

B. Tech Degree VI Semester Examination April 2011**ME 601 INSTRUMENTATION AND CONTROL SYSTEMS**
(2006 Scheme)

Time : 3 Hours

Maximum Marks : 100

PART – A
(Answer ALL questions)

(8 x 5 = 40)

- I. (a) Briefly explain the elements of a generalized measurement systems.
 (b) What do you mean by a zero order instrument?
 (c) What do you mean by gauge factor? Obtain an expression for gauge factor.
 (d) Explain the working principle of a sound level meter.
 (e) Define and explain transfer functions.
 (f) Explain the concept of steady state error and static error constants.
 (g) Define BIBO stability. What is the requirement for BIBO stability?
 (h) Explain the working principle of DC Tachogenerator.

PART – B

(4 x 15 = 60)

- II. (a) What do you mean by order of an instrument in the mathematical modeling? Define time constant and static sensitivity of a first order instrument. (6)
 (b) Derive the equations for time response of a first order system when subjected to
 (i) unit step input (ii) unit ramp input
 Draw response curves and find the steady error in each case. (9)

OR

- III. (a) Explain the three categories of error in measuring systems. (6)
 (b) Explain various systematic errors giving suitable examples. (9)
- IV. (a) What do you mean by un bonded and bonded strain gauges? (5)
 (b) Explain the methods of calibration of strain gauges. (10)

OR

- V. (a) Write notes on :
 (i) hydraulic load cells (ii) Froude hydraulic dynamometer. (7)
 (b) Briefly explain ORSAT's apparatus with neat sketches. (8)

- VI. For a unity feed back control system the open loop transfer function

$$G(s) = \frac{10(s+2)}{s^2(s+1)}. \text{ Find}$$

- (i) the position, velocity and acceleration error constants
 (ii) the steady state error when the input is $R(s) = \frac{3}{s} - \frac{2}{s^2} + \frac{1}{3s^3}$.

(15)

OR

- VII. Find the steady state error when the input is

- (i) unit step signal
 (ii) unit ramp signal
 (iii) unit parabolic signal

(15)

- VIII. (a) Briefly explain- Routh-Hurwitz criterion. (5)
 (b) Using Routh criterion, determine the stability of the system represented by the characteristic equation, $s^4 + 8s^3 + 18s^2 + 16s + 5 = 0$. Comment on the location of the roots of characteristic equation. (10)

OR

- IX. Sketch Bode Plot for the following transfer function and determine the system gain K for the gain cross over frequency to be 5 rad/sec.

$$G(s) = \frac{Ks^2}{(1+0.25s)(1+0.025s)}$$

(15)

B. Tech Degree VI Semester Examination April 2011**ME 602 DYNAMICS OF MACHINERY**
(2006 Scheme)

Time : 3 Hours

Maximum Marks : 100

PART - A
(Answer ALL questions)

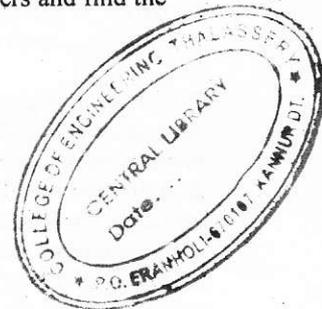
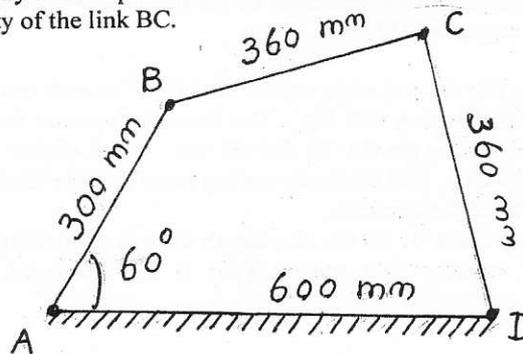
(8 x 5 = 40)

- I. (a) State and explain D'Alembert's principle.
 (b) Give an account of the two inversions of a slider-crank mechanism.
 (c) What is coefficient of fluctuations of speed? Obtain the expression for the coefficient of fluctuation of speed in terms of maximum fluctuation of energy and kinetic energy of the flywheel at mean speed.
 (d) Discuss the effect of gyroscopic couple on an aeroplane.
 (e) Explain static balancing and dynamic balancing.
 (f) What do you mean by balancing machines? Describe any one type of balancing machine.
 (g) Derive the relation for ratio of belt tensions in a flat belt drive.
 (h) With the help of a neat sketch explain belt transmission dynamometer.

PART - B

(4 x 15 = 60)

- II. (a) In a pin jointed four bar mechanism as shown in the figure, AB = 300 mm, BC = CD = 360 mm and AD = 600 mm. The angle BAD = 60°. The crank AB rotates uniformly at 100 rpm. Locate all the instantaneous centers and find the angular velocity of the link BC.



- (b) Explain shaking forces and shaking moments.

(11)

(4)

OR

- III. A horizontal steam engine running at 240 rpm has a bore of 20 cm and stroke of 36 cm. The piston rod is 2 cm in diameter and connecting rod length is 90 cm. The mass of the reciprocating parts is 7 Kg and the frictional resistance is equivalent to a force of 500 N. Determine the following when the crank is at 120° from the inner dead center, the mean pressure being $5 \times 10^2 \text{ N/m}^2$ on the cover side and $1 \times 10^2 \text{ N/m}^2$ on crank side.
- (i) thrust on the connecting rod
 (ii) thrust on the cylinder walls
 (iii) load on the bearings
 (iv) turning moment on the crank shaft.

(15)

(P.T.O)

- IV. The intercepted areas between the output torque curve and the mean resistance line of a turning moment diagram for a multicylinder engine, taken in order from one end are as follows:
 - 0.35, + 4.10, - 2.85, + 3.25,
 - 3.35, + 2.60, - 3.65, + 2.85, - 2.60 sq.cm.
 The diagram has been drawn to a scale of 1 cm = 700 N-m and 1 cm = 45° . The engine speed is 900 rpm and the fluctuation in speed is not to exceed 2% of the mean speed.
 Find a suitable diameter and cross section of the fly wheel rim if the safe centrifugal stress is limited to 7×10^6 N/m². The density of the material of the flywheel may be taken as 7200 Kg/m³. The rim is rectangular with the width 2 times the thickness. Neglect effect of arms etc. (15)
- OR**
- V. Each ball of a Porter governor has a mass of 3 Kg and the mass of the sleeve is 15 Kg. The governor has equal arms each of 200 mm length and pivoted on the axis of rotation. When the radius of rotation of the ball is 120mm, the sleeve begins to rise up 160 mm at the maximum speed. Determine the
 (i) range of speed
 (ii) lift of the sleeve
 (iii) effort of the governor
 (iv) power of the governor.
 What will be the effect of friction at the sleeve if it is equivalent to 8N? (15)
- VI. A shaft supported in bearings that are 1.6m apart projects 400mm beyond bearings at each end. It carries three pulleys one at each end and one at the center of its length. The masses of the end pulleys are 40 Kg and 22Kg and their centers of mass are at 12mm and 18 mm respectively from the shaft axes. The mass of the center pulley is 38 Kg and its center of mass 15 mm from the shaft axis. The pulleys are arranged in a manner that they give static balance. Determine
 (i) the relative angular positions of the pulleys
 (ii) the dynamic forces developed on the bearings when the shaft rotates at 210 rpm. (15)
- OR**
- VII. A four crank engine has the two outer cranks set at 120° to each other and their reciprocating masses are each 400 Kg. The distance between the planes of rotation of adjacent cranks are 45, 75 and 60 cm. If the engine is to be in complete primary balance, find the reciprocating mass and the relative angular positions for each of the inner cranks.
 If the length of each crank be 30 cm, the length of each connecting rod 10cm and the speed of rotation 240 rpm. What is the maximum secondary unbalanced force? (15)
- VIII. Determine the width of a 9.75 mm thick leather belt required to transmit 15 KW from a motor running at 900 rpm. Diameter of the driving pulley of the motor is 30 cm. The driven pulley runs at 300 rpm and the distance between the center of the two pulleys is 3 meters. The mass of the leather is 1×10^{-4} Kg/cm³. Maximum allowable stress in the leather is 250 N/cm². Coefficient of friction between the leather and pulley is 0.30. Assume open belt drive and neglect the sag and slip of the belt. (15)
- OR**
- IX. (a) Explain the working of a shoe brake. (5)
 (b) A band brake acts on the 3/4 of circumference of a drum of 450 mm diameter which is keyed to the shaft. The band brake provides a braking torque of 225 N-m. One end of the band is attached to a fulcrum pin of the lever and the other end to a pin 100 mm from the fulcrum. If the operating force is applied at 500 mm from the fulcrum and the coefficient of friction is 0.25, find the operating force when the drum rotates in the
 (i) anticlockwise direction
 (ii) clockwise direction. (10)

