefficient is 875 W/m^{2} .Take diametral clearance as 0.1 mm.
10. A single row deep groove ball bearing operating at 2000 rpm is acted by a 10 KN radial load and 8 KN thrust load. The bearing is subjected to a light shock load and outer ring is rotating. Determine the rating life of the bearing.
11. A bronze spur pinion rotating at 600 rpm drives a cast iron spur gear at a transmission ratio of 4: 1 . the allowable static stresses for the bronze pinion and cast iron gear are 84 MPa and 105 MPa respectively. The pinion has 16 standard 20^{0} full depth involute teeth of module 8 mm . The face width of both the gears is 90 mm. Find the power that can be transmitted from the standpoint of strength.
12. Following data is given for the hydrostatic step bearing of vertical turbo generator , thrust load =450KN , shaft diameter = 400 mm , recess diameter = 250 mm , shaft speed = 750 rpm , viscosity of lubricant = 30cP , Draw a neat sketch showing the effect of flim thickness on energy losses .Calculate the optimum film thickness for minimum power loss .
13. Design 20^{0} involute worm and gear to transmit 10KW with worm rotating at 1500 rpm and to obtain a speed reduction of 12:1. The distance between the shafts is 225 mm.

SUB: AIR CONDITIONING AND REFERIGERATRION

PAPER CODE: ME-604(A)

1. Describe the C.O.P of refrigerator and heat pump. Obtain the relation between them.
2. Discuss the deviation of actual vapour compression cycle from simple theoretical cycle .
3. Differentiate between Air Cooled Condenser and Water cooled Condenser.
4. 28 tonnes of ice from at 0^{o} C is produced per day is an refrigerator. The temperature range in the compressor is from 25 ^{0} C to -15 ^{0} C. The vapour is dry and saturated at the end of compression and an expansion valve is used . Assuming a coefficient of performance of 62% of the theoretical , Calculate the power required to drive the compressor. use R-12 as refrigerant.
5. Explain with neat sketch the 'Electrolux refrigerator with working and principle. '
6. Define the Psychometric? Explain the Dalton's law of Partial Pressures
7. Ennumerate and explain in short the points should be considered while making the heat load calculation .
8. Classify the Air Conditioning system . Explains any one.
9. Explain the method of installation of refrigeration system in car.
10. Write short note on various types of compressors. Explain any one with neat sketch.
11. Define Refrigerant. State desirable properties of an Idle refrigerant.
12. Explain heat rejection factor for the case of a condenser. State the basic function of a Expansion device.
13. With a neat sketch explain the working principle of Bell-Coleman cycle for air refrigeration. Draw P-V and T-s diagram.
14. Describe briefly any two of the following processes a) sensible heating b) sensible Cooling c) Heating & humidification
15. A refrigeration system operates on the reversed Carnot cycle. The higher temperature of the refrigerant in the system is 25^{o} C and lower temperature is -5^{o} C. The capacity is to be 6 tonnes. neglect all losses. Determine, a)Coefficient of performance. b) Heat rejected from the system per hour, c)power required.
16. What are the desirable properties of refrigerants? Explain name at least five commercial refrigerants.

SUB: TURBO MACHINERY

PAPER CODE: ME-605C

. 1 A conical draft tube having diameter at the top as 2.0 m & pressure head at 7 m of water (Vacuum),discharges water at the outlet with a velocity of 1.2 m/s at the rate of 25m3/s If Atmospheric pressure head is 10.3 m of water & losses between inlet & outlet of the draft Tube are negligible, find the length of draft tube immersed in water & also efficiency . Total length of draft tube is 5m.

