

Total No. of Questions : 12]

SEAT No. :

P3355

[Total No. of Pages : 3

[5253] - 1

T.E. (Mechanical Engg.)

**INDUSTRIAL ENGINEERING AND TECHNOLOGY  
MANAGEMENT  
(2008 Pattern)**

Time : 3 Hours]

[Max. Marks : 100

Instructions to the candidates :

- 1) Answers to the two sections should be written in separate answer books.
- 2) Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6 from section I and Q.7 or Q.8, Q.9 or Q.10, Q.11 or Q.12 from section II.
- 3) Neat diagrams must be drawn wherever necessary.
- 4) Figures to the right side indicate full marks.
- 5) Assume Suitable data if necessary.

**SECTION - I**

- Q1)** a) Briefly discuss various leadership styles adopted in industry. [8]  
b) Discuss types of plant layout and explain combination layout in detail. [8]

OR

- Q2)** a) Discuss types of Motivation methods and Maslow's hierarchy of needs. [8]  
b) Explain the role of material handling principles in improving the productivity of a firm. [8]

- Q3)** a) Define work measurement. Explain the procedure for work study. [8]  
b) Following are the element times of a turning operation. The corresponding rating and relaxation allowances are given in tabular record as under : [4]

Element	Observed time (min.)	Performance rating	Relaxation
1. Locate the tool	0.15	80	13%
2. Start Machine	0.05	85	13%
3. Adjust tool centre	0.55	90	10%
4. Carry out turning operation	1.00	95	12%
5. Return the tool	0.10	90	13%

Assuming contingency allowance of 3% of normal time. Calculate standard time.

- c) Write a note on PMTS. [4]

P.T.O.

OR

- Q4)** a) Explain the term industrial engineering and method study procedure. [8]  
b) Explain productivity improvement methods for organization. [4]  
c) What are Therbligs? Give any six Therbligs with symbols. [4]

- Q5)** a) A manufacturing company requires 3600 units per year. Ordering cost is Rs. 80 per order and carrying cost is Rs 1.2/unit/annum. Purchase price per unit is Rs. 35. Determine : [6]  
i) EOQ,  
ii) Optimum number of orders,  
iii) Average annual inventory cost,  
iv) Optimum period of supply/order.  
b) Purpose and costs associated with inventory control. [6]  
c) Explain ABC Analysis [6]

OR

- Q6)** Write notes on (Any Three) [18]  
a) Managerial Grid  
b) Two handed process chart  
c) Break-even analysis and its application  
d) Importance & Types of merit rating.

### SECTION - II

- Q7)** a) Differentiate between 'Product Technology' and 'Process Technology'. [5]  
b) Write a short note on Forms of Technology. [5]  
c) Explain of Government can play important role in the development of Technology. [6]

OR

- Q8)** a) Describe the term 'Technology Management' and its significance. [8]  
b) Discuss the various important steps in product development. [8]

- Q9) a)** Explain the following in brief : **[10]**  
i) Technological Leadership,  
ii) Mission flow diagram
- b) What do you mean by Technology assessment? **[6]**

OR

- Q10)a)** What do you mean by Technological Forecasting? Explain various techniques used in Technology Forecasting. **[8]**
- b) Explain in brief the following. **[8]**  
i) Growth curves,  
ii) Technology Monitoring

- Q11)a)** Explain the steps involved in formulating technology planning. **[6]**
- b) Explain the various modes of Technology transfer and its categories. **[6]**
- c) Explain the concept of S-Shaped curve of Technology Adoption. **[6]**

OR

- Q12)** Write short notes on the following : (any three) **[18]**
- a) Technology diffusion.
- b) Key principles for developing technology strategy.
- c) Status of IPR Activities in India.
- d) Foreign Direct Investment (FDI).



Total No. of Questions : 12]

SEAT No. :

**P3356**

[Total No. of Pages : 5

**[5253]-2**

**T.E. (Mechanical)**

**REFRIGERATION AND AIR-CONDITIONING**

**(2008 Pattern) (Semester - II)**

*Time : 3 Hours]*

*[Max. Marks : 100*

*Instructions to the candidates:*

- 1) Answers to the two sections should be written in separate answer books.*
- 2) Answer any three questions from each section.*
- 3) Neat diagrams must be drawn wherever necessary.*
- 4) Figures to the right side indicate full marks.*
- 5) Use of Calculator is allowed.*
- 6) Use of psychrometric chart is allowed.*
- 7) Assume Suitable data if necessary, state clearly he assumption made.*

**SECTION - I**

- Q1)** a) With neat schematic explain application of refrigeration for ice plant. **[8]**
- b) Air is used in Bell coleman cycle. The temperature at the end of heat absorption and heat rejection are 5°C and 30°C respectively. The pressure in cooler is 6 bar and pressure ratio is 4. Determine the temperature at all state points in cycle and volume flow rate at compressor inlet and expander exit if cooling capacity is 2 TR. **[8]**

OR

- Q2)** a) Explain working of thermoelectric refrigeration. **[6]**
- b) What is ultrasound refrigeration? Give its limitations. **[6]**
- c) Explain the concept of cold chain. **[4]**

- Q3)** a) With neat diagram explain double effect Li-Br refrigeration system. Explain its limitations. **[8]**

***P.T.O.***

b) An ammonia refrigeration system working between  $35^{\circ}\text{C}$  and  $-15^{\circ}\text{C}$ . using p-h chart calculate [8]

i) theoretical piston displacement per TR.

ii) theoretical power per TR. &

iii) COP

Assume two cases

a) Dry compression and

b) Wet compression

Comment on result.

OR

**Q4)** a) Discuss the effect of condenser pressure and suction superheat on performance of VCC with the help of p-h or T-s diagram. [8]

b) Enlist desirable characteristics of refrigerant absorbent pair in vapour absorption system. Give selection criteria for refrigerant absorbent pair. [8]

**Q5)** a) Explain cascade refrigeration system. Give its practical applications. What are advantages and disadvantages over multipressure systems? [8]

b) Explain refrigerant charging procedure in a newly built refrigeration system. [5]

c) Explain alternative refrigerants for refrigerator applications giving its suitability. [5]

OR

**Q6)** a) Explain ODP, GWP and TEWI. [9]

b) A two stage refrigeration system using ammonia as refrigerant is used for temperatures of  $-15^{\circ}\text{C}$  and  $40^{\circ}\text{C}$ . A flash intercooler is used at  $15^{\circ}\text{C}$ . The condensate is cooled by  $5^{\circ}\text{C}$ . The mass flow through HP compressor is  $0.4\text{ kg/s}$ . Find mass flow through evaporator, cooling capacity, power input and COP. Take compressor and expander efficiency as 80%. [9]

## SECTION - II

- Q7)** a) Explain the followings: [6]  
Specific humidity, Relative humidity, dew point temperature, dry bulb temperature
- b) Air at 30°C DBT and 25°C WBT is heated to 40°C. Find the amount of heat added/min and RH & WBT, if 300 cmm air is supplied. Take air pressure 98 kPa. [6]
- c) Write note on : IAQ [4]

OR

- Q8)** a) Explain working of sling psychrometer with neat diagram. [6]
- b) 5.5 cmm of air stream at 15°C & 60% RH is mixed adiabatically with another stream of 35 cmm at 25°C & 70% RH, calculate mixture DBT, WBT and enthalpy. [6]
- c) Discuss significance of coil ADP and Room ADP. [4]

- Q9)** a) Explain VAV system with neat schematic. [8]
- b) Explain construction and working of Automatic expansion valve. Why it is called as constant pressure valve? [8]

OR

- Q10)**a) Explain the working of high side and low side float valve. [8]
- b) Explain the different types of grills and diffusers used in air conditioning. [8]

- Q11)**a) Explain CAMA in cold storage. [9]
- b) Classify fans and blowers. Explain fan laws. [9]

OR

- Q12)**a) What are the different types of freezers used in food preservation? Explain in brief. [9]
- b) Explain static regain method of duct design. How dampening is determined? [9]