B. Tech Degree VI Semester Examination April 2011

ME 602 MACHINE DESIGN I
(2002 Scheme)

(Use of approved design data book permitted)

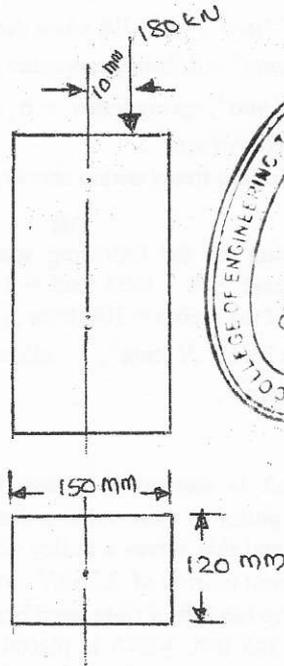
Time : 3 Hours

Maximum Marks : 100

- I. (a) Define Design. Explain the steps involved in design. (10)
 (b) A wrought iron bar 50mm diameter and 2.5m long transmits a shock energy of 100Nm. Find the maximum instantaneous stress and elongation. Take $E = 200GN/m^2$ (10)

OR

- II. (a) What are the factors to be considered for the selection of materials for the design of machine elements? Discuss in detail. (10)
 (b) A rectangular strut is 150mm wide and 120mm thick. It carries a load of 180kN at an eccentricity of 10mm in a plane bisecting the thickness as shown in the figure. Find the maximum and minimum intensities of stress in the section. (10)



- III. Design a cotter joint to connect piston rod to the cross head of a double acting steam engine. The diameter of the cylinder is 300mm and the steam pressure is $1N/mm^2$. The allowable stresses for the material of cotter and piston rod are $\sigma_t = 50N/mm^2$, $\sigma_s = 40N/mm^2$ and $\sigma_c = 84N/mm^2$. (20)

OR

- IV. Two mild steel rods are connected by a knuckle joint to transmit an axial load of 150kN. Design the joint completely. Assume the working stresses for both the pin and the rod material as $80N/mm^2$ in tension $68N/mm^2$ in shear and $160N/mm^2$ in crushing. Assume that the rods to be connected are not very long. (20)

- V. (a) Explain the different failure modes of riveted joints. (8)
 (b) Design a double riveted butt joint with two cover plates for the longitudinal seam of a boiler shell $1.5m$ in diameter subjected to a steam pressure of $0.95N/mm^2$. Assume the joint efficiency as 75%, allowable tensile stress in the plate is $90N/mm^2$, compressive stress $140N/mm^2$ and shear stress in the rivet is $56N/mm^2$. (12)

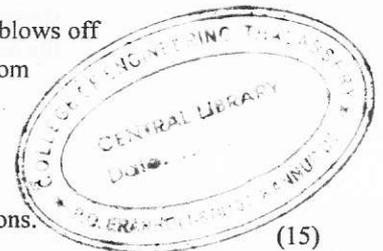
OR

- VI. (a) Give the advantages and disadvantages of welded joints. (10)
 (b) A plate $100mm$ wide and $12.5mm$ thick is to be welded to another plate by means of parallel fillet welds. The plates are subjected to a load of $50kN$. Find the length of the weld so that the maximum stress does not exceed $56N/mm^2$. Consider the joint first under static loading and then under fatigue loading. (10)

- VII. (a) Explain the term buckling of springs. (5)
 (b) Calculate the dimensions of a helical spring for a spring loaded safety valve from the following data.

valve diameter = $65mm$, max pressure when the valves blows off freely = $0.73N/mm^2$, valve lift when the pressure rises from 0.7 to $0.73N/mm^2 = 3.2mm$, maximum permissible stress = $500N/mm^2$, spring index = 6 , modulus of rigidity = $85 \times 10^3 N/mm^2$.

Give a neat sketch of the freely spring showing major dimensions.



(15)

OR

- VIII. Design a leaf spring for the following specifications. Number of springs supporting the load = 4 , total load = 14 tonnes, maximum number of leaves = 10 , span of the spring = $1000mm$, permissible deflection = $80mm$. Take $E = 2 \times 10^5 N/mm^2$, allowable stress in spring material = $600N/mm^2$. (20)

- IX. A steel solid shaft is supported by two bearings placed $1m$ apart. A $600mm$ diameter pulley is mounted at a distance of $300mm$ to the right of left hand bearing and this drives a pulley directly below it with the help of belt having maximum tension of $2.25kN$. Another pulley $400mm$ diameter is placed $200mm$ to the left of right hand bearing and is driven with the help of electric motor and belt, which is placed horizontally to the right. The angle of contact for both the pulleys is 180° and $\mu = 0.24$. Determine the diameter of shaft, allowing working stress of $63N/mm^2$ in tension and $42N/mm^2$ in shear for the material of shaft. Assume that the torque on one pulley is equal to that on the other pulley. (20)

OR

- X. (a) Explain the term critical speed of shaft. (5)
 (b) A mild steel shaft transmits $23KW$ at $200rpm$. It carries a central load of $900N$ and is simply supported between the bearings $2.5m$ apart. Determine the size of shaft if allowable shear stress is $42N/mm^2$ and the maximum tensile or compressive stress is not to exceed $56N/mm^2$. What size of the shaft will be required, if it is subjected to gradually applied load. (15)

B. Tech Degree VI Semester Examination April 2011**ME 604 HEAT AND MASS TRANSFER**
(2006 Scheme)

Time : 3 Hours

Maximum Marks : 100

PART – A(Answer ALL questions)

(8 x 5 = 40)

- I. (a) What is critical insulation thickness? Derive an expression for the critical insulation thickness for a cylinder.
- (b) Derive an expression for the temperature distribution in a semi infinite plate.
- (c) Differentiate film boiling and pool boiling.
- (d) State and explain Newton's law of cooling. Differentiate Free Convection and Forced Convection. Enumerate the differences between Laminar flow and Turbulant flow.
- (e) What do you mean by Radiation Shape factor? State and explain reciprocity theorem.
- (f) Describe about Radiation Shields. How do you find out the percentage reduction in heat flow by using radiation shields?
- (g) Explain about different types of Heat Exchangers.
- (h) Describe about
- Effectiveness
 - NTU
 - LMTD
 - Fouling factor

**PART – B**

(4 x 15 = 60)

- II. A steel tube ($K = 43.26 \text{ W/mK}$) of 5.08 cm I.D and 7.62 cm O.D is covered with a 2.54 cm layer of asbestos insulation ($K=0.208 \text{ W/mK}$). The inside surface of the tube receives heat by convection from a hot gas at a temperature of $T_a = 316^\circ\text{C}$ with a heat transfer co-efficient $h_a = 284 \text{ W/m}^2\text{K}$ while the outer surface of the Insulation is exposed to the ambient air at $T_b = 38^\circ\text{C}$ with a heat transfer coefficient of $h_b=17\text{W/m}^2\text{K}$. Estimate
- the loss of ambient air for 3m length of the tube
 - the temperature drops across the tube material and insulation layer.