1. A centrifugal pump rotates at 750r.p.m. The inlet radius of the pump impeller is 80mm,while its outlet radius is 160mmThe width of the impeller is 50mm.The blade angles of the backward curved vanes are 220 & 150at inlet & outlet respectively.For smooth radial inflow of water & neglecting losses determine the pump discharge,ideal head rise, pump power & static pressure rise in the impeller.
2. A hydro Turbine is required to give 25 MW at 45m head and 90 rpm runner speed. The laboratory facilities available, permit testing of 20 KW model at 5m head. What should be the model runner speed & model to prototype scale ratio.
3. A Pelton wheel has a mean bucket speed of 10m/s with a jet of water flowing at the rate of 800 l/s under a head of 35m. The bucket deflects the jet through an angle of 160^0.Calculate the power given by water to the runner & hydraulic efficiency. Assume co-efficient of velocity as 0.98
4. A radial flow hydraulic turbine is required to be designed to produce 25 MW under a head of 16m at a speed of 90 rpm. A geometrically similar model with an output of 30KW & a head of 5m is to be tested under dynamically similar conditions. At what speed must the model run? What is the required runner diameter ratio between the model & prototype & what is the discharge through the model,if its efficiency is 90%.
5. What is an air vessel? Describe the function of the air vessel for reciprocating pump.What is cavitation? How it can be minimized?
6. A centrifugal pump is to discharge 0.215 m^3/s at a speed of 1500 rpm against a head of 30m. The impeller diameter is 300mm,its width at outlet is 50mm, & manometric efficiency is 75 %. Determine the vane angle at the outer periphery of the impeller.
7. Define & explain hydraulic efficiency, mechanical efficiency & overall efficiency of a turbine.
8. Explain the specific speed of turbine. Draw the performance characteristic curve of Pelton turbine, Francis turbine, Kaplan turbine
9. The velocity of water at the outlet of a conical draft tube attached to a Francis turbine is 1.6 m/s. The velocity of water at the inlet of the draft tube, which is 5m above the tail race level, is 5.5m/s. If the loss of head due to friction in the draft tube is 40% of the velocity head at outlet of the tube, find the the pressure head at inlet to the draft tube
10. The following data is given for a Francis turbine. Net head H = 60M; Speed N = 700 R.P.M Shaft power = 294.3 KW ; η_h = 93 % ; η_o = 84% ; flow ratio =0.20 ; breadth ratio n= 0.1 ; outer diameter of the runner = 2x inner diameter of runner. The thickness of vanes occupy 5% of circumferential area of the runner , velocity of flow is constant at inlet & outlet & discharge is radial at outlet. Determine :

i)Guide blade angle ii) Runner vane angles at inlet & outlet

iii)Diameters of runner at inlet & outlet iv)Width of wheel at inlet & outlet

B.TECH 6TH SEM – EE

SUB: PRINCIPLES OF MANAGEMENT

PAPER CODE: HU601

1. Briefly explain the characteristics of services.

2. What is marketing mix? What are the elements of marketing mix? Why these marketing mix elements are important in marketing management?

3. Write a short note on Brand Management. Explain the importance of 'Branding' in marketing.

4. Give a short note on:

(g) Barriers to effective communication

(h) Training and Development

(i) Stress Management

5. How will you classify the levels of management in an organization?

6. Differentiate between Recruitment and Selection.

7. Describe in details the various training methods.

8. Discuss the steps involved in selection process.

SUB: CONTROL SYSTEM-II

PAPER CODE: EE-601

(1) Draw the block diagram of MIMO systems.

(2) Write short on phase pole analysis of non-linear system.

(3) Define Lyapunov function.

(4) State the properties of state transition matrix?

(5) What are the advantages of Asymptotic Stability?

(6) Write short notes Dead zone type non–linearity and its effect on stability of a system.

(7) Find out the Describing Function of Dead-zone with saturation.

(8) What is Controllability & Obsevability.

(9) Explain the Harmonic linearization.

(10) Describe the function analysis of limit cycles in nonlinear system.

SUB: POWER SYSTEM-11

PAPER CODE: EE- 602

1. What is Per Unit System describe with example.
2. Explain with a neat diagram the application of Merz-price circulating current principle for the protection of alternator.
3. Discus about SF6 circuit breaker
4. Transmission line protection
5. What is relay? Discus about fundamental requirements of protective relay
6. What do you understand by sequence network? What is their importance in unsymmetrical fault calculation?