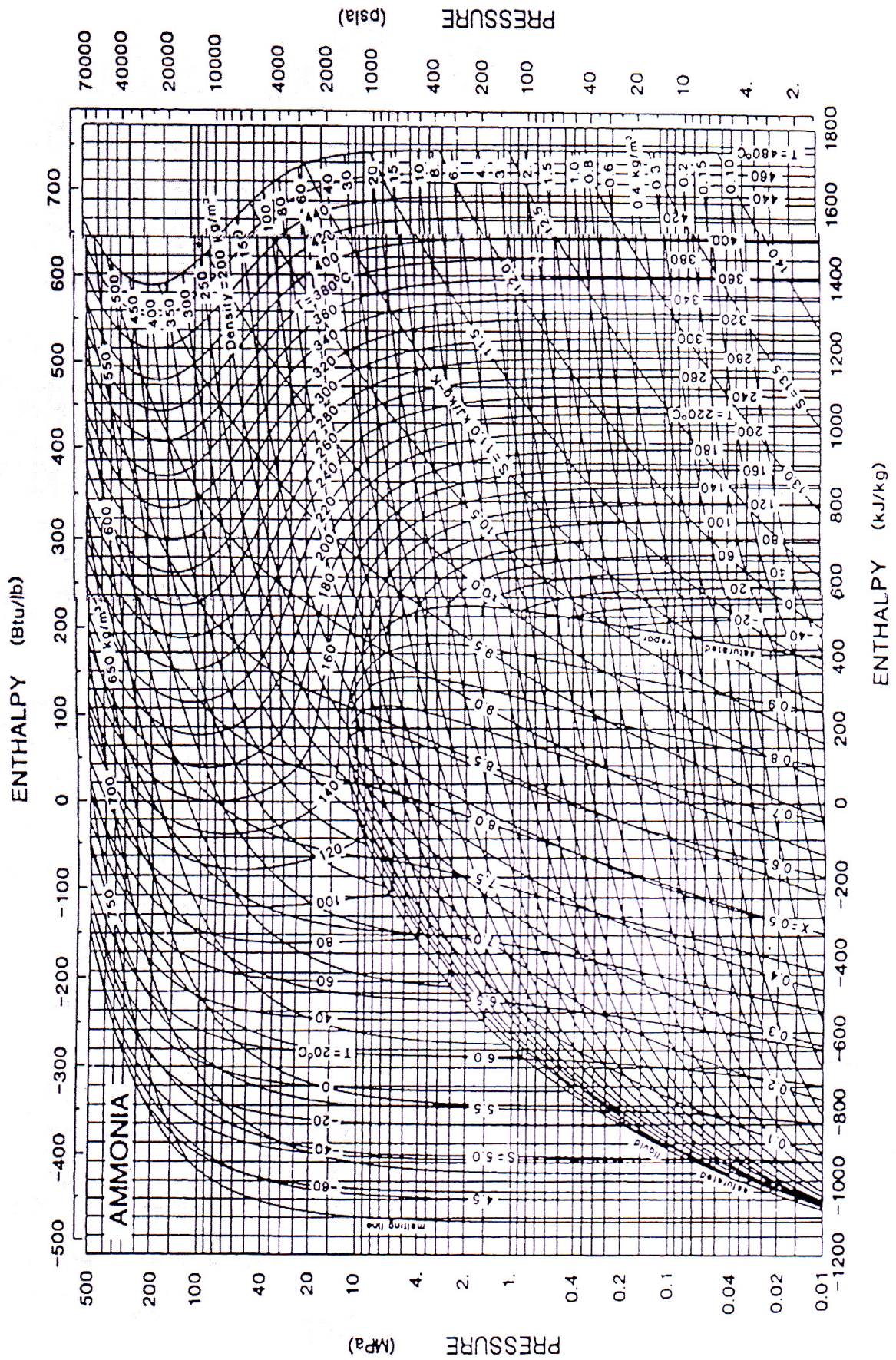
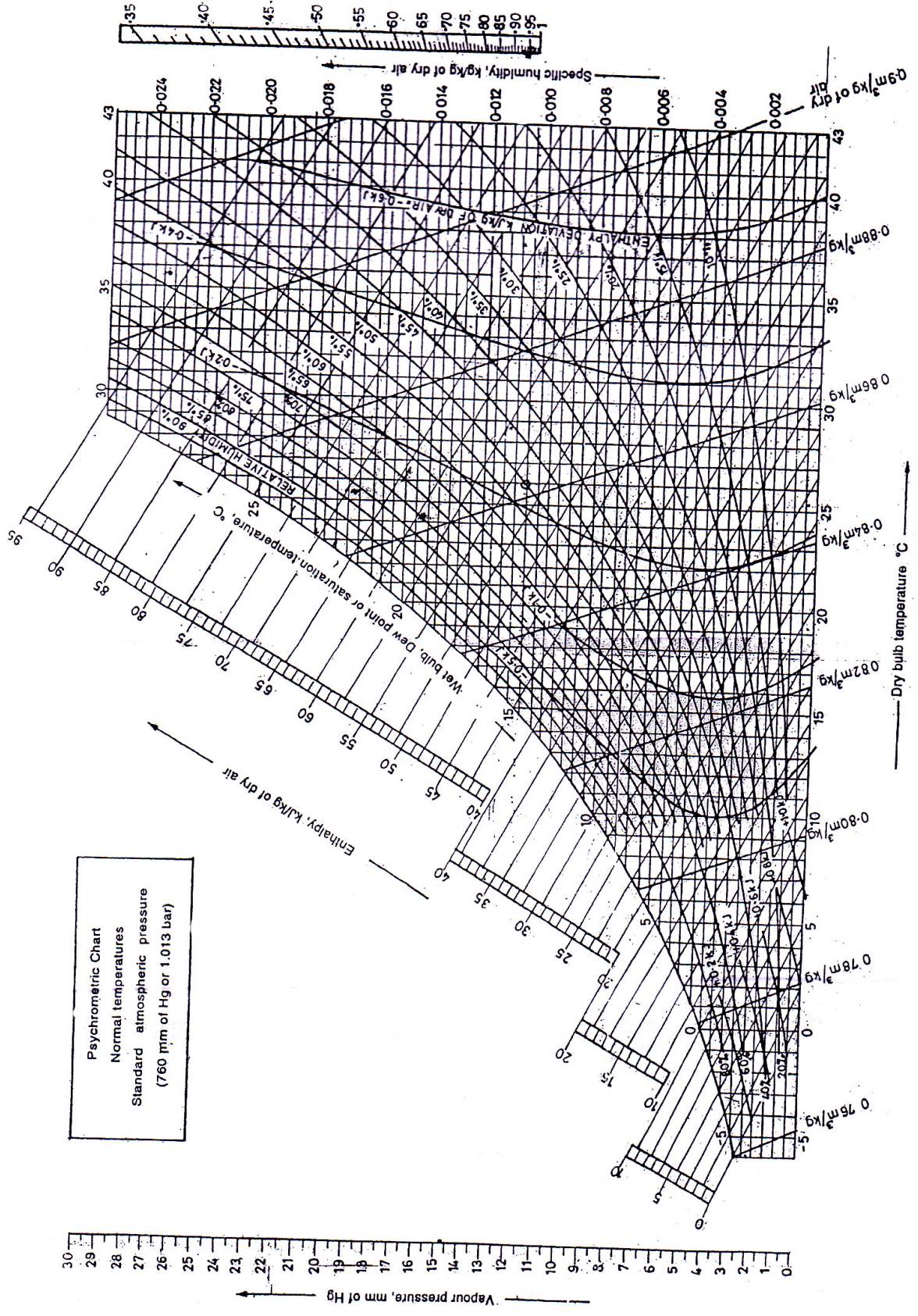


FIGURE E2 Pressure - enthalpy diagram for ammonia





Psychrometric Chart  
 Normal temperatures  
 Standard atmospheric pressure  
 (760 mm of Hg or 1.013 bar)





**[5253]-7**  
**T.E. (Electronics)**  
**FEEDBACK CONTROL SYSTEM**  
**(2008 Pattern) (Semester - I)**

Time : 3 Hours]

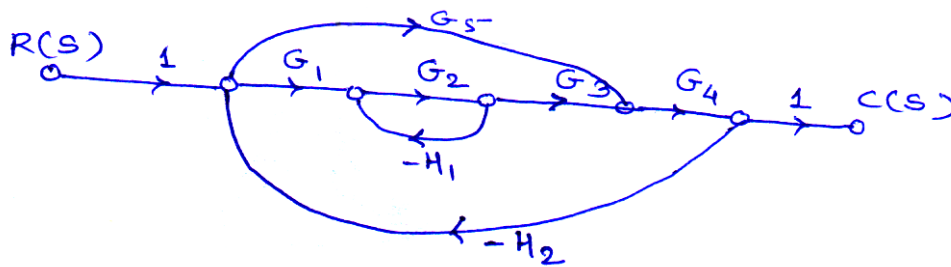
[Max. Marks : 100

Instructions to the candidates:

- 1) Answer any three questions from each section.
- 2) Answer three questions form section - I and three questions form section - II.
- 3) Answers to the two sections should be written in separate books.
- 4) Neat diagrams must be drawn wherever necessary.
- 5) Figures to the right indicate full marks.
- 6) Use of logarithmic table slide rule, Mollier charts, electronic pocket calculator and steam tables is allowed.
- 7) Assume suitable data, if necessary.

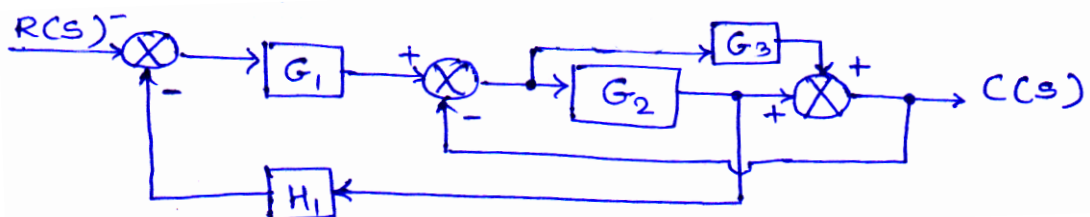
**SECTION - I**

- Q1) a)** Identify the following system as open loop or closed loop and Justify. [8]  
 i) Home heating system  
 ii) Traffic light controller
- b)** Find  $\frac{C(S)}{R(S)}$  by using mason's gain formula. [8]



OR

- Q2) a)** Reduce the block diagram to it's canonical form and obtain  $\frac{C(S)}{R(S)}$ . [8]



P.T.O.