(15)

OR

- III. (a) A hollow sphere is kept at a uniform temperature T_i at the inner surface $r = r_i$ and at temperature T_o at the outer surface $r = r_o$. Show that the heat transfer rate, Q , through the sphere is given by

$$Q = \frac{T_i - T_o}{R} \text{ where the thermal resistance of the sphere is } R = \frac{r_o - r_i}{KA_m},$$

$$A_m = \sqrt{A_i A_o}.$$

(7)

- (b) A hollow sphere is made up of two materials; first with $K = 70 \text{ W/mK}$ is having an I.D of 10cm and O.D of 30cm and the second with $K = 15 \text{ W/mK}$ forms the outer layer with O.D of 40cm. The inside and outside temperatures are 300°C and 30°C respectively. Estimate the rate of heat flow through this sphere assuming perfect contact between two materials.

(8)

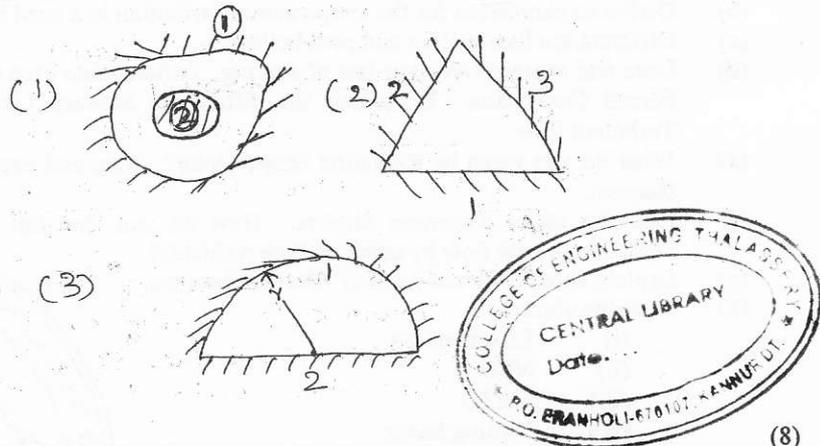
(P.T.O)

- IV. A large vertical plate 5m high is maintained at 100°C and exposed to air at 20°C . Calculate the convection heat transfer coefficient. (15)

OR

- V. Atmospheric air at 275 K and a free stream velocity of 20m/s flows over a flat plate of 1.5m long that it maintained at a uniform temperature of 325 K. Calculate the average heat transfer co-efficient over the region where the boundary layer is laminar, the average heat transfer co-efficient over the entire length of the plate and the total heat transfer rate from the plate to the air over the length 1.5m and width 1m. Assume transition occurs at $Re_c = 2 \times 10^5$. (15)

- VI. (a) Compute the shape factors between different surfaces of the configurations shown in the figure.



- (b) A small sphere (O.D = 60mm) with a surface temperature of 300°C is located at the geometric centre of a large sphere (I.D = 360 mm) with an inner surface temperature of 15°C . What is the net interchange of heat between the two spheres? (8)

OR

- VII. The net radiation from the surface of two parallel plates maintained at temperatures T_1 and T_2 is to be reduced by 79 times. Calculate the number of screens to be place between the two surfaces to achieve this reduction in heat exchange, assuming the emissivity of the screens as 0.05 and that of the surfaces as 0.8. (15)

- VIII. A counter flow heat exchanger is employed to cool 0.55 Kg/s ($C = 2.45 \text{ kJ/Kg}^{\circ}\text{K}$) of oil from 115°C to 40°C by the use of water. The inlet and outlet temperatures of cooling water are 15°C and 75°C respectively. The over all heat transfer co-efficient is expected to be $1450 \text{ W/m}^2\text{K}$. Using NTU method calculate the following. (15)
- The mass flow rate of water
 - The effectiveness of the heat exchanger
 - The surface area required.

OR

- IX. In a certain double pipe heat exchanger, hot water flows at a rate of 5000 Kg/hr. and gets cooled from 95°C to 65°C . At the same time, 50,000 kg/hr of cooling water at 30°C enters the heat exchanger. The over all heat transfer coefficient remains constant at $2270 \text{ W/m}^2\text{K}$. Determine the heat transfer area required and the effectiveness assuming that two streams are in parallel flow. Assume for the both the streams $C_p = 4.2 \text{ kJ/KgK}$. (15)

B. Tech Degree VI Semester Examination April 2011

ME 605 TOOL ENGINEERING AND DESIGN
(2006 Scheme)

Time : 3 Hours

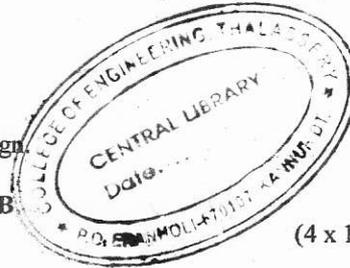
Maximum Marks : 100

PART – A
(Answer ALL questions)

(8 x 5 = 40)

- I. (a) Sketch a single point cutting tool and show rake angles and clearance angles.
(b) Sketch a broaching tool and mark its portions.
(c) Write notes on cutting fluids and their selection.
(d) What are the factors affecting cutting forces?
(e) Write notes on Tool Life.
(f) Explain economics of machining.
(g) What is 3 – 2 – 1 method of location?
(h) Write notes on Press Working and Die block design.

PART – B



(4 x 15 = 60)

- II. Discuss different types of cutting tool materials and their properties.
OR
- III. How Grinding Wheels are specified? What are the criteria for selecting a grinding wheel for a particular purpose?
- IV. Explain the thermal aspects of Machining.
OR
- V. How chip formation helps to identify the nature of metals being machined?
- VI. Explain machinability. What are the variables affecting machinability? What is machinability index?
OR
- VII. Write notes on :
(i) Selection of optimal machining condition.
(ii) Productivity of machine tools
- VIII. Differentiate between Jigs and Fixtures. What are the design considerations common to jigs and fixtures?
OR
- IX. With neat sketch describe –
(i) pin location, radial location and V-location
(ii) Toggle clamp, Screw clamp and Latch clamp.

B. Tech Degree VI Semester Examination April 2011

ME 606 CAD/CAM
(2006 Scheme)

Time : 3 Hours

Maximum Marks : 100

PART – A
(Answer ALL questions)

(8 x 5 = 40)

- I. (a) Explain Computer Aided Design
(b) Discuss various types of transfer mechanisms used to move parts between stations.
(c) Explain any five advantages of Numerical Control.
(d) What are the miscellaneous functions? Explain any two of them.
(e) Write a note on Computer Numerical Control Systems.
(f) Explain Automatic Tool changing system.
(g) Explain any five applications of robots.
(h) Explain the concept of Flexible Manufacturing System.

PART – B

(4 x 15 = 60)

- II. (a) What is automation? What are the levels of automation? (10)
(b) Explain Detroit type of automation. (5)

OR

- III. Discuss the techniques for solving large scale line balancing problems based on the use of the computer with examples. Also discuss the other methods to improve line balance. (15)

- IV. (a) Differentiate between straight and contouring systems. (7)
(b) Differentiate between open loop and closed loop systems. (8)

OR

- V. (a) Discuss about the computer assisted part programming. (8)
(b) Write notes on geometry statements in APT. (7)

- VI. (a) Explain basic forms of CNC controlled loading system. (12)
(b) What are the advantages of CNC-Controlled loading system? (3)

OR

- VII. Explain special tools and tool systems in CNC Systems for lathes. Also state the advantages of CNC controlled production system. (15)

- VIII. (a) Explain the control approaches of robots. (8)
(b) Discuss the classification of robots. (7)

OR

- IX. Write short notes on :
(i) Sensors in robots
(ii) Artificial intelligence
(iii) Accuracy and Repeatability. (15)

B. Tech Degree VI Semester Examination April 2011**IT 601 FINANCIAL MANAGEMENT AND E-BANKING**
(2006 Scheme)

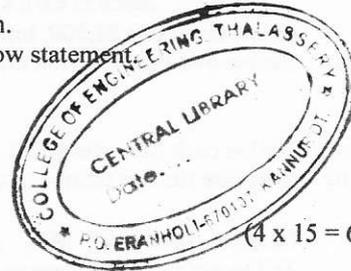
Time : 3 Hours

Maximum Marks : 100

PART – A
(Answer ALL questions)

(8 x 5 = 40)

- I. (a) Define accounting. What are the functions of accounting?
 (b) Write short notes on Capital Expenditure and Revenue Expenditure.
 (c) What are the limitations of accounting ratios?
 (d) Write the merits and demerits of Interfirm Comparison.
 (e) Distinguish between Fund flow statement and Cash flow statement.
 (f) Briefly explain Cost reduction.
 (g) Write a short note on Security First Network Bank.
 (h) Explain the pricing issues in online banking.