SUB: POWER ELECTRONICS

PAPER CODE: EE- 603

1) Explain the operation of a Single phase full wave Converter with necessary diagram and waveforms.

2) What is cycloconverter? Explain the operation of dual converter.
3) Explain are the different types of thyristor protection. Explain briefly about di/dt protection.
4) What is a cycloconverter? What benefits does it offer in comparison to inverter?
5) Write down the advantage and disadvantage of IGBT.
6) Draw and explain dynamic or switching characteristics of an SCR.
7) Draw and explain the switching characteristics of power MOSFET.
8) Draw the circuit of a two-quadrant chopper and explain its working principle.

SUB: OBJECT ORIENTED PROGRAMMING

Paper Code: EE604C

1. Write a JAVA program to check any character is vowel or consonant.
2. Write a JAVA program to print the greater number among three numbers.
3. Write a JAVA program to check any number is Palindrome number or not.
4. Write a JAVA program to print the reverse number of any number. (e.g. reverse no. of 123 = 321).
5. Write a JAVA program to print the pattern bellow

```
        *
      * * *
    * * * * *
  * * * * * * *
```

6. Write a JAVA program to add two-dimensional matrix.
7. Write a JAVA program to multiply two-dimensional matrix.
8. Write a JAVA program to check any number is palindrome or not.
9. Write a JAVA program to sort array in ascending order.
10. Write a JAVA program to print the Fibonacci series.

SUB: DIGITAL SIGNAL PROCESSING

Paper Code: EE605A

1. Define system stability with an example. What is antialiasing effect?
2. Write the properties of ROC of a Z transform.
3. Find the convolution between two sequence x(n)={1,0,0,-1} h(n)={0,-1,0,1}
4. Find the Z transform of $x(n)=(1/2)^n u(n)$
5. What is energy signal? Check the signal energy or power $x(n)= (2)^n u(n)$

B.TECH 6TH SEM – EEE

SUB: PRINCIPLES OF MANAGEMENT

PAPER CODE: HU601

1. Briefly explain the characteristics of services.

2. What is marketing mix? What are the elements of marketing mix? Why these marketing mix elements are important in marketing management?

3. Write a short note on Brand Management. Explain the importance of 'Branding' in marketing.

4. Give a short note on:

(j) Barriers to effective communication
(k) Training and Development
(l) Stress Management

5. How will you classify the levels of management in an organization?
6. Differentiate between Recruitment and Selection.
7. Describe in details the various training methods.
8. Discuss the steps involved in selection process.

SUB: POWER SYSTEM-11

PAPER CODE: EEE- 601

1. What is Per Unit System describing with example?
2. Explain with a neat diagram the application of Merz-price circulating current principle for the protection of alternator.
3. Discus about SF6 circuit breaker
4. Transmission line protection
5. What is relay? Discus about fundamental requirements of protective relay
6. What do you understand by sequence network? What is their importance in unsymmetrical fault calculation?

SUB: CONTROL SYSTEM

PAPER CODE: EEE-602

(1) Draw the block diagram of MIMO systems.
(2) Write short on phase pole analysis of non-linear sysytem.
(3) Define Lyapunov function.
(4) State the properties of state transition matrix?
(5) What are the advantages of Asymptotic Stability?
(6) Write short notes Dead zone type non–linearity and its effect on stability of a system.
(7) Find out the Describing Function of Dead-zone with saturation.
(8) What is Controllability & Obsevability.
(9) Explain the Harmonic linearization.
(10) Describe the function analysis of limit cycles in nonlinear system.

SUB: POWER ELECTRONICS

PAPER CODE- EEE-603

1) Explain the operation of a Single phase full wave Converter with necessary diagram and waveforms.
2) What is cycloconverter? Explain the operation of dual converter.
3) Explain are the different types of thyristor protection. Explain briefly about di/dt protection.
4) What is a cycloconverter? What benefits does it offer in comparison to inverter?
5) Write down the advantage and disadvantage of IGBT.
6) Draw and explain dynamic or switching characteristics of an SCR.
7) Draw and explain the switching characteristics of power MOSFET.
8) Draw the circuit of a two-quadrant chopper and explain its working principle.