- b) Distinguish between [8]
- Block diagram method & signal flow graph method.
  - Open and closed loop system.

- Q3)** a) Derive the value of static error constant and steady state error for [8]
- Type 0 system
  - Type 1 system
  - Type 2 system
- b)  $s^6 + 4s^5 + 3s^4 - 16s^2 - 64s - 48 = 0$  check the stability of the given characteristics equation using Routh's Method. [8]

OR

- Q4)** a) Sketch the root locus for system with  $G(S)H(S) = \frac{K(S + 4)}{S(S^2 + 6S + 13)}$  [8]
- b) What is static error coefficient? Derive formula for each? [8]

- Q5)** a) Derive the expression for the bandwidth of a standard second order system in frequency domain. [8]

- b) The unit Feedback control system has  $G(S) = \frac{40(S + 5)}{S(S + 10)(S + 2)}$ . Draw Bode plot. Determine  $G_M$ ,  $P_M$ ,  $W_{gc}$ ,  $W_{pc}$ . Comment on stability of system. [10]

OR

- Q6)** a) Write a note on correlation between time domain & frequency domain specification. [6]
- b) State and explain "Mapping theorem". [6]
- c) State the advantages of Nyquist plot. [6]

**SECTION - II**

- Q7)** a) Define the terms: [8]
- i) State
  - ii) State variables
  - iii) State vector
  - iv) State space
- b) Obtain the state transition matrix for system  $\begin{bmatrix} \dot{x}_1 \\ \dot{x}_2 \end{bmatrix} = \begin{bmatrix} -3 & 1 \\ 0 & -1 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \end{bmatrix}$ . [8]

OR

- Q8)** a) Find the controllability and observability of state Model [8]
- $$A = \begin{bmatrix} -2 & 1 \\ 1 & -2 \end{bmatrix}, \quad B = \begin{bmatrix} 1 \\ 0 \end{bmatrix}, \quad C = [1 \quad -1]$$
- b) Write a short note on Controllability and observability. [8]

- Q9)** a) Draw a ladder diagram for an elevator system. [8]
- b) State PID control mode & state characteristics. [8]

OR

- Q10)**a) Draw & explain response of PID controller for [8]
- i) Unit step input
  - ii) Unit ramp input
- b) Explain PLC operating modes. [8]

- Q11)**a) Write note on [10]
- i) Fuzzy operation
  - ii) Fuzzy set and membership functions.
- b) Write note on Artificial Neuron. [8]

OR

- Q12)**a) Explain various types of neural network used in control system. [10]
- b) Explain fuzzification and defuzzification method. [8]



Total No. of Questions : 12]

SEAT No. :

**P3358**

[Total No. of Pages : 2

**[5253]-8**

**T.E. (Electronics Engineering) (Semester - I)**

**MICROCONTROLLERS**

**(2008 Pattern)**

*Time : 3 Hours]*

*[Max. Marks : 100*

*Instructions to the candidates:*

- 1) Answers to the two sections should be written in separate answer books.*
- 2) Answer any three questions from each section.*
- 3) Neat diagrams must be drawn wherever necessary.*
- 4) Figures to the right side indicate full marks.*
- 5) Use of Calculator is allowed.*
- 6) Assume Suitable data if necessary.*

**SECTION - I**

- Q1)** a) Draw & explain the Internal RAM organization of 8051 microcontroller. [8]  
b) Compare Microprocessor and Microcontroller. [8]

OR

- Q2)** a) Compare Harvard and Van-Neumann architecture. [8]  
b) Explain various factors to be considered while selection of microcontroller for any application. [8]

- Q3)** a) What is mean by addressing modes of the 8051? What are the types of addressing mode ? explain any three addressing modes of 8051. [8]  
b) Draw and explain PSW of 8051 Microcontroller. [8]

OR

- Q4)** a) Write an assembly language program for timer 0 to generate a square wave of 2KHz frequency on pin P1.5. Calculate the value need to store in Timer 0 register. In calculation do not include the overheads due to instruction in the loop. [8]  
b) Explain the internal structure of port 0 of 8051 microcontroller. [8]

***P.T.O.***



- Q5)** a) Explain pin configuration of ADC 0808. [9]  
b) Explain with diagram interfacing of LCD with 8051. [9]

OR

- Q6)** a) Explain the interrupt structure in 8051. [9]  
b) Write a program to transfer message serially “WELLCOME TO MICROCONTROLLE WORD” at 9600 baud rate. 8 bit data, one start and stop bit continuously with delay of 1 sec. [9]

### **SECTION - II**

- Q7)** a) Explain I2C communication protocol. [9]  
b) Explain the following buses in details [9]  
i) RS - 232  
ii) RS - 485

OR

- Q8)** a) What is CAN bus protocol? And explain Message frame formats of CAN Protocol. [9]  
b) Explain SPI bus in detail. [9]

- Q9)** a) Draw an interfacing diagram of LED with PORT B of PIC 18Fxx and write an embedded C programme for flashing of LED. [8]  
b) Explain addressing modes of PIC 16FXX Microcontroller. [8]

OR

- Q10)** a) Explain memory organization in PIC microcontroller. [8]  
b) Explain features of PIC microcontroller series. [8]

- Q11)** a) Explain in brief various steps involved in designing of data acquisition system. [12]  
b) Explain typical characteristics of thermocouple. [4]

OR

- Q12)** a) Draw & explain the interfacing diagram for temperature measurement using PIC 16FXX. [8]  
b) Explain the working principle of stepper motor. [8]



Total No. of Questions : 12]

SEAT No. :

**P3359**

[Total No. of Pages : 3

**[5253]-9**  
**T.E. (Electronics)**  
**DRIVES AND CONTROLS**  
**(2008 Pattern)**

*Time : 3 Hours]*

*[Max. Marks : 100*

*Instructions to the candidates:*

- 1) *Answer Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8, Q9 or Q10, Q11 or Q12.*
- 2) *Answers to the two sections should be written in separate book.*
- 3) *Neat diagrams must be drawn wherever necessary.*
- 4) *Figures to the right indicate full marks.*
- 5) *Assume Suitable data if necessary.*
- 6) *Electronic pocket calculator is allowed.*

**SECTION - I**

- Q1)** a) Draw and explain the working of three phase full converter feeding a separately excited d.c. motor. Explain with typical waveforms, the operation in continuous and discontinuous armature current modes. **[10]**
- b) What is the need of reversible drives? Explain with circuit diagrams and waveforms the operation of four quadrant chopper drive with suitable load. **[8]**

OR

- Q2)** a) Draw the circuit and waveforms of single phase Semi converter drive for continuous and discontinuous motor current. **[6]**
- b) The speed of a separately excited dc motor is controlled by a single phase semi converter. The field current is also controlled by a semi converter and is set to maximum possible value. The ac supply voltage to the armature and field converter is single phase 230 V. 50Hz. The armature resistance and field resistance are  $0.4\Omega$  &  $150\Omega$  respectively, and the motor voltage constant is  $K_v = 0.7$  V/A rad/s. The load torque is 50 N.m at 1200 rpm. The armature and field currents are continuous and ripple free.
- Determine: **[6]**
- a) the field current
  - b) the firing angle of armature converter.

**P.T.O.**

- c) Explain with suitable waveforms how power factor can be improved with Symmetrical Angle Control scheme. [6]

- Q3)** a) Explain open loop and closed loop control of dc drives with transfer function. [10]  
b) Explain the working of microcontroller based drive system. State advantages of microcontroller based drives. [6]

OR

- Q4)** a) What is PLL? Explain in brief with block diagram PLL based speed control of a DC motor. Explain the advantages of this control. [8]  
b) Explain different types of breaking for DC machines. [8]

- Q5)** a) Draw and explain torque-slip curve of three phase induction motor and mark the stable operating point. Explain various operating regions like motoring, regeneration and plugging. [8]  
b) Explain Direct and Indirect Vector control of three phase induction motors. [8]

OR

- Q6)** a) Enlist different methods for speed control of induction motor .Explain variable frequency control of three phase induction motor. [6]  
b) Compare between AC & DC drive. [4]  
c) With the help of block diagram explain closed loop speed control of a three phase induction motor. [6]

## **SECTION - II**

- Q7)** a) With the help of block schematic explain Scalar control of a three phase induction motor. [10]  
b) Draw and explain block diagram of a self controlled synchronous motor fed from a three phase inverter. [6]

OR

- Q8)** a) Draw and explain briefly the torque speed characteristics of synchronous reluctance motor at constant voltage and frequency. [8]  
b) With the help of block schematic explain Separate and self control of Synchronous motor. [8]

**Q9)** Write short note on

**[18]**

- a) Stepper motor drive
- b) Brushless ac motor drive
- c) Switched Reluctance motor