PART – B

(4 x 15 = 60)

- II. From the following Trial Balance and additional information, prepare Trading and Profit and Loss Account and Balance Sheet.

TRIAL BALANCE		
Particulars	Dr. Amount (Rs.)	Cr. Amount (Rs.)
Capital		20,000
Sundry Debtors	5,400	
Drawings	1,800	
Machinery	7,000	
Sundry Creditors		2,800
Wages	10,000	
Purchases	19,000	
Opening Stock	4,000	
Bank Balance	3,000	
Carrier Charges	300	
Salaries	400	
Rent and Taxes	900	
Sales		29,000
	51,800	51,800

(P.T.O)

Additional Information:

- (i) Closing stock Rs.1,200
- (ii) Outstanding rent and taxes Rs.100
- (iii) Charge depreciation on machinery at 10%
- (iv) Wages prepaid Rs.400. (15)

OR

III. Briefly explain the basic concepts and conventions of accounting. (15)

IV. What is Cost Accounting? Explain the classification of cost. (15)

OR

V. (a) From the particulars given below, calculate:

- (i) Break even sales
- (ii) Margin of safety
- (iii) Sales to earn a profit of Rs.4000

Given that sales 20,000, total cost 16,000 and variable cost 12,000. (9)

(b) Define overheads. What are the classification of overheads? (6)

VI. (a) Define cash flow statement. Write the sources and applications of cash. (10)

(b) What are the limitations of cash flow statement? (5)

OR

VII. Balance Sheet of M/s. Black and White as on 1 January, 2010 and 31 December, 2010 were as follows :

BALANCE SHEET					
Liabilities	1 Jan, 2010 Rs.	31 Dec.,2010 Rs.	Assets	1 Jan.,2010 Rs.	31 Dec., 2010 Rs.
Creditors	40,000	44,000	Cash	10,000	7,000
Mr.White's Loan	25,000	-	Debtors	30,000	50,000
Loan from R.N.Bank	40,000	50,000	Stock	35,000	25,000
Capital	1,25,000	1,53,000	Machinery	80,000	55,000
			Land	40,000	50,000
			Building	35,000	60,000
	<u>2,30,000</u>	<u>2,47,000</u>		<u>2,30,000</u>	<u>2,47,000</u>

During the year, machine costing Rs.10,000 (accumulated depreciation Rs.3,000) was sold for Rs.5,000. The provision for depreciation against machinery as on 1 January, 2010 was Rs,25,000 and on 31 December, 2010 Rs,40,000. Net profit for the year 2010 amounted to Rs.45,000. Prepare Funds Flow Statement. (15)

VIII. Explain the Home Banking implementation approaches. (15)

OR

IX. Illustrate the changing dynamics in banking industry. (15)

B. Tech Degree VI Semester Examination April 2011

IT 602 INTERNET PROGRAMMING (2006 Scheme)

Time : 3 Hours

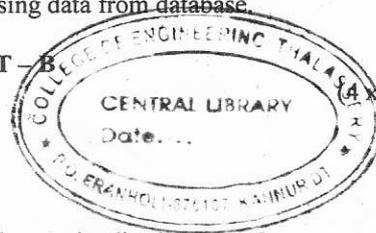
Maximum Marks : 100

PART – A (Answer ALL questions)

(8 x 5 = 40)

- I. (a) 'XML is called meta language'. Why?
(b) Describe the disadvantages of using attributes in XML.
(c) Give the drawbacks of CGI.
(d) What do you mean by ports?
(e) What are the advantages of JSP over various server side programming techniques?
(f) What are the implicit objects available to the JSP Page?
(g) Write a short note on GET and POST methods in PHP with examples.
(h) Write the syntax of PHP commands for accessing data from database.

PART – B



15 = 60

- II. (a) Describe the syntax of the XML Document. (7)
(b) Explain the process of XML parsing. (8)

OR

- III. (a) What is DTD? What are its applications? What are its disadvantages? (8)
Mention any one alternatives to DTD. (8)
(b) Why namespaces are used in XML? (7)

- IV. (a) Write a CGI script that prompts the user for his or her name and age. When the user presses the submit button, convert the age into number of months and print the result? (8)
(b) Explain the steps involved in executing a CGI program. (7)

OR

- V. (a) List *any four* functions in Perl which help generating HTML tags? (8)
(b) Write a web based program which receives a number 'n' from HTML form and generates the Fibonacci series upto 'n' using PERL program which process the form information. (7)

- VI. Create an application that accepts the entries from the guest book form and add those entries in a database. (15)

OR

- VII. Write an application to display the price of the items of an online store. The details of the items are to be stored in a database. The item name is provided from the form. (15)

- VIII. Write a program in PHP to validate a login form and if validated the user may be permitted to modify his personnel data. (15)

OR

- IX. Write a program in PHP to access a table student (Rollno, Name, Branch, District) and display the names of all students in a selected district. (15)

B.Tech Degree VI Semester Examination April 2011

CS/IT 603 OPERATING SYSTEMS (2006 Scheme)

Time : 3 Hours

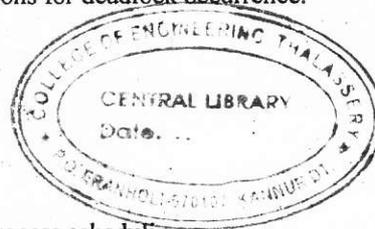
Maximum Marks : 100

PART - A (Answer ALL questions)

(8 x 5 = 40)

- I. (a) Define operating system. What are the objectives and functions of operating system?
(b) Explain *five* state process models with a neat diagram.
(c) Differentiate fixed size and variable size partitioning in multiprogramming.
(d) Give a short note on virtual memory.
(e) Explain different functions of file management.
(f) List out and explain three techniques for performing I/O Operation.
(g) Define deadlock and what are the conditions for deadlock occurrence.
(h) Explain Banker's Algorithm.

PART - B



(4 x 15 = 60)

- II. List and explain any three methods for process scheduling. (15)
OR
- III. What is message passing? Explain how semaphores are used in solving reader's writer's problem. (15)
- IV. Differentiate between paging and segmentation. What are the uses of TLB? (15)
OR
- V. Explain the following terms with respect to memory management : (3 x 5 = 15)
(i) Bitmaps
(ii) Linked list
(iii) Buddy system
- VI. (a) Explain DMA with neat diagram. (8)
(b) Describe I/O buffering. (7)
OR
- VII. What are the different disk scheduling policies? Explain. (15)
- VIII. (a) Discuss about Deadlock Detection and Recovery. (10)
(b) Define safe and unsafe state in Deadlock. (5)
OR
- IX. (a) Explain two phase locking. (5)
(b) By using Dining philosopher's problem show that it is free from deadlock and starvation. (10)

B.Tech Degree VI Semester Examination April 2011

CS/IT 604 ANALYSIS AND DESIGN OF ALGORITHMS (2006 Scheme)

Time : 3 Hours

Maximum Marks : 100

PART - A

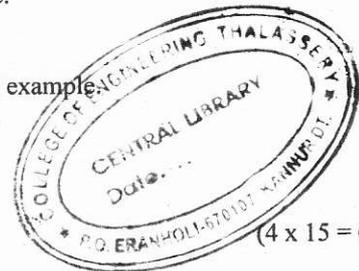
(Answer ALL questions)

(8 x 5 = 40)

- I. (a) Explain with an example divide and conquer technique.
(b) Solve the recurrence equation $T(n) = 2T(\sqrt{n}) + 1$
(c) Explain any one searching algorithm with an example.
(d) What is Amortized Time Analysis?
(e) Explain strongly connected component algorithm.
(f) Explain transitive closure of a binary relation with an example.
(g) Explain the significance of approximation algorithm.
(h) Explain graph coloring problem with an example.