SUB: OBJECT ORIENTED PROGRAMMINGB & JAVA

PAPER CODE: EEE604B

1. Write a JAVA program to check any character is vowel or consonant.
2. Write a JAVA program to print the greater number among three numbers.
3. Write a JAVA program to check any number is Palindrome number or not.
4. Write a JAVA program to print the reverse number of any number. (e.g. reverse no. of 123 = 321).
5. Write a JAVA program to print the pattern bellow

```
        *
      * * *
    * * * * *
  * * * * * * *
```

6. Write a JAVA program to add two-dimensional matrix.
7. Write a JAVA program to multiply two-dimensional matrix.
8. Write a JAVA program to check any number is palindrome or not.
9. Write a JAVA program to sort array in ascending order.
10. Write a JAVA program to print the Fibonacci series.

SUBJECT: COMMUNICATION ENGINEERING
PAPER CODE: EEE-605B

1.Mention the merits of DPCM.
2.What is meant by adaptive delta modulation?
3.Define Matched filter.
4.Define Eye pattern.
5. Define information capacity theorem)

B.TECH 6TH SEM – CSE

SUB: PRINCIPLES OF MANAGEMENT
PAPER CODE: HU601

1. Briefly explain the characteristics of services.

2. --What is marketing mix? What are the elements of marketing mix? Why these marketing mix elements are important in marketing management?

3. Write a short note on Brand Management. Explain the importance of 'Branding' in marketing.

4. Give a short note on:

(m) Barriers to effective communication

(n) Training and Development

(o) Stress Management

5. How will you classify the levels of management in an organization?

6. Differentiate between Recruitment and Selection.

7. Describe in details the various training methods.

8. Discuss the steps involved in selection process.

SUBJECT: DATA BASE MANAGEMENT SYSTEM
PAPER CODE: CS601

1. What is Data dictionary? What do you mean by unary operations in Relational algebra? Give

example.

2. Discus the purpose of BCNF and describe how BCNF differs from 3NF. Provide an example to illustrate your answer.
3. With proper example explain – i) Generalization & ii) Aggregation.
4. Discuss the usefulness of ACID properties to ensure integrity during transaction process.
5. Briefly describe the 3-layer architecture of DBMS.
6. Consider a BANK database having customer, loan, account, employee and branch as entity types. Each banks of branch allows customers to open accounts and borrow loans. A customer can open more than one account and one account may also belong to one or more customers (joint account). Design an E-R diagram for the BANK database.
7. What do you mean by Weak Entity Set in E-R diagram?
8. Differentiate between Super key, Candidate Key and Primary Key.
9. Mention the advantages of use of Database Management System over the use of simple file based system for an software based organization.
10. Why we need foreign key? Discuss the foreign key provides referential integrity of the Database system.

SUB: COMPUTER NETWORKS

PAPER CODE: CS602

1. Name the four basic network topologies and cite an advantage of each type.
2. Draw a hybrid topology with a star backbone and four ring networks.
3. What are the responsibilities of data link layer in the internet model?
4. How are OSI ad ISO related to each other?
5. List the layer of internet model.
6. What is the difference between a port address a logical address and a physical address?
7. Distinguish between baseband transmission and broadband transmission.
8. Name the advantages of optical fiber over twisted pair and coaxial cable.

SUB: OPERATING SYSTEM

PAPER CODE: CS603

1. Difference between pre-emptive scheduling and non-pre-emptive scheduling
2. Explain the following scheduling algorithm with example?
   a) FCFS b) SJF
3. Explain about process control block.
4. What is deadlock? What are the four necessary conditions for deadlock?
5. What is resource allocation graph? What do you mean by wait –for- graph?
6. What is fragmentation? How can it be overcome?
7. What is difference between a page & segment?
8. Explain the following allocation algorithm

a) First fit
b) Best fit
c) Worst fit

SUB: COMPUTER GRAPHICS

PAPER CODE: CS604B

1. Write two techniques for producing color displays with a CRT.
2. Explain Mid-point circle drawing algorithm.
3. Draw a circle with radius=10 cm. using Mid-point circle drawing algorithm.
4. Briefly explain the raster scan display with a neat diagram.