OR

**Q10)a)** With the help of a neat circuit diagram and waveforms explain the operation of three phase brushless dc motor drive. State the applications of three phase brushless dc motor drive. **[10]**

b) Compare Variable reluctance & Permanent magnet stepper motor. **[8]**

**Q11)a)** Explain the operation of neural network based control system. Explain general design methodology of neural network based system. **[8]**

b) Enlist different applications of neural network in drives and control. Explain the operation of Fuzzy logic based Induction motor drive. **[8]**

OR

**Q12)a)** What is Neuro fuzzy system? Explain Adaptive network based Fuzzy Interface System. **[8]**

b) Explain the operation of neural network based PWM controller. **[8]**





Total No. of Questions : 12]

SEAT No. :

**P3360**

[Total No. of Pages : 3

**[5253]-10**

**T.E. (Electronics) (Semester - II)**

**SENSORS AND INTERFACES**

**(2008 Pattern)**

*Time : 3 Hours]*

*[Max. Marks : 100*

*Instructions to the candidates:*

- 1) *Answer any 3 questions from each section.*
- 2) *Answers to the two sections should be written in separate books.*
- 3) *Neat diagrams must be drawn wherever necessary.*
- 4) *Figures to the right side indicate full marks.*
- 5) *Use of logarithmic table slide rule, Mollier charts, electronic pocket calculator and steam tables is allowed.*
- 6) *Assume Suitable data if necessary.*

**SECTION - I**

- Q1)** a) List various temperature sensors. Explain any two. **[8]**
- b) I) Explain the following performance terminology of measurement system. **[4]**
- i) Reproducibility
  - ii) Sensitivity
  - iii) Hysteresis error
  - iv) Accuracy
- II) Explain the selection criterion for choosing a transducer for a particular measurement application. **[4]**

OR

- Q2)** a) Explain the use of load cell for force measurement and its type. **[8]**
- b) Explain the construction and working of absolute and incremental optical encoder. **[8]**
- Q3)** a) Write a note on guidelines for designing an analog signal - conditioning system. **[8]**
- b) Explain the use of Wheatstone's bridge and instrumentation amplifier as a signal conditioning circuit. **[10]**

***P.T.O.***

OR

- Q4)** a) Explain the passive circuits used in analog signal conditioning. [8]  
b) Explain with circuit diagram voltage to current and current to voltage converter. [10]

- Q5)** a) List the features of PIC micro controller. Draw and explain interface of 4×4 matrix keyboard with PIC 16F84. [8]  
b) Explain selection for ADCs related to sensor interfacing. [8]

OR

- Q6)** a) Draw and explain interfacing of 89C51 microcontroller with LCD and relay. [8]  
b) State different types of DACs and give their specifications. [8]

### **SECTION - II**

- Q7)** a) Write short note on I<sup>2</sup>C bus. [8]  
b) Explain the HART communication protocol in process control networks along with its modes of operation. [10]

OR

- Q8)** a) Explain the block diagram of multichannel data logger system. [8]  
b) Write a short note on IEEE 488 bus and field bus. [10]

- Q9)** a) Explain principle of operation of stepper motor. State important specification of stepper motor. [8]  
b) Draw and explain the symbols of following pneumatic valves. [8]  
i) 2 × 2 valve  
ii) 3 × 2 valve  
iii) 4 × 2 valve  
iv) pressure limiting valve

OR

**Q10)a)** Explain a lift system to move the load up and down using pneumatic actuators. [8]

b) Explain the power supply system for pneumatic and hydraulic power supply. [8]

**Q11)a)** Draw and explain architecture of PLC. State important specification of PLC. [8]

b) Explain current source and current sink configuration of input and output channel. [8]

OR

**Q12)a)** Write short note on : [8]

i) Analog input / output for PLC.

ii) Interfacing input and output devices with PLC.

b) Explain the PLC operating cycle. [8]



Total No. of Questions : 12]

SEAT No. :

P3361

[Total No. of Pages : 3

**[5253]-11**  
**T.E. (Electronics) (Semester - II)**  
**MICROCOMPUTER BASED SYSTEM**  
**(2008 Pattern)**

*Time : 3 Hours]*

*[Max. Marks : 100*

*Instructions to the candidates:*

- 1) *Answer any 3 questions from each section.*
- 2) *Answers to the two sections should be written in separate books.*
- 3) *Neat diagrams must be drawn wherever necessary.*
- 4) *Figures to the right side indicate full marks.*
- 5) *Use of logarithmic table slide rule, Mollier charts, electronic pocket calculator and steam tables is allowed.*
- 6) *Assume Suitable data if necessary.*

**SECTION - I**

- Q1) a)** Explain following addressing modes with suitable examples. **[8]**
- i) Register Relative
  - ii) Indexed
  - iii) Based Indexed
  - iv) Direct
- b) Draw and explain Minimum mode of 8086 system. **[8]**

OR

- Q2) a)** Explain the functions of following pins. **[8]**
- i)  $\overline{\text{TEST}}$
  - ii)  $\overline{\text{BHE}}$
  - iii) NMI
  - iv) READY
- b) Explain the concept of memory segmentation. What are the advantages of using memory segmentation? **[8]**

**P.T.O.**



- Q3)** a) Explain following Instructions with suitable example. [8]
- i) XCHG
  - ii) ROR
  - iii) IRET
  - iv) JNZ
- b) Draw and explain Interrupt structure of 8086 microprocessor. [8]

OR

- Q4)** a) Write an ALP to find sum of numbers in the array of 10 bytes. [8]
- b) Design 8086 processor based system in minimum mode to interface 32k RAM using 2 chips of 16k each. Draw the complete interfacing diagram and memory map. [8]
- Q5)** a) Draw and explain internal architecture of 80386 processor. [10]
- b) Enlist descriptor tables of 80386 processor. Draw and explain any two. [8]

OR

- Q6)** a) Describe the paging operation in 80386 using page directory and page table. [10]
- b) Enlist operating modes of 80386 processor and explain any two modes. [8]

### **SECTION - II**

- Q7)** a) Draw and explain North Bridge and South Bridge of IBM PC. [8]
- b) State and explain the features of USB interface over other Interfaces. [8]

OR

- Q8)** a) Give the specifications of PCI Bus and compare it with EISA Bus. [8]
- b) Write short note on : [8]
- i) PS2
  - ii) BIOS

- Q9)** a) Explain with suitable block diagram data flow model of ARM 7. [10]
- b) Explain the following ARM instructions [8]
- i) LDM
  - ii) SWP
  - iii) BL
  - iv) MLA

OR

- Q10)**a) With the help of block diagram explain three stage and five stage pipeline instruction execution in ARM7. [10]
- b) Write an ALP for ARM7 to transfer 10bytes of data from 3,00,000,000 to location 4,00,000,000. [8]

**Q11)** Design 8086/ARM7 Based system to sense temperature from PT100 and display it on LCD. [16]

- a) Design the signal conditioning circuit.
- b) Draw the complete interfacing diagram
- c) Draw the flow chart.

OR

- Q12)**a) State and explain various design steps involved in designing DAS. [8]
- b) Design 8086/ARM7 based closed loop control circuit for DC motor using PWM control. Draw interfacing diagram and flowchart. [8]



**[5253]-12**  
**T.E. (Electronics & Telecommunication)**  
**CONTROL SYSTEMS**  
**(2008 Pattern)**

Time : 3 Hours]

[Max. Marks : 100

Instructions to the candidates:

- 1) Answer 3 questions from section - I and 3 questions from section - II.
- 2) Answers to the two sections should be written in separate books.
- 3) Neat diagrams must be drawn wherever necessary.
- 4) Figures to the right side indicate full marks.
- 5) Use of logarithmic table slide rule, Mollier charts, electronic pocket calculator and steam tables is allowed.
- 6) Assume Suitable data, if necessary.

**SECTION - I**

- Q1) a)** Explain feedback and feed forward control systems with the help of suitable examples. [8]
- b)** Determine the transfer function  $Y(s)/R(s)$  using block diagram reduction rules for the system shown in figure No. 1. [8]

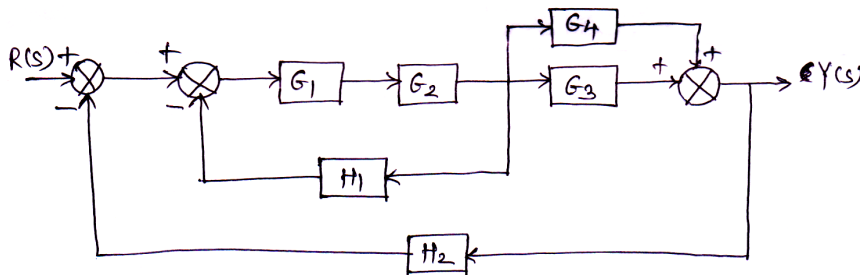


Figure No.1

OR

- Q2) a)** Determine the transfer function  $Y(s)/R(s)$  using Mason's gain formula for the system shown in figure No.2. [8]