PART – B

- II. (a) Explain the different asymptotic notations used for specifying the growth rate of functions. (10)
(b) Explain dynamic programming method of solving a problem. (5)
OR
III. Explain the various criteria used for analyzing algorithms with suitable examples. (15)
IV. Explain quick sort algorithm with an example. Analyze the worst case, best case and average case behaviour of quick sort. (15)
OR
V. (a) What are the properties of Red – Black Trees? Explain the insertion procedure to a Red – Black Tree. (10)
(b) Explain the union operation in Binomial Heap. (5)
VI. (a) Explain any one algorithm for finding all pair shortest path in graphs. (10)
(b) Explain BFS with an example. (5)
OR
VII. What is a binary search tree? Explain an algorithm for constructing an optimal binary search tree. Analyze its complexity. (15)
VIII. (a) Distinguish between NP hard and NP complete problem. (5)
(b) What is Bin Packing problem? Explain the first fit decreasing strategy for solving bin packing problem. (10)
OR
IX. Define Travelling salesman problem. Explain the three possible strategies for TSP. (15)



(4 x 15 = 60)

B. Tech Degree VI Semester Examination April 2011

IT 605 OBJECT ORIENTED MODELLING AND DESIGN (2006 Scheme)

Time : 3 Hours

Maximum Marks : 100

PART A

(Answer ALL questions)

(8 x 5 = 40)

- I. (a) Explain the structure of UP.
(b) Name and describe the relationships in a usecase diagram.
(c) Explain the Activity Semantics in an activity diagram.
(d) Describe any two UML dynamic diagrams.
(e) With a suitable example explain a template class.
(f) Distinguish a composite state with a submachine state.
(g) Write a note on Software Architecture.
(h) What is OCL? Explain.

PART B



(4 x 15 = 60)

- II. (a) With suitable example explain Actor-generalization and use case generalization. (10)
(b) Briefly explain UML and its importance. (5)
- OR**
- III. (a) Explain the different types of object relationships. Give examples. (10)
(b) Explain any three dependencies in packages. (5)
- IV. With a suitable example explain an activity diagram. (15)
- OR**
- V. With a suitable example explain a sequence diagram. (15)
- VI. (a) Briefly explain design work-flow. (7)
(b) Explain any two characteristics of a well formed design class. (8)
- OR**
- VII. Write short notes on (i) State machine diagram (ii) Interfaces (iii) Components (7+4+4=15)
- VIII. (a) Explain deployment diagram. (6)
(b) Explain the basic building blocks of Software Architecture. (9)
- OR**
- IX. (a) Explain different types of OCL expressions. (10)
(b) What is ADL? Explain (5)

B. Tech Degree VI Semester Examination April 2011

CS/IT 606 COMPUTER NETWORKS (2006 Scheme)

Time : 3 Hours

Maximum Marks : 100

PART – A (Answer ALL questions)

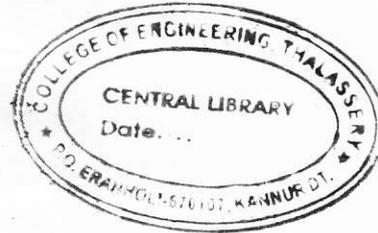
(8 x 5 = 40)

- I. (a) Differentiate between LAN, MAN and WAN.
(b) Briefly explain what is transport layer multiplexing and demultiplexing.
(c) Draw and explain IP datagram format.
(d) List the various services provided by Data link layer.
(e) Write notes on Hierarchical routing.
(f) Write notes on CDMA.
(g) Differentiate between circuit and packet switching .
(h) What is frame relay?

PART – B

(4 x 15 = 60)

- II. Write notes on :
(i) FTP
(ii) SNMP
(iii) RPC



OR

- III. Explain TCP/IP reference model.

- IV. (a) Briefly explain the various steps in TCP connection management.
(b) Draw and explain TCP states in server and client while TCP protocol is running.

OR

- V. Explain TCP and UPP segment structure with neat diagrams.

- VI. Explain various sliding window protocols.

OR

- VII. Write notes on :
(i) HDLC
(ii) PPP

- VIII. Explain various transmission media used in networks.

OR

- IX. Write notes on :
(i) ISDN
(ii) BISDN

B. Tech Degree VI Semester Examination April 2011

EC 602 MICROWAVE TECHNIQUES AND DEVICES (2006 Scheme)

Time : 3 Hours

Maximum Marks : 100

PART A (Answer **ALL** questions)

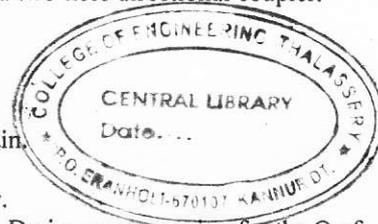
(8 x 5 = 40)

- I. (a) What are microwaves? Why are they called so?
(b) Explain why TEM mode of propagation does not exist in rectangular wave guide.
(c) Explain the concept of scattering parameters.
(d) What is a magic Tee? Explain.
(e) Explain the principle of operation circulator.
(f) What are the applications varactor diodes?
(g) What do you meant by velocity modulation? Explain.
(h) What is VSWR? What is the relation between reflection coefficient and VSWR?

PART B

(4 x 15 = 60)

- II. (a) Explain the concept of S-matrix. Explain its properties. (10)
(b) Distinguish between E-plane Tee and H-plane Tee. (5)
- OR**
- III. (a) What is a directional coupler? Derive the S-matrix of a two-hole directional coupler. (10)
(b) What are waveguide bends and twists? (5)
- IV. (a) Explain TE modes in rectangular wave guide in detail. (10)
(b) What are dominant mode and degenerate mode? Explain. (5)
- OR**
- V. (a) Distinguish between phase velocity and group velocity. (5)
(b) Explain the principle of operation of cavity resonators. Derive an expression for the Q of the cavity resonator. (10)
- VI. (a) Explain the working of tunnel diodes with the help of energy-band diagrams. (10)
(b) Explain the structure of IMPATT diode. (5)
- OR**
- VII. Explain the principle of operation of Gunn diode with the help of two-valley theory. (15)
- VIII. (a) Explain the principle of operation of Reflex Klystron with the help of Applegate diagram. (10)
(b) What are the applications of Reflex Klystron? (5)
- OR**
- IX. (a) Explain the working of a TWT amplifier. (10)
(b) How can we measure microwave frequency and wavelength? (5)



B. Tech Degree VI Semester Examination April 2011

CS/EC/EB/EI 605 CONTROL SYSTEMS ENGINEERING
(2006 Scheme)

Time : 3 Hours

Maximum Marks : 100

PART - A
(Answer ALL questions)

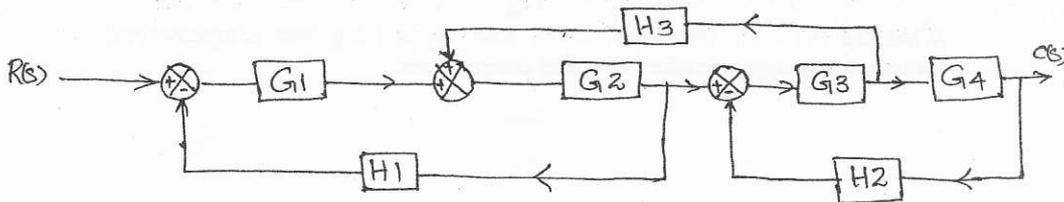
(8 x 5 = 40)

- I. (a) Distinguish between open loop and closed loop system.
- (b) What is a signal flow graph? What are its basic properties?
- (c) What are generalized error coefficient? Give the relation between generalized and static error coefficients.
- (d) What is the effect of PI, PD and PID controllers on the system performance?
- (e) State and explain Nyquist Stability criterion.
- (f) Explain different frequency domain specifications.
- (g) What is BIBO stability criterion? Explain in detail.
- (h) What is break-away and break in point? Explain how to determine them.