5. Distinguish between Raster Scan and Random Scan Display
6. Discuss DDA line drawing algorithm with the help of an example.
7. Difference between DDA and Breshenham's line drawing algorithm
8. What is polygon?
9. What are the types of polygon?
10. Explain boundary fill and flood fill algorithm.

SUB: MULTIMEDIA TECHNOLOGY

PAPER CODE: CS605C

1. What is Multimedia? What is its impact? What are the components of Multimedia?
2. What is Text compression? What are the difference between lossy compression and lossless compression?
3. What is sampling process? What do you mean by sampling rate? What is quantization process and quantization error?
4. What do you mean by Text Format representation? Describe different types of Text.
5. Define the term: Pixel depth, Resolution, Luminance.
6. Write short notes on
   i. SGML
   ii. MPEG frame.
7. Describe the steps of JPEG compression
8. Why compression is needed?
9. What is the difference between CD and DVD?
10. Explain the steps for creating of a multimedia presentation.
11. What is text compression?
12. Describe RGB and CMYK color model with the help of proper diagram.

B.TECH 6TH SEM – AEIE

SUB: PRINCIPLES OF MANAGEMENT

PAPER CODE: HU601

1 .Briefly explains the characteristics of services.
2. What is marketing mix? What are the elements of marketing mix? Why these marketing mix elements are important in marketing management?
3. Write a short note on Brand Management. Explain the importance of 'Branding' in marketing.
4. Give a short note on:
   (p) Barriers to effective communication
   (q) Training and Development
   (r) Stress Management
5. How will you classify the levels of management in an organization?
6. Differentiate between Recruitment and Selection.

SUB: PROCESS CONTROL I

PAPER CODE: EI-601

1. Why is derivative control not used alone?
2. Explain the function of differential gap or neutral zone on the performance of On-Off controller.
3. Discuss analytically the problem for the proportional controller in a first order process.
4. What are the differences between retentive and non-retentive timer PLC?

5. Draw the block diagram of a basic process control loop and describe the function of each block in brief.
6. Explain with a neat sketch how feed forward control is implemented for the temperature control in a heat exchanger system.

SUB: ELECTRONIC INSTRUMENTATION AND MEASUREMENT

PAPER CODE: EI-602

1. Define deflection sensitivity for a CRT.
2. Draw the circuit diagram of a 10 : 1 probe together with the signal source and the Oscilloscope input. Explain briefly.
3. What is virtual instrumentation? What are the advantages of it over conventional system ?
4. a) What are the major advantages of LCD display over LED display ?
   b) A 3 1/ 2 digit seven segment LED display uses diodes that require a 20 mA forward current. Calculate the total supply current required.
5. With diagram, explain the operation of frequency to voltage converter.
6. a) With the help of a block diagram, explain the operation of a VCO.
   b) Explain the three states of a PLL

SUB: ADVANCED MICRO PROCESSORS AND MICROCONTROLLERS

PAPER CODE: EI-603

1) With a neat timing diagram explain the purpose of the instruction "STA" for 8085 microprocessor .
2) What are flag bits ? Explain the bit configuration of 8085 flag register.
3) Elaborate the following instruction related to 8085 programming.
   i) INTA ii) HOLD iii) READY iv) SOD v) SID
4) Draw the architecture of 8085 microprocessor
5) Write about the interrupt of 8086 microprocessor