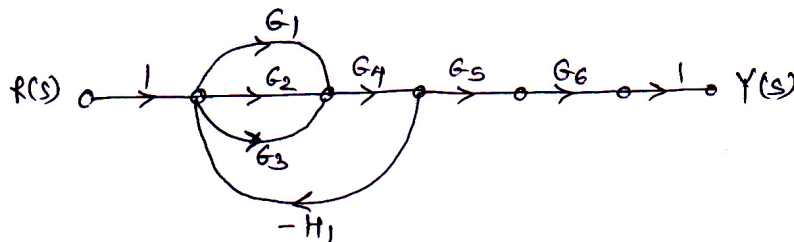
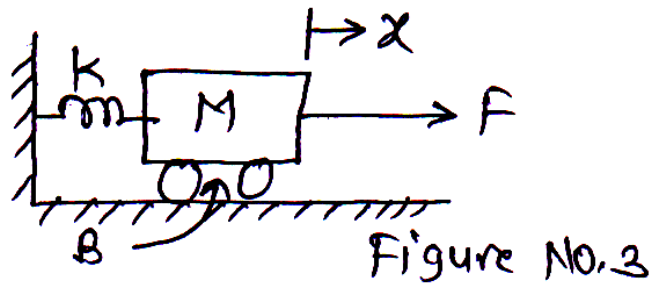


Figure No.2

**P.T.O.**

- b) Determine the transfer function  $X(s)/F(s)$  and F-V analogous electrical circuit for the system shown in figure No.3. [8]



- Q3) a) Explain in detail the Routh stability criterion and its two special cases with suitable examples. [10]

- b) Determine  $K_p$ ,  $K_v$ ,  $K_a$  for the unity feedback system with open loop

$$\text{transfer function } G(s) = \frac{4(s^2 + 10s + 100)}{s(s + 3)(s^2 + 2s + 10)}. \quad [6]$$

Also determine steady state error for step input.

OR

- Q4) a) For the system with closed loop transfer function  $G(s) = \frac{16}{s^2 + 4s + 16}$  determine  $\xi$ ,  $w_n$ ,  $w_d$ ,  $t_r$ ,  $t_p$  and  $m_p$ . [6]

- b) Sketch root locus of the unity feedback system with open loop transfer

$$\text{function } G(s) = \frac{k}{s(s + 1)(s + 4)}. \quad [10]$$

- Q5) a) Explain the correlation between time and frequency domain specifications. [6]

- b) Draw the Bode plot of unity feedback system with open loop transfer

$$\text{function } G(s) = \frac{20}{s(s + 2)(s + 10)}. \text{ Determine gain margin, phase margin, gain and phase crossover frequencies and comment on stability. [12]}$$

OR

**Q6) a)** Sketch the Nyquist plot of unity feedback system with open loop transfer function  $G(s) = \frac{10}{(s+1)(s+2)(s+3)}$ . Comment on stability. [12]

b) For the system with closed loop transfer function  $G(s) = \frac{9}{s^2 + 2s + 9}$  determine  $\xi$ ,  $w_n$ ,  $m_r$ ,  $w_r$ . [6]

**SECTION - II**

**Q7) a)** List and derive any four properties of state transition matrix. [8]

b) Investigate the controllability and observability of a system with state model matrices [8]

$$A = \begin{bmatrix} 0 & 1 & 0 \\ 0 & 0 & 1 \\ -4 & -2 & -3 \end{bmatrix}, B = \begin{bmatrix} 0 \\ 0 \\ 1 \end{bmatrix}, C = [1 \quad 2 \quad 1]$$

OR

**Q8)** Determine the solution of state equation  $\dot{x} = Ax + Bu$  [16]

$$\text{if } A = \begin{bmatrix} 0 & 1 \\ -2 & -3 \end{bmatrix}, B = \begin{bmatrix} 0 \\ 2 \end{bmatrix}, u(t) = \begin{cases} 1, & t \geq 0 \\ 0, & t < 0 \end{cases} \text{ and } x(0) = \begin{bmatrix} 0 \\ 1 \end{bmatrix}$$

**Q9) a)** Explain the operation of bottle filling plant and draw its ladder diagram. [8]

b) Explain PID controller with the help of its equation, transfer function, features. [8]

OR

**Q10) a)** Explain PLC with the help of its block diagram. [8]

b) Draw step response of PI, PD and PID controllers and write the equations of these controllers. [8]

**Q11) a)** Draw the block diagram of digital control system and explain its operation. **[8]**

b) Explain the concept of optimal control system. Also explain any four performance indices. **[10]**

OR

**Q12) a)** Explain the application of control systems in speed control of D.C. motor. **[8]**

b) Explain model reference adaptive control with the help of block diagram and justify its use for non linear and time variant systems. **[10]**





**[5253]-13**  
**T.E. (E & TC)**  
**NETWORK SYNTHESIS & FILTER DESIGN**  
**(2008 Pattern)**

Time : 3 Hours]

[Max. Marks : 100

Instructions to the candidates:

- 1) Answers to the two sections should be written in separate books.
- 2) Answer Q1 or Q2, Q3 or Q 4, Q5 or Q6 from Section - I and Q7 or Q8, Q9 or Q10, Q11 or Q12 from Section - II.
- 3) Use of electronic pocket calculator is allowed.
- 4) Figures to the right side indicate full marks.
- 5) Assume Suitable data if necessary.

**SECTION - I**

- Q1)** a) Compare network analysis and network synthesis also state the properties of Hurwitz Polynomial. [6]
- b) Test whether following polynomials are Hurwitz [8]
- i)  $P(s) = s^3 + 2s^2 + 4s + 2$
  - ii)  $P(s) = s^4 + s^3 + 4s^2 + 2s + 3$
- c) Define all the transfer functions for a two port network. [4]

OR

- Q2)** a) Explain procedure for testing of positive real function (PRF) [6]
- b) Show that the driving point impedance  $Z(s)$  is a positive real function
- $$Z(s) = \frac{s^3 - 1}{4s^3 - 3s^2 - 1} \quad [4]$$
- c) For the network shown in Fig. 1, find the functions  $y_{11}(s)$  and  $-y_{21}(s)$  [8]

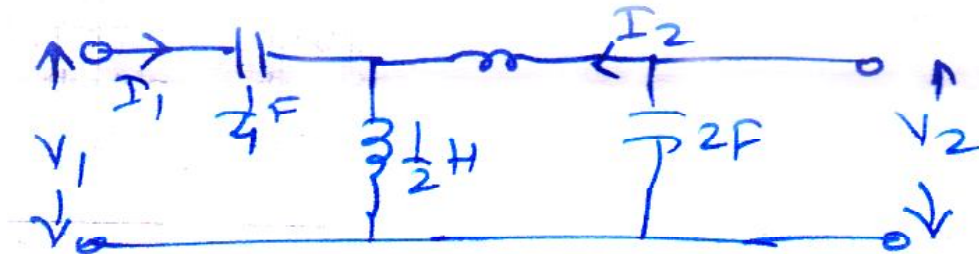


Fig 1

- Q3) a)** Obtain Foster I and II forms for the given driving point network function. [8]

$$Z(s) = \frac{4s^4 + 40s^2 + 36}{s^3 + 4s}$$

- b) Synthesize the following one port network function in both cauer forms

$$Y(s) = \frac{(s+1)(s+3)}{(s+2)(s+5)} \quad [8]$$

OR

- Q4) a)** List properties of one port LC driving point impedance function. [6]

- b) Synthesize the given RL driving point function into all four canonical

forms  $Z(s) = \frac{(s+1)(s+3)}{(s+2)(s+4)}$  [10]

- Q5) a)** Explain the concept of zeros of transmission. What is minimum phase and non-minimum phase functions? How the driving point impedance of series or shunt arm elements help to identify ZOT of ladder network? Explain with proper example. [8]

- b) Synthesize [8]

$$Y_{21}(s) = \frac{s}{s^3 + 3s^2 + 4s + 2}$$

as a LC ladder with  $1\Omega$  termination.

OR

- Q6) a) Synthesize the all pass function [6]

$$\frac{V_o}{V_{in}} = \frac{s^2 - 2s + 2}{s^2 + 2s + 2} \text{ as a lattice network terminated into } 1\Omega.$$

- b) Synthesize voltage ratio [6]

$$\frac{V_2}{V_1} = \frac{s + 4}{3s + 4}$$

as a constant resistance bridge T network terminated by  $1\Omega$ .