PART - B

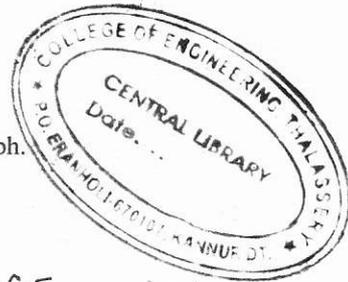
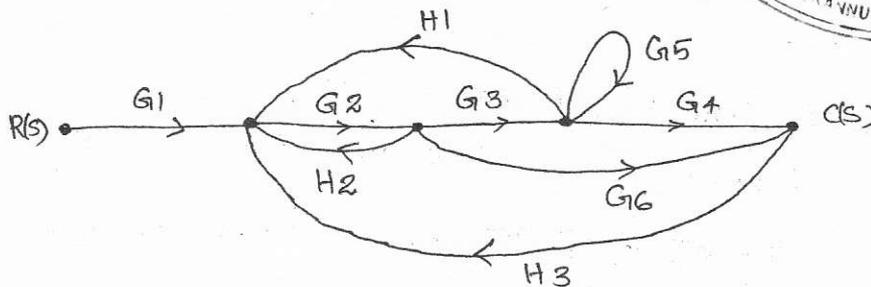
(4 x 15 = 60)

- II. Simplify the block diagram shown to obtain the closed loop transfer function $C(s)/R(s)$.



OR

- III. Find the over all gain $C(s)/R(s)$ for the signal flow graph.



(P.T.O)

- IV. What are the different time domain specifications? Derive expression for each.

OR

- V. The open loop transfer function of a unity feed back control system is given by

$$G(s) = \frac{K}{(s+2)(s+4)(s^2+6s+25)}$$

Apply Routh Hurwitz criterion to discuss the stability of the system.
Determine the value of K for sustained oscillations in the closed loop system.
What are the corresponding oscillating frequencies?

- VI. Plot the Bode diagram for the following transfer function and obtain the gain and phase cross over frequencies.

$$G(s) = \frac{10}{s(1+0.5s)(1+0.01s)}$$

OR

- VII. The open loop transfer function of a unity feed back system is given by.

$$G(s) = \frac{K}{s^2(1+s)(1+2s)}$$

Sketch the polar plot and determine the gain and phase cross over frequencies.

- VIII. A feed back control system has an open loop transfer function.

$$G(s)H(s) = \frac{K}{s(s+3)(s^2+2s+2)}$$

Find the root locus as K is varied from 0 to ∞ .

OR

- IX. What are the basic characteristics of lead lag and lag lead compensation?
Explain the design procedure of a lead compensator.

B. Tech Degree VI Semester Examination April 2011

EC/EI 606 EMBEDDED SYSTEMS

(2006 Scheme)

Time : 3 Hours

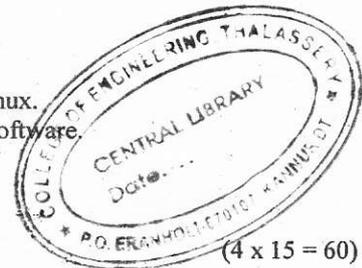
Maximum Marks : 100

PART A

(Answer ALL questions)

(8 x 5 = 40)

- I.
- (a) What is an embedded system? Describe its characteristics.
 - (b) With functional block diagram, explain the application of embedded systems in control systems and industrial automation.
 - (c) Mention any three communication interface standards and explain any one of them.
 - (d) Explain the operating system kernel architecture.
 - (e) What are the features of PIC 16F873 processor?
 - (f) Explain the types of hardware architecture in PIC.
 - (g) What are the features of RT Linux? Give a comparison with Linux.
 - (h) Explain the development environment of Real-time embedded software.



PART B

(4 x 15 = 60)

- II. Discuss about the challenges and issues in the embedded software development.
OR
- III. Briefly explain the application of embedded system in consumer electronics and communication devices.
- IV. Briefly explain the different steps in embedded system development process.
OR
- V. Explain the various inter-task communication and synchronization technique used in embedded operating systems.
- VI. Draw and explain the architecture of PIC 16F873 processor.
OR
- VII. Explain SPI mode and I²C bus operation associated with PIC 16F873 processor.
- VIII. Briefly explain the embedded database applications with an example.
OR
- IX. What are the main components in a process control system? Explain the various factors in the design of such a system.

B.Tech Degree VI Semester Examination April 2011

EE 601 POWER SYSTEM I (2006 Scheme)

Time : 3 Hours

Maximum Marks : 100

PART - A (Answer ALL questions)

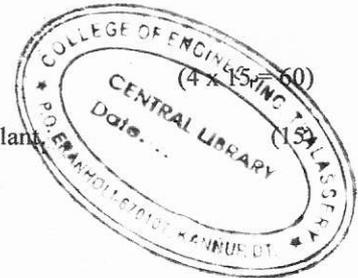
(8 x 5 = 40)

- I. (a) What is tariff and what are the objectives of tariff?
(b) Define :
(i) connected load (ii) load factor
(iii) demand factor (iv) diversity factor
(c) Write a short note on Pin type insulators.
(d) Derive an expression for capacitance of a single core cable.
(e) Compare overhead and under ground systems.
(f) State and explain Kelvin's law.
(g) Write a short note on short transmission line, medium transmission line and long transmission line.
(h) Derive an expression for ABCD parameter for a short transmission line.

PART - B

- II. With neat diagram explain the working of a thermal power plant. (8)
- OR
- III. (a) The monthly reading of a consumer's meter are as follows :
Maximum demand - 50 KW
Energy consumed - 36,000 KWh
Reactive energy - 23,400 KVAR
If the tariff is Rs. 80/KW of maximum demand plus 8 paise per unit plus 0.5 paise per unit of each 1% of power factor below 86%, calculate monthly bill of the consumer? (8)
- (b) Explain power factor improvement by synchronous condenser. What are the advantages and disadvantages of this method? (7)
- IV. (a) Write a short note on line supports. (5)
(b) An insulator string consists of three units, each having a safe working voltage of 15 KV. The ratio of self capacitance to shunt capacitance of each unit is 8:1. Find the maximum safe working voltage of the string. Also find string efficiency. (10)
- OR
- V. (a) What are the factors affecting corona? Define :
(i) Critical disruptive voltage (8)
(ii) Visual critical voltage. (8)
(b) What is sag? Derive an expression for sag when supports are at equal levels. (7)

(P.T.O.)