SUB: SOFT COMPUTING

PAPER CODE:-EI-604B

1. a) Under which condition A* algorithm provides an optimal solution?
   b) Justify the statement "A game tree is basically an AND/OR graph".
   c) Discuss the state space search.
2. a) Explain Bayesian network with example.
   b) Two boxes contain respectively 4 white and 2 black balls, 1 white and 3 black balls. One ball is transferred from the first box into the second and then one ball is drawn from the later. It turns out to be black. What is the probability that the transferred ball is white?
   c) What are the advantages of Breadth-First-Search?
3. a) What can AI systems do ? What can AI systems NOT do yet?
   b) Define Plan-Space Search.
   c) Convert the following English statements to statements in first order logic:
      i) Every dog is an animal
      ii) Every dog likes to eat meat
      iii) No dog gets vegetables
      iv) Jam is a dog
      v) All of the dogs hate cats.
4. a) What is local maxima problem in simple Hill climbing method? Explain with diagram. Which method overcomes this problem and how?
   b) Why Steepest-Ascent Hill climbing method is called a heuristic search technique?
   c) State the steps of A* algorithm.

5. Write Short notes on any three:
   a) Tic-Tac-Toe
   b) Limitations of Hill-climbing Algorithm.
   c) 8 puzzle problem
   d) PROLOG
   e) Crypt Arithmetic.

SUB: DIGITAL SIGNAL PROCESSING

PAPER CODE:-EI-605A

1. Prove that an LTI system is BIBO stable if the ROC of system function includes the unit circle.
2. determine the DFT sequence x(n)={0,2,4,6}
3. Find the Z-transform and ROC of the signal,

$$x(n) = \left(\frac{1}{3}\right)^{n-2} u(n-1)$$

4. a) What is zero padding? What are its uses?
   b) What is the sufficient condition for the existences of DTFT?

5. Define Emery and Power signal. Calculate the power of the sequence $x(n)=2(-1)^n$ for $n>=0$, o when $n<0$

B.TECH 8TH SEM – CE

SUB: ORGANISATIONAL BEHAVIOUR

PAPER CODE: HU801

1. Leadership is situational. Do you agree? Explain.
2. How do you define Attitude? What are the factors that influence personality?
3. What are the contributing fields of OB?
4. Differentiate between manager and leader.
5. Explain the concept of Freud's Psycho-analytical theory of personality.
6. How is behavioural theory on leadership different from contingency theory of leadership?
7. Write a short note on Halo Effect & Horns Effect.
8. What are the different stages of group development?
9. Why is it important for manager to have a working knowledge of perception?

SUB: ENVIRONMENTAL POLUTION AND CONTROL

PAPER CODE: CE-801A

1. State the different forms of air pollutants.
2. Describe a grit chamber with neat sketch.
3. What is drop manhole? What are the objects? How is it constructed ?
4. Define Greenhouse Effect. State its effects.
5. What is primary and secondary treatment for pollution?
6. Mention the effects of noise and air pollution.
7. Explain the following laws-water act and motor vehicle act.
8. Give a note on probable environmental impact of a thermal power plant & a mining industry.
9. Differentiate between the following:
   a) Particulates and aerosols b) Super-adiabatic and sub-adiabatic.

10. What is population density and population forecasting?

SUB: PAVEMENT DESIGN

PAPER CODE: CE-802D

1. Describe about typical road cross section with sketch.
2. Write short notes on vertical curves with sketch.
3. Discuss about transition curves with sketch.
4. Write short notes on horizontal curves.
5. A circular load of radius 16cm with uniform contact pressure of 7.5 kg/cm^2 is applied on the surface of a homogeneous elastic mass. Determine the vertical stress under the centre of the load at a depth of 48cm from the surface using the i) formula ii) stress distribution chart.
6. What are the stresses acting in concrete pavements?
7. Draw a typical cross section of highway in embankment.
8. What are the methods to reduce the accidents in roads?
9. What is the recommendation of jayakar committee?
10. What are the different types of gradients used in the highways?

B.TECH 8TH SEM – CSE

SUB: ORGANISATIONAL BEHAVIOUR

PAPER CODE: HU801

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2. How do you define Attitude? What are the factors that influence personality?
3. What are the contributing fields of OB?
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8. What are the different stages of group development?
9. Why is it important for manager to have a working knowledge of perception?