- c) Identify the zeroes of transmission for the network in Fig.2 [4]

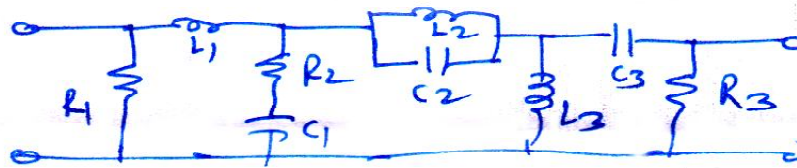


Fig 2

## SECTION - II

- Q7) a) Explain in detail the steps in finding transfer function of Butterworth approximated low pass filter. [8]

- b) Realize a third order low pass Butterworth filter and using frequency and impedance scaling technique, design if for cut-off frequency  $\omega_c = 10^4$  rad/sec and load resistance of  $500\Omega$ . [8]

OR

- Q8) a) What is necessity of approximation in filter design. Compare Butterworth and Chebyshev approximation. [8]

- b) Explain in detail the properties of Chebyshev polynomials used in filter approximation. [8]

- Q9) a)** Explain in detail the design steps of Sallen and Key Butterworth low pass filter. [8]
- b) Synthesize a 2<sup>nd</sup> order low pass filter to have pole frequency of 2KHz and pole Q of 10 using the Sallen and Key circuit based on positive feedback. [8]

OR

- Q10)a)** Explain with suitable example the coefficient matching techniques for obtaining element values. [8]
- b) Synthesize the given pass filter function using RC → CR transformation

$$H_{HP}(s) = K \frac{s^2}{s^2 + s + 25} \text{ where K is a constant} \quad [8]$$

- Q11)a)** Derive the sensitivity properties: [8]

$$i) \quad S_x^{y_1+y_2} = \frac{y_1 + S_x^{y_1} + y_2 S_x^{y_2}}{y_1 + y_2}$$

$$ii) \quad S_x^{y_n} = \frac{1}{n} S_x^y$$

$$iii) \quad S_x^y = S_p^y S_x^p$$

$$iv) \quad S_x^{pq} = S_x^p + S_x^q$$

- b) Find the transfer function ( $V_2/V_1$ ) of a passive network shown in Fig.3. Also compute the sensitivities of K,  $\omega_p$  and  $Q_p$  with respect to elements. [10]

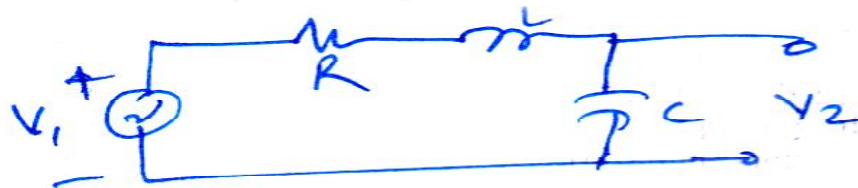


Fig 3

OR

**Q12)a)** Explain effect following op-amp parameters on performance of active filters [8]

- i) Dynamic range
- ii) Slew rate
- iii) Input bias and input offset currents
- iv) CMRR

**b)** Write short note on multi element deviation [6]

**c)** The cut off frequency and design resistance of constant k low pass filter

are given by  $f_c = \frac{1}{2\pi\sqrt{LC}}$  and  $R_0 = \sqrt{\frac{L}{C}}$ . Find sensitivities of  $f_c$  and  $R_0$  with respect to L and C. [4]



Total No. of Questions : 12]

SEAT No. :

**P3364**

[Total No. of Pages : 3

**[5253]-14**

**TE (E & TC) (Semester -II)**

**COMPUTER ORGANISATION AND ARCHITECTURE**

**(2008 Pattern)**

*Time : 3 Hours]*

*[Max. Marks : 100*

*Instructions to the candidates:*

- 1) *Answers to the two sections should be written in separate books.*
- 2) *Neat diagrams must be drawn wherever necessary.*
- 3) *Figures to the right indicate full marks.*
- 4) *Assume Suitable data if necessary.*
- 5) *Solve Q1 or Q2, Q3 or Q4, Q5 or Q6 from Section I and Q7 or Q8, Q9 or Q10, Q11 or Q12 from Section II.*

**SECTION - I**

- Q1) a)** Draw and explain flowchart of restoring division operation. [6]  
b) Perform  $(4) \times (-5)$  using Booth's multiplication algorithm. [12]

OR

- Q2) a)** With the help of flow chart explain floating point division operation. [8]  
b) Describe different IEEE standards for representing floating point numbers. [10]

- Q3) a)** Draw and explain organization of single bus CPU with control signals. [8]  
b) Explain with respect to micro programmed control unit: [8]  
i) Micro-instruction sequencing  
ii) Micro-instruction encoding

OR

- Q4) a)** Write control sequence for ADD R1, (R2). [8]  
b) With the help of diagram explain hardwired control unit. [8]

**P.T.O**



- Q5) a)** Explain with neat block diagram and timing diagram synchronous DRAM. [8]
- b) What is the different method of handling multiple I/O devices by CPU? [8]

OR

- Q6) a)** Explain cache memory organization and cache read and write methods. [8]
- b) Explain the concept of virtual memory. How virtual address is translated to physical address? [8]

### SECTION II

- Q7) a)** State difference between software & hardware interrupt and give example of each. [6]
- b) Explain segmentation concept. List its advantages and disadvantages. [6]
- c) Explain following instructions. [6]
- i) MOV AL,[BX]
  - ii) MOV CX,5[BX]
  - iii) LDA DX,[BX][SI]
  - iv) MOV DL,[0020H]
  - v) MOV AX,BA
  - vi) MOV CL,0FH

OR

- Q8) a)** Explain the minimum and maximum modes of operation in 8086 and pins associated with it. [6]

- b) With neat diagram explain the architecture of 8086 processor. [6]
- c) Explain any three assembler directives: [6]

- Q9)** a) Explain the real mode of 80386. [6]
- b) State different types of descriptors and explain in detail segment descriptor. [10]

OR

- Q10)**a) What is paging? Explain with suitable diagram addressing translation for paging giving details of page frame, page table and page directory. [10]
- b) Explain task switching in 80386. [6]

- Q11)**a) Explain properties of RISC architecture also explain pipelining mechanism of RISC processor. [10]
- b) Explain role of Barrel shifter in ARM core data flow model. [6]

OR

- Q12)**a) Write short note on (any two): [8]
- i) Instruction pipelining
- ii) Superscalar processor
- iii) Tightly couples and loosely coupled Multiprocessor
- b) Give classification of various computer architecture for Flynn's classification. [8]



Total No. of Questions : 12]

SEAT No. :

P3365

[Total No. of Pages : 3

[5253]-16

T.E. (Computer Engg.) (Semestr -I)

DATA COMMUNICATIONS

(2008 Pattern)

Time : 3 Hours]

[Max. Marks : 100

Instructions to the candidates:

- 1) Answer to the two sections should be written in separate books.
- 2) Neat diagrams must be drawn wherever necessary.
- 3) Figures to the right indicate full marks.
- 4) Assume Suitable data if necessary.
- 5) Solve Q1 or Q2, Q3 or Q or 4 Q5 or Q6 or from Section I and Q7 or Q8 or Q9 or Q10 or Q11 or Q12 from Section II.

SECTION - I

- Q1) a) Explain WDM and CDMA multiplexing techniques. [8]  
b) Differentiate between analog and digital signals. Explain any two analog modulation techniques. [8]

OR

- Q2) a) Explain difference in Bit rate and baud rate. [4]  
b) Explain statistical TDM with diagram. What are issues in TDM. [6]  
c) Distinguish between multilevel TDM, multiple slot TDM and Pulse-stuffed TDM. [6]

- Q3) a) Distinguish between forward error correction versus error correction by retransmission. [8]

- b) Explain pulse code modulation technique. [8]

OR

- Q4) a) Explain stop-and-wait ARQ Protocol. State its limitation and compare it with Go-Back-N, ARQ Protocol. [8]

- b) Explain line coding polar schemes. [8]

P.T.O

- Q5)** a) Describe Shannon's theorem on channel capacity. Explain with suitable example. [8]
- b) Explain following terms related to codes: [10]
- i) Code word
  - ii) Code rate
  - iii) Hamming weight of code word
  - iv) Code efficiency
  - v) Hamming distance

OR

- Q6)** a) Explain in brief all the different types of error correcting techniques: State its applications. [10]
- i) Stop and Wait ARQ
  - ii) Go-Back N ARQ
  - iii) Selective Repeat ARQ
- b) With neat diagram explain the working of Selective Repeat Protocol. State its applications. [8]

**SECTION - II**

- Q7)** a) Write short notes on any three of the following. [18]
- i) PSTN
  - ii) Frame relay
  - iii) Network topology
  - iv) SONET

OR

- Q8)** a) Explain in detail seven layers ISO-OSI reference model. [10]  
b) Explain architecture of Bluetooth protocol. [8]

- Q9)** a) Comparison of optical fiber with coaxial and twisted pair cable. [8]  
b) Explain classification of wireless media in detail. [8]

OR

- Q10)** a) What is Frequency hopping? Explain the types of frequency hopping. [8]  
b) Explain packet switching network. [8]

- Q11)** a) What is static and dynamic channel allocation? [8]  
b) Describe the frame format of PPP with diagram. [8]

OR

- Q12)** a) What is HDLC? Draw and explain the frame types of HDLC. [8]  
b) Write short note on persistent and non persistent CSMA. [8]



Total No. of Questions : 12]

SEAT No. :

**P3366**

[Total No. of Pages : 3

**[5253]-17**

**T.E. (Computer Engineering)  
MICROPROCESSORS & MICROCONTROLLERS  
(2008 Pattern)**

*Time : 3 Hours]*

*[Max. Marks : 100*

*Instructions to the candidates:*

- 1) *Answer Question No. Q1 or Q2, Q3 or Q4 and Q5 or Q6 from Section I and Q7 or Q8, Q9 or Q10, Q11 or Q12 from Section II.*
- 2) *Answer to the two sections must be written in separate answer books.*
- 3) *Neat diagrams must be drawn wherever necessary.*
- 4) *Figures to the right indicate full marks.*
- 5) *Assume Suitable data if necessary.*