- VI. (a) Give the single line diagram of a typical distribution system. (5)
 (b) Derive an expression for the voltage drop for a uniformly loaded distributor fed at one end. (10)
- OR**
- VII. (a) What are the limitations of Kelvin's law? (5)
 (b) A conductor cable 1 Km long is required to supply a constant current of 200 A throughout the year. The cost of cable including installation is Rs. $(20a + 20)$ per metre where 'a' is the area of cross section of the conductor in cm^2 . The cost of energy is 5 p per KWh and interest and depreciation charges amount to 10%. Calculate the most economical conductor size. Assume resistivity of conductor material as $1.73 \mu\Omega \text{cm}$. (10)
- VIII. Derive an expression for ABCD parameter of a long transmission line by Rigorous method. (15)
- OR**
- IX. (a) What are the importance of voltage control? (5)
 (b) Give the various locations of voltage control equipment. (3)
 (c) Derive an expression for ABCD constants of a medium transmission line by nominal T method. (7)

B.Tech Degree VI Semester Examination April 2011**CS/EE 602 DIGITAL SIGNAL PROCESSING**
(2006 Scheme)

Time : 3 Hours

Maximum Marks : 100

PART - A
(Answer ALL questions)

(8 x 5 = 40)

- I. (a) Check the linearity, causality and time invariance of the system $y(n) = n \times (n)$.
 (b) What is a system function? Explain its significance.
 (c) State and prove the convolution property of DFT.
 (d) Distinguish between DFT and DTFT.
 (e) Explain the concept of windowing in FIR filter.
 (f) Compare the performance of FIR and IIR filters.
 (g) Explain any one of the application of DSP.
 (h) Explain the quantization error in analog to digital conversion.

PART - B

(4 x 15 = 60)

- II. Find the Z - Transform of the following :

- (i) $x(n) = n a^{n-1}$
 (ii) $x(n) = a^n u(n)$
 (iii) $x(n) = \cos(\theta n) u(n)$



(15)

OR

- III. Find the inverse Z - Transform of

- (i) $x(z) = 1 + 3z^{-1} + 3z^{-2} + 2z^{-3}$ ROC $|z| > 2$
 (ii) $x(z) = (1/4)^* z^{-1} / (1 - 1/2^* z^{-1})(1 - 1/4^* z^{-1})$ ROC $|z| > 1/2$
 (iii) $x(z) = 1/z^2 - 1.2z + 0.2$ ROC $|z| > 1$

(15)

- IV. Find the output response of the LTI system with impulse response $h(n) = (111)$, excited by an input $x(n) = \{10101\}$ using FFT algorithm.

(15)

OR

- V. (a) Find the 8 point DFT of the sequence $x(n) = \{1, 2, 3, 4, 4, 3, 2, 1\}$ and plot the magnitude and frequency response.
 (b) State and prove *any two* property of DTFT.

(5)

(10)

- VI. Obtain the Direct form II, Cascade and parallel form realization for the system $y(n) = -0.1y(n-1) + 0.2y(n-2) + 3x(n) + 3.6x(n-1) + 0.6x(n-2)$

(15)

OR

- VII. Obtain the cascade form realization and parallel form realization of the following $H(z) = (1 + 0.5z^{-1})(1 + 0.25z^{-1}) / (1 - 0.5z^{-1})(1 - 0.25z^{-1})(1 - 0.125z^{-1})$

(15)

- VIII. With block diagram explain the architecture of TMS320C54x fixed point processor.

(15)

OR

- IX. With block diagram explain the architecture of TMS320C4x floating point processor.

(15)

B. Tech Degree VI Semester Examination April 2011**EE 603 CONTROL SYSTEMS I**
(2006 Scheme)

Time : 3 Hours

Maximum Marks : 100

PART – A
(Answer ALL questions)

(8 x 5 = 40)

- I. (a) State and explain Nyquist's stability criteria.
 (b) For a certain system, gain margin is found to be zero. What is the phase margin? What is the implication with regard to the stability of the system?
 (c) Mention the significance of break away and break in points in the root locus plots.
 (d) Explain the structure and characteristics of two phase ac servomotor.
 (e) Mention the significance of compensation in the design of a control system. Differentiate between cascade and feed back compensation.
 (f) Distinguish between Proportional, Derivative and Integral controllers.
 (g) State and verify the principle of duality as applied to continuous time systems.
 (h) Enumerate the properties of state transition matrix.

PART – B

- II. Sketch the Bode plot for the Transfer function given below

$$G(s)H(s) = \frac{2(s+0.25)}{s^2(s+1)(s+0.5)}$$

Also determine

- (i) The phase cross over frequency and the gain cross over frequency
 (ii) The gain and phase margins.

(15)

OR

- III. What is meant by relative stability? Using Nyquist plot, discuss the stability of the control system described by the following transfer function.

$$G(s)H(s) = \frac{K(s+5)}{s(s+200)}$$

(15)

- IV. Draw the root locus plot for the system represented by the transfer function

$$G(s) = \frac{\alpha}{s(s^2 + 6s + 10)}$$

as the parameter α varies from zero to infinity and

hence determine the value of α so that the damping ratio of the dominant pole is 0.6.

(15)

OR

- V. Explain the working of a stepper motor and its use in a digital control system.

(15)

(P.T.O)

- VI. Design a cascade compensation for the following system

$$G(s) = \frac{K}{s(1+0.1s)(1+0.001s)}$$

to satisfy the following specifications. Phase margin ≥ 45 degree, velocity error constant = 1000/sec. (15)

OR

- VII. (a) Obtain the transfer function and hence the pole zero plot of a lag-lead compensator network. (6)
 (b) What is meant by tuning of a PID controller? Discuss within the context of a process control system. (9)

- VIII. Check the controllability and observability of the system described by

$$\begin{bmatrix} \dot{x}_1 \\ \dot{x}_2 \\ \dot{x}_3 \end{bmatrix} = \begin{bmatrix} 0 & 1 & 0 \\ 0 & 0 & 1 \\ -6 & -11 & -6 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix} + \begin{bmatrix} 0 \\ 0 \\ 1 \end{bmatrix} [u]$$

$$y = [4 \quad 5 \quad 1] \begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix}. \quad (15)$$

OR

- IX. Define a state observer. Distinguish between full order and reduced order observer. (15)

- VI. Design a cascade compensation for the following system

$$G(s) = \frac{K}{s(1+0.1s)(1+0.001s)}$$

to satisfy the following specifications. Phase

margin ≥ 45 degree, velocity error constant = 1000/sec. (15)

OR

- VII. (a) Obtain the transfer function and hence the pole zero plot of a lag-lead compensator network. (6)
 (b) What is meant by tuning of a PID controller? Discuss within the context of a process control system. (9)

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$$\begin{bmatrix} \dot{x}_1 \\ \dot{x}_2 \\ \dot{x}_3 \end{bmatrix} = \begin{bmatrix} 0 & 1 & 0 \\ 0 & 0 & 1 \\ -6 & -11 & -6 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix} + \begin{bmatrix} 0 \\ 0 \\ 1 \end{bmatrix} [u]$$

$$y = [4 \quad 5 \quad 1] \begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix}. \quad (15)$$

OR

- IX. Define a state observer. Distinguish between full order and reduced order observer. (15)

B. Tech Degree VI Semester Examination April 2011**EE 604 ELECTRICAL DRAWING**
(2006 Scheme)

Time : 3 Hours

Maximum Marks : 100

- I. Draw the developed winding diagram of lap winding for 6 poles, 18 slots, double layer winding showing the direction of motion, direction of induced emfs and position of brushes. (25)

OR

- II. Draw to a suitable scale the half sectional elevation of a dc machine as per the following dimensions:

Diameter of the shaft	=	13 cm
Outside diameter of the armature	=	36 cm
Number of poles	=	4
Pole height	=	16 cm
Pole width	=	12cm
Pole arc	=	0.65
No. of interpoles	=	4
Interpole dimensions	=	4cm x 15cm
Thickness of yoke	=	3.5cm
Depth of slot	=	2.5cm

(25)

- III. Draw the half sectional longitudinal view of a 10hp 3 phase 50Hz 4 pole squirrel cage induction motor with following dimensions:

Stator

Internal diameter of the stator	=	18 cm.
Outside diameter of the stator	=	32 cm.
Gross length of the stator core	=	13.5 cm.
No. of slots	=	36
Slot width	=	.77 cm.
Slot depth	=	3.4cm.
Length of air gap	=	0.1 cm.