SUB: CRYPTOGRAPHY & NETWORK SECURITY

PAPER CODE: CS801D

1. Explain MD5 algorithm.
2. What are the model of network security?
3. State the difference between stream and block ciphers?
4. How SSL is different from SHTTP? Explain with suitable example
5. How can be Caesar chipper cracked? What is the main feature of polygram substitution chipper? State the principle behind one time pad?
6. Explain Block ciper principles.
7. What are the functions of firewall?
8. What is access control? How it is differ from availability
9. Describe the RSA key generation and encryption and decryption algorithm?
10. RSA Algorithm

SUB: E-COMMERCE

PAPER CODE: CS802E

1. What is Electronic Data Exchange? Explain with the help of proper diagram and give examples.
2. What legal issues are associated with internet commerce? Explain them
3. Draw the Generic Trade cycle and briefly explain it.
4. Describe the component of EDI in electronic market?
5. Explain about Virtual Auction.
6. Is there any privacy and data security in CRM?
7. What are the types/variations of CRM?
8. What is e-CRM?
9. Explain different types of digital documents.
10. How risk is handled in e-Payment system?

B.TECH 8TH SEM – EEE

SUB: ORGANISATIONAL BEHAVIOUR

PAPER CODE: HU801

1. Leadership is situational. Do you agree? Explain.
2. How do you define Attitude? What are the factors that influence personality?
3. What are the contributing fields of OB?
4. Differentiate between manager and leader.
5. Explain the concept of Freud's Psycho-analytical theory of personality.
6. How is behavioural theory on leadership different from contingency theory of leadership?
7. Write a short note on Halo Effect & Horns Effect.
8. What are the different stages of group development?
9. Why is it important for manager to have a working knowledge of perception?

SUB: FACTS & HVDC TRANSMISSION

PAPER CODE: EEE 801D

1. Explain the relative advantage and disadvantages of using these links.
2. Describe the working principle of TCSC device.
3. Explain the advantages & disadvantages of HVDC transmission.
4. Explain the STATCOM device.
5. How TCSC enhances power transfer capability of lines?
6. Compare Shunt compensation system over series compensation device.

SUB: SOFTWARE ENGINEERING

PAPER CODE: EEE 802A

1. What is DFD? Draw a DFD for Hospital management system
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 a use case diagram for ATM system.
6. What is 4Ps of software project management?
7. What is iterative waterfall model? What are the advantages of iterative waterfall model over classical waterfall model?
8. What is prototype? Explain the model which use prototype.

9. What are the features of good software? What are the Top-down, Bottom-up approach?
10. What is software maintenance? What are the different types of software maintenance?

B.TECH 8TH SEM –ECE

SUB: ORGANISATIONAL BEHAVIOUR
PAPER CODE: HU801

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SUB: SATELLITE COMMUNICATION AND REMOTE SENSING
PAPER CODE: EC 801C

1) What are the frequency allocations for Satellite Services?
2) What are the problems for Orbital and Space Craft systems and mention the drawbacks?
3) Discuss the multiple access (FDMA, TDMA and CDMA) techniques broadly and describe the comparisons between the multiple access techniques.
4) What is Transponder and why it is used in Satellite systems?
5) Describe Friis transmission equation.

SUB: RENEWABLE ENERGY
PAPER CODE: EC802C

1)Explain the operating principle of optical pyrometer with proper diagram. Also mention its range and advantages.
2) How can velocity of liquid through a pipeline be measured by using ultrasonic transducer ? Draw necessary diagram. What frequency range of ultrasonic wave is used by ultrasonic transducer ?
3) Discuss briefly the use of platinum in metal resistance thermometric sensor.
4)Give simple scheme of using quartz resonator piezoelectric arrangement for force sensing.
5) What are the differences beEtween Vilari effect and Wiedemann effect ? How are these two effects used in developing magneto-elastic sensors .