**SECTION - I**

- Q1)** a) Explain following pins of the Pentium. **[4]**
- i) ADS#
  - ii) D/C#
- b) With the help of neat diagram explain architecture of the Pentium processor. **[8]**
- c) Describe on chip cache organization. **[6]**

**OR**

- Q2)** a) Explain Floating Point Unit of the Pentium? **[6]**
- b) What is the function of prefetch buffer and Branch target buffer in the Pentium processor? **[6]**
- c) What is branch prediction in the Pentium? Explain with diagram. **[6]**
- Q3)** a) How pipelined bus cycles are different than non-pipelined bus cycles? Explain with timing diagram. **[8]**
- b) Describe various addressing modes of the Pentium with suitable examples. **[8]**

***P.T.O***



OR

- Q4)** a) With the help of neat diagram, explain non-pipelined read bus cycle of the Pentium. [8]
- b) What is the purpose of control registers? Explain significance of CR0 in working of cache and paging unit. [8]
- Q5)** a) How logical address is translated to physical address in the Pentium. Draw the required data structures. [8]
- b) Explain rules designed to protect data or code of the Pentium. [8]

OR

- Q6)** a) What are the privilege checks performed by the Pentium when FAR JMP or FAR CALL instruction is executed? Under what circumstances privilege level is changed by the Pentium? Explain with the help of diagram. [8]
- b) How pages can be protected in the Pentium? Give details. [8]

**SECTION - II**

- Q7)** a) What is multitasking? Explain registers & descriptors involved to support this feature in the Pentium. [8]
- b) What is I/O permission bit map? When it is referred? [6]
- c) Differentiate between real mode and virtual mode of the Pentium. [4]

OR

- Q8)** a) How interrupts are handled in protected mode? Explain with the help of neat diagram. [8]
- b) What is difference between interrupt, Fault Trap and Abort? [6]
- c) Explain nested task in the Pentium. [4]

- Q9)** a) Explain the features of 8051 microcontroller. [6]  
b) Explain following 8051 instructions. [6]  
i) POP  
ii) ANL  
iii) MULAB  
c) What is the function of EA# and PSEN# [4]

OR

- Q10)** a) Explain addressing modes of 8051 microcontroller. Explain with suitable example. [6]  
b) Draw and explain program status word of 8051 microcontroller. [6]  
c) Explain following 8051 instructions [4]  
i) MOVC  
ii) MOVX

- Q11)**a) Explain features and architecture of 8096 microcontroller. [8]  
b) What are the different sources of interrupts in 8051? Explain interrupt handling mechanism in 8051. [8]

OR

- Q12)**a) Describe different timer modes of 8051 Microcontroller. [8]  
b) Describe serial port on 8051 with the help of SCON. [8]



Total No. of Questions : 12]

SEAT No. :

P3367

[Total No. of Pages : 4

**[5253]-18**  
**T.E. (Computer)**  
**DIGITAL SIGNAL PROCESSING**  
**(2008 Pattern)**

*Time : 3 Hours]*

*[Max. Marks : 100*

*Instructions to the candidates:*

- 1) *Answer to the two sections should be written in separate answer books.*
- 2) *Answer any three questions from each section.*
- 3) *Neat diagrams must be drawn wherever necessary.*
- 4) *Figures to the right indicate full marks.*
- 5) *Use of Calculator is allowed.*
- 6) *Assume Suitable data if necessary.*

**SECTION - I**

**Q1) a)** Determine whether the following signals are periodic or aperiodic. If periodic find the fundamental period. **[6]**

i)  $x(n) = 5 \sin\left(\frac{2\pi n}{4}\right) + 8 \cos\left(\frac{2\pi n}{6}\right)$

ii)  $x(n) = \cos(2n)$

iii)  $x(n) = \cos(2\pi n)$

**b)** Define discrete time system. Find out the response  $y(n)$  if  $x(n)$  and  $y(n)$  are related by following relations where  $x(n) = \{1, 1, 1, 1\}$  **[10]**

i)  $y(n) = x(n-1)$

ii)  $y(n) = x(n+1)$

iii)  $y(n) = x(n-1) + x(n+1)$

iv)  $y(n) = 2x(n)$

**c)** What is Nyquist rate for the signal? **[2]**

OR

**Q2) a)** What is LTI system? Explain stability of LTI system. **[6]**

**b)** Test Linearity, Causality, stability and time invariance systems of  $y(n) = \cos [x(n)]$  **[12]**

**P.T.O**



OR

**Q8)** a) Define system function  $H(z)$ . How it is obtained from the general difference equation? [6]

b) The difference equation of the system is  $y(n) = \frac{1}{2}x(n) + \frac{1}{2}x(n-1)$  [10]

Find out:

i) System function

ii) Unit sample response

iii) Pole-zero plot

iv) Transfer function and its magnitude, phase

**Q9)** a) Determine the unit sample response of the ideal low pass filter. Why it is not realizable? [8]

b) The system function of analog filter is:  $H_a(s) = \frac{(s + 0.1)}{(s + 0.1)^2 + 9}$ . Obtain the system function of the IIR filter by using impulse invariance method. [8]

OR

**Q10)** a) To design the digital IIR filter, analog IIR filter is designed first, why? Explain the mapping of S-plane to Z-plane for bilinear transformation method. [8]

b) Compare FIR and IIR filters. Explain Kaiser window for FIR filter design. [8]

**Q11)** Draw and explain the architecture of ADSP-21xx processor. **[18]**

OR

**Q12)a)** What are the advantages of representing the digital filter in block diagram form? **[4]**

b) Explain the desirable features of DSP processor. **[6]**

c) Obtain linear phase FIR filter of  $H(z) = \left( 1 + \frac{z^{-1}}{4} + \frac{z^{-2}}{4} + z^{-3} \right)$  **[8]**





Total No. of Questions : 12]

SEAT No. :

P3368

[Total No. of Pages : 3

[5253]-19

**T.E. (Computer Engineering) (Semester -II)**  
**PRINCIPLES OF PROGRAMMING LANGUAGES (New)**  
**(2008 Pattern)**

*Time : 3 Hours]*

*[Max. Marks : 100*

*Instructions to the candidates:*

- 1) *Answer to the two sections should be written in separate answer books.*
- 2) *Answer any three questions from each section.*
- 3) *Neat diagrams must be drawn wherever necessary.*
- 4) *Figures to the right indicate full marks.*
- 5) *Use of Calculator is allowed.*
- 6) *Assume Suitable data if necessary.*

**SECTION - I**

- Q1) a)** What are characteristics of good programming language? [8]
- b) Explain data objects, variables and constants with the help of example.  
What do you mean by data object binding? [8]

OR

- Q2) a)** Explain how swapping of two numbers using call by reference is done. [8]
- b) How data types are classified? Explain in brief structure data type. [8]
- Q3) a)** Explain the basic elements of PASCAL programming language. [8]
- b) Write suitable example demonstrate how nested procedures and functions acts as a efficient program design construct? [8]

OR

- Q4) a)** Which are the different parameter passing technique in PASCAL [8]
- b) What is the use of local and global variable in a program? With the help of sample 'C' program explain the concept. [8]

**P.T.O**

- Q5)** a) What do you mean by checked exceptions? What are pros and cons of it. [6]  
b) Explain the multithreading with using Thread class and Runnable interface. [12]

OR

- Q6)** a) Explain in brief for type of access specifiers associated with JAVA with examples. [4]  
b) Explain the socket programming with proper example. [8]  
c) Write short note on JDBC. [6]

**SECTION - II**

- Q7)** a) How does C# differ from C++? [5]  
b) Explain with example delegates & event handlers. [5]  
c) Explain the inheritance, interface and sealed class in C# [6]

OR

- Q8)** a) Draw and explain various component of .Net framework. [8]  
b) Describe the structure of C# program. [8]

- Q9)** a) With suitable example demonstrate merits and demerits of searching methods used in Logic Programming. [6]  
b) Explain following PROLOG statements: [6]  
i) Fact statement  
ii) Rule statement  
iii) Goal statement  
c) What is cut operator in PROLOG? [4]

OR

**Q10)** a) What are different searching techniques supported by logic programming? [8]

b) Describe the control structure of Prolog with example. [8]

**Q11)**a) Define a LISP functions to determine whether two given lists are equal. [4]

b) What is output of following LISP functions? [6]

i) (EXPT 43)

ii) (RECIP 5)

iii) (>66)

iv) (ONE P 1.0)

v) (SETQ X'(123))

c) Define following terms with respect to Functional programming [8]

i) Ambiguity

ii) Reductions

OR

**Q12)**a) What are different applications of Functional programming? [4]

b) Explain in brief functions for reading and writing from files in LISP. [8]

c) Explain the any three expression evaluation in LISP. [6]



Total No. of Questions : 12]

SEAT No. :