Rotor

No. of slots	=	31
Rotor bars	=	0.51cm x 1.52 cm
Shaft diameter	=	5.1cm.

(25)

OR

(P.T.O)

IV. Draw the half sectional end view of an alternator with following dimensions:

Diameter of Shaft	=	7.6 cm	
Diameter of rotor	=	46 cm	
Height of pole	=	7.6 cm	
Outside diameter of stator	=	76 cm	
External diameter of supporting frame	=	92 cm	
Number of poles	=	10	
Overall distance of the base plate from the centre line of the alternator to the ground level.	=	50 cm.	(25)

V. Draw a winding diagram for a 4 – pole, 24 slot, 3 phase mesh connected armature. (25)

OR

VI. For a 3 phase ac machine the armature is having 24 slots. A single layer concentric bifurcated winding for four poles is to be made. Draw the developed winding diagram with the overhang in three planes. (25)

VII. Draw the single line layout of a typical generating station. (25)

OR

VIII. (a) Draw a 220KV double circuit transmission tower. } (25)
 (b) Draw a 66KV single circuit transmission tower.

B. Tech Degree VI Semester Examination April 2011

EE 605 MODERN COMMUNICATION ENGINEERING (2006 Scheme)

Time : 3 Hours

Maximum Marks : 100

PART – A (Answer ALL questions)

(8 x 5 = 40)

- I. (a) How does a terminal microwave station differ from a repeater station?
(b) Briefly mention the frequency range and modulation methods used in microwave communication.
(c) Explain the different types of satellite orbits.
(d) What is the significance of 'antenna look angle' in satellite communication?
(e) Explain the concept of frequency reuse in cellular telephony.
(f) Explain the functional concept of DECT system.
(g) Explain the concepts of –
(i) MUF
(ii) Skip Distance
(h) Define radiation resistance of an antenna. What is the importance of this quantity?



PART – B

(4 x 15 = 60)

- II. (a) Discuss the different types of fading in microwave communication. Explain the steps taken to minimize the effect of fading. (7)
(b) Discuss the salient features in the design of a microwave link. (8)
- OR
- III. (a) Discuss the antennas used in microwave links. Explain their propagation characteristics. (8)
(b) With the help of a block diagram, explain the working of a microwave terminal transmitter and receiver. (7)
- IV. (a) What are the advantages and disadvantages of geostationary satellites? (7)
(b) What are the factors that affect this uplink design and down link design in geostationary satellite communication? Explain. (8)
- OR
- V. (a) Discuss the orbital parameters in detail related to satellite communication. (8)
(b) What is meant by a satellite transponder? Describe with the help of a block diagram. (7)
- VI. (a) Compare the performances of a direct sequence and a frequency hopping spread spectrum. (8)
(b) Explain the working principle of CDMA. How capacity improvement is obtained in CDMA? (7)
- OR
- VII. (a) Explain in detail the working of an optical heterodyne receiver. (5)
(b) What is meant by cell splitting? How it helps in increasing the capacity? (10)
- VIII. (a) Explain briefly the effect of earth's magnetic field on ionospheric radio wave propagation. (8)
(b) Explain ground wave propagation. (7)
- OR
- IX. (a) Explain Yagi-Uda array with a diagram. (8)
(b) Explain the principle of operation of parabolic reflector. (7)

B. Tech Degree VI Semester Examination April 2011

EE 606 ELECTRICAL MACHINES III

(2006 Scheme)

Time : 3 Hours

Maximum Marks : 100

PART A

(Answer ALL questions)

(8 x 5 = 40)

- I. (a) Differentiate between slip ring and squirrel cage induction motor.
(b) Draw the equivalent circuit of a 3ϕ induction motor.
(c) Describe deep bar cage rotor motor.
(d) Explain cogging and crawling of induction motors.
(e) Discuss the pole changing method of speed control in induction motor.
(f) Write short note on synchronous induction motor.
(g) Explain how a commutator acts as a frequency converter.
(h) Discuss the working of universal motor.



PART B

(4 x 15 = 60)

- II. (a) Explain the torque-slip curve of a 3ϕ induction motor. Derive the condition for maximum starting torque. (7)
(b) A 3ϕ induction motor having a star connected rotor has an induced emf of 80V between slip rings at stand still on open-circuit. The rotor has a resistance and reactance per phase of 1Ω & 4Ω respectively. Calculate current/ph and power factor when (i) slip rings are short circuited (ii) slip rings are connected to a star-connected rheostat of $3\Omega/ph$. (8)

OR

- III. Draw the circle diagram from no load and short circuit test of a 3ϕ , 14.92KW, 400V, 6 pole induction motor from the following test results (line values).
No load test: 400V, 11A, pf = 0.2
S.C. test : 100V, 25A, pf = 0.4
Rotor Cu loss at standstill is half the total copper loss. From the diagram, find (i) line current, slip, efficiency and power factor at full load (ii) the maximum torque. (15)

- IV. (a) Explain the working of a rotor rheostat starter for a 3ϕ induction motor with the help of neat sketch. (7)
(b) Calculate the steps in a 5 step rotor resistance starter for a 3ϕ induction motor. The slip at the maximum starting current is 2% with slip ring short circuited and the resistance per rotor phase is 0.02Ω . (8)

OR

- V. (a) Explain the construction of double cage induction motor with the help of its equivalent circuit. (10)
(b) In a double cage IM, if the outer cage has an impedance at standstill of $(2+j1.2)\Omega$, determine the slip at which the two cages develop equal torques if the inner cage has an impedance of $(0.5+j3.5)\Omega$ at stand still. (5)

(P.T.O)

VI. Explain the theory and application of the induction generator with necessary phasor diagrams and equivalent circuit. (15)

OR

VII. (a) Explain the use of SCR for the speed control of induction motor. (5)

(b) Explain the effect of excitation on armature current and power factor of synchronous motor. (10)

VIII. (a) Explain the working and construction of a Schrage motor. (10)

(b) Write short notes on AC series motor. (5)

OR

IX. Why a single phase IM is not self starting? Explain any one circuit to self start a single phase induction motor. (15)

B. Tech Degree VI Semester Examination April 2011

CS 601 COMPILER CONSTRUCTION

(2006 Scheme)

Time : 3 Hours

Maximum Marks : 100

PART – A (Answer ALL questions)

(8 x 5 = 40)

- I. (a) Draw and explain the interaction of lexical analyzer with parser.
(b) Describe the terms tokens, patterns and lexemes.
(c) Write the various Error recovery strategies.
(d) Write the algorithm for computing FIRST(X) and FOLLOW(X).
(e) Write a note on Synthesized Attributes and Inherited Attributes.
(f) What are the various static checks?
(g) Write the three address code corresponding to the expression
 $a := b * -c + b * -c$.
(h) What is meant by Back patching?

PART – B

(4 x 15 = 60)

- II. (a) Describe the concept of recognition of tokens with the help of neat transition diagrams. (8)
(b) Write a short note on Compiler Construction Tools. (7)
OR
- III. (a) Describe the design of a Lexical Analyzer Generator. (10)
(b) Write a note on Input Buffering. (5)
- IV. (a) Write the algorithm for eliminating Left Recursion. (7)
(b) Describe the stack implementation of Shift Reduce Parsing. What is meant by Handle Pruning? (8)
OR
- V. (a) Write the features of LR parsers. (7)
(b) Explain the Operator Parsing Algorithm with the help of an example. (8)
- VI. (a) Describe the Bottom-up Evaluation of Inherited Attributes. (7)
(b) Write a short note on various methods for evaluating semantic rules. (8)
OR
- VII. (a) Write a note on Activation Trees. (5)
(b) Explain various storage allocation strategies. (10)
- VIII. (a) Describe various types of three Address Statements. (5)
(b) Write a note on structure preserving transformations on basic blocks. (10)
OR
- IX. (a) Explain various mechanisms for Run Time Storage Management. (7)
(b) Describe various principal sources of optimization. (8)