B.TECH 8TH SEM –ME

SUB: ECONOMICS FOR ENGINEERS
PAPER CODE: ME 801(HU)

1. The following details on the cash flows of two projects A and B.

Year	Project A cash flows (Rs.)	Project B cash flows (Rs.)
0	4,00,000	5,00,000
1	2,00,000	1,00,000
2	1,75,000	2,00,000
3	3 25,000	3,00,000
4	2,00,000	4,00,000
5	1,50,000	2,00,000

Cost of capital is 12% p.a. Compute PBP, NPV and PI for A and B and suggest which project should be accepted and why.

2. (a) Differentiate elaborately Absorption Costing and Marginal Costing.

(b) Variable cost per unit is Rs.12. Selling price per unit is Rs.20. Fixed expenses is Rs.60,000. Find BEP and what will be the selling price per unit if the BEP is brought down to 6000 units?

3. What is the importance of Ratio Analysis and Capital budgeting methods in an organization?

4. Give a short note on:

(s) Average Rate of Return (ARR)

(t) Balance Sheet

(u) Power sizing model of cost estimation.

5. Explain various advantages and disadvantages of Capital Budgeting Appraisal criteria.

SUB: ENERGY CONSERVATION & MANAGEMENT
PAPER CODE: ME802C

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

SUB: AUTOMOBILE ENGINEERING
PAPER CODE: ME803D

1. Draw the layout of Master vac power assisted brakes. Explain the construction & working of main components of this system.
2. Explain with neat sketch the construction of a propeller shaft. Explain the necessity of differential in automobile
3. How an automobile can be classify? Describe basic component and parts of automobile.
4. Draw the diagram fuel mixing and circuit control system.

5. Describe classification of carburetor. Explain working principle of simple carburetor & Zenith carburetor with neat sketches.
6. Explain advantages and disadvantages of petrol injection system.
7. Explain working principle and line diagram of common rail and individual injection system.
8. Explain various component of water cooling system.
9. With the help of neat sketches, explain the construction & working of (a) A.C. Mechanical fuel pump &(b) S,U. Electrical fuel pump.
10. Enlist the common troubles experienced in the fuel supply system of an engine. Locate their possible causes & suggest measure to remedy these.
11. Describe with neat sketches the construction & working function of (a) constant mesh gear box & sliding mesh gear box.
12. Explain with neat sketches the final drive also Hotch-kiss drive in automobile system.
13. What is perfect steering. Discuss in detail the Ackermann steering mechanism.
14. Enlist the common troubles experienced in the fuel supply system of an engine. Locate their possible causes & suggest measure to remedy these.

B.TECH 8TH SEM – EE

SUB: ORGANISATIONAL BEHAVIOUR

PAPER CODE: HU801

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SUB: HVDC TRANSMISSION

PAPER CODE: EE801A

1. Explain the causes of reactive power absorbed by HVDC converter substation.
2. What are the types of HVDC transmission system applications ?
3. Explain the importance of a HVDC converter station, in the whole scheme of HVDC transmission.
4. What are the precautions needed for series & parallel connections of thyristor.
5. Give the necessity of smoothing reactor in a HVDC system and list out main functions of it.
6. Compare EHV AC & HVDC options for an Integral power network.
7. Compare simultaneous and sequential methods of power flow analysis.
8. Write short notes on Limitation of HVDC transmission.
9. Draw the flow chart for AC/DC load flow.
10. Write short notes on Bipolar HVDC links.

SUB: SENCORS & TRANDUCERS

PAPER CODE: EE802B

1)Explain the operating principle of optical pyrometer with proper diagram. Also mention its range and advantages.
2) How can velocity of liquid through a pipeline be measured by using ultrasonic transducer ? Draw necessary diagram. What frequency range of ultrasonic wave is used by ultrasonic transducer ?
3) Discuss briefly the use of platinum in metal resistance thermometric sensor.
4)Give simple scheme of using quartz resonator piezoelectric arrangement for force sensing.
5) What are the differences beetween Vilari effect and Wiedemann effect ? How are these two effects used in developing magneto-elastic sensors .