P3369

[Total No. of Pages : 3

**[5253]-20**  
**T.E. (Computer)**  
**FINANCE & MANAGEMENT INFORMATION SYSTEM**  
**(2008 Pattern)**

*Time : 3 Hours]*

*[Max. Marks : 100*

*Instructions to the candidates:*

- 1) *Answer any 3 questions from each section.*
- 2) *Neat diagrams must be drawn wherever necessary.*
- 3) *Figures to the right indicate full marks.*
- 4) *Assume Suitable data if necessary.*

**SECTION - I**

**UNIT - I**

- Q1)** a) What is mean by quality? What are the primary uses of term quality in Industry? What is the role played by quality in TQM? [8]
- b) What is mean by planning? How planning helps to reach to an organizations goal? What are the objectives of planning? [8]

OR

- Q2)** a) Define Mangement and its level. How MIS helps management in their decision making process? Explain in brief. [8]
- b) What is Human resource management (HRM)? State and explain the functionalities performed by HRM. [8]

**UNIT - II**

- Q3)** a) Explain Merger and Acquisition with suitable example. [8]
- b) What are fundamental uses of financial statements in financial management? Explain with suitable example. [8]

OR

- Q4)** a) What are different types of ratio analysis? Explain with suitable examples. [8]

**P.T.O**

- b) What are significance and importance of shares and debentures in business organization? What are the different types of shares? [8]

**UNIT - III**

**Q5)** Write notes on any THREE. [18]

- a) Role of DSS (decision support system) in strategic management.
- b) Business process outsourcing
- c) Structured and non-structured decision
- d) Knowledge Management system

OR

**Q6)** Explain any THREE: [18]

- a) Programmed and non programmed decision
- b) Business process reengineering
- c) Knowledge Management system
- d) Management Information system

**SECTION - II**

**UNIT - IV**

- Q7)** a) How an organization can do business in digital form? State and explain the digital model of an organization. [8]
- b) Explain the process of payment making in E-Commerce system in detail. What are different security measures in payment making process? [8]

OR

- Q8)** a) Explain the different components of Enterprise Content Management (ECM). [8]
- b) How does Content Management System (CMS) work? [8]

**UNIT - V**

- Q9)** a) Why do you think there have been so many business failures among e-commerce companies that were devoted only to retail e-commerce? [8]
- b) Explain the cultural, and political challenges involved in global IT Management. [8]

OR

- Q10)** a) How can the problem of overenthusiastic demand forecasts in supply chain planning be avoided? [8]
- b) What are the components of enterprise management system? Explain two components in detail. [8]

**UNIT - VI**

**Q11)** Write notes on: [18]

- a) Common scenarios in cyber crimes
- b) Copyright and Patent acts
- c) Encryption as a tool for Security management

OR

- Q12)**a) How are internet technologies affecting the type of cyber crimes in organization? Explain. [10]
- b) What may be the intentions behind different Cyber crimes in an organization? Explain with suitable arguments. [8]



Total No. of Questions : 12]

SEAT No. :

P3370

[Total No. of Pages : 3

[5253] - 21

**T.E. Computer Engineering**  
**SYSTEMS PROGRAMMING AND OPERATING SYSTEMS**  
**(2008 Pattern)**

*Time :3 hours]*

*[Max. Marks :100*

*Instructions to the candidates:*

- 1) *Answer any 3 questions from each section.*
- 2) *Answer to the two sections should be written in separate books.*
- 3) *Neat diagrams must be drawn wherever necessary.*
- 4) *Figures to the right indicates full marks.*
- 5) *Assume suitable data, if necessary.*

**SECTION - I**

- Q1)** a) Define language processors. What are different language processing activities? [9]
- b) Explain different types of assembly language statements with their significance with suitable examples. [6]
- c) Define forward reference with example. What is impact of forward reference w.r.t. assembling? [3]

OR

- Q2)** a) Explain with suitable example the use of intermediate code in two pass assemble. [9]
- b) Enlist the different types of errors that are handled by pass I and Pass II of two pass assembler. [9]

- Q3)** a) What are the advantages of overlay structure? Explain with example. [6]
- b) Draw the flow chart for Pass II of direct linking loader. [10]

OR

- Q4)** a) Mention four basic functions of the loader and explain how these functions are performed by absolute loader. [8]
- b) What is an object module? What information does the object module contain? [4]
- c) Compare image builder and linkage editor. [4]

**P.T.O.**

- Q5)** a) Enlist basic functions fo an operating system. [4]  
 b) Consider following set of processes.

Process	Arrival time	Burst Time
P1	0	3
P2	2	5
P3	3	2
P4	8	4
P5	10	5

Calculate waiting time, turnaround time for the following methods.

- i) FIFO                      ii) SJF    iii) RR with time slot of 3. [12]

OR

- Q6)** a) What are the benefits of system calls? [4]  
 b) Write short notes on any three: [12]  
 i) Distributed OS    ii) Real time scheduling  
 iii) Multiprogramming    iv) Library functions

**SECTION - II**

- Q7)** a) Describe the difference between short term, medium term and long term schedulers. [8]  
 b) Explain Deadlock detection approach with proper example. [8]

OR

- Q8)** a) What is inter-process synchronization? Write solution for producer consumer problem using semaphores. [8]  
 b) List the differences between user level and kernel level threads. [4]  
 c) What are the draw backs of monitors? [4]

- Q9)** a) What are the advantages and disadvantages of fixed and dynamic partitioning of memory? [4]  
 b) How sharing and protection is provided in a paging system. [4]  
 c) What is segmentation how segmentation is implemented in operating system? [8]



OR

**Q10)a)** Explain the usage of translation look aside buffer with the help of diagram. [8]

b) Explain the difference between logical and physical address with examples. [8]

**Q11)a)** Explain the characteristics of FIFO, SSTF and C-SCAN. [10]

b) With the help of diagram explain the methods used for record blocking. [8]

OR

**Q12)a)** How UNIX manages the files and directories? [9]

b) Consider a disk system with 200 cylinders. The request to access the cylinders occur in following sequence. Assume that the head is at track 50. Calculate the average seek length for the FIFO, SSTF and C-SCAN algorithm. [9]



Total No. of Questions : 12]

SEAT No. :

[Total No. of Pages : 3

P3371

**[5253] - 22**  
**T.E. (Information Technology)**  
**PROGRAMMING PARADIGMS**  
**(2008 Pattern)**

*Time :3 hours]*

*[Max. Marks :100*

*Instructions to the Candidates:*

- 1) *Answer question 1 or 2, 3 or 4 and 5 or 6 from Section I and Question 7 or 8, 9 or 10 and Q 11 or Q 12 from section II.*
- 2) *Answers to the two sections should be written in separate answers books.*
- 3) *Neat diagrams must be drawn whenever necessary.*
- 4) *Figures to the right indicate full marks.*
- 5) *Assume suitable data, if necessary.*

**SECTION - I**

- Q1) a)** Why there is a need to study programming language explain with. [8]
- i) Choice of programming languages
  - ii) Use of existing programming Languages
  - iii) Design a new language
- b) What are characteristic of good programming language. [8]

OR

- Q2) a)** i) Explain the any one type of programming paradigms? [2]
- ii) Explain the concept of data types. Describe specifications of data types. [6]
- b) Define the term "Binding". With suitable example in particular language Explain which bindings are done at. [8]
- i) Language implementation time.
  - ii) Translation time
  - iii) Execution time

- Q3) a)** Draw a layout of a typical activation record of a pascal. [8]
- b) Write a short note on: [8]
- i) Static scope rule
  - ii) Dynamic scope rule

**P.T.O.**

- iii) Lifetime of a variable
- iv) Scope of a variable

OR

- Q4)** a) Compare programming language 'C' and 'Pascal' with respect to. [8]
- i) Data types
  - ii) Subprogram declaration
  - iii) Control structures
  - iv) Pointers
- b) Discuss various parameter passing methods with suitable examples. [8]

- Q5)** a) What do you mean by applet and further explain life cycle of applet with proper example. Write difference between. [12]
- i) Applet and Application
  - ii) AWT and SWING
- b) Explain difference between C++ and JAVA. [6]

OR

- Q6)** a) Why Java doesn't support for multiple inheritances? Explain how interfaces play a role for it with suitable example. [9]
- b) What do you mean by multithreading? Explain the life cycle of threading? How it is achieved in JAVA. [9]

### **SECTION - II**

- Q7)** a) Explain approaches for garbage collection in LISP. [8]
- b) Explain Unification and Backtracking with example in prolog. [10]

OR

- Q8)** a) i) Enlist Application of Logic programming. [5]
- ii) What are cuts in Prolog? How it is used in program. [4]
- b) Define following terms with respect to declarative and functional programming. [9]
- i) Facts, Rules and Queries
  - ii) Lambda Calculus
  - iii) Reduction

- Q9)** a) Explain the Flynn's classification of computer architectures. [8]  
b) Explain different synchronization mechanisms of parallel programming language. [8]

OR

- Q10)** a) Explain message passing and shared address space. [8]  
b) Draw data flow diagram for computation for  $X = B^2 - 4 * A * C$  and control flow methods. [8]

**Q11)** Write Short notes on following (Any two) [16]

- a) Internet programming
- b) Design principles of Database programming
- c) Socket programming in Java

OR

**Q12)** Write Short notes on following (Any two) [16]

- a) Mapping and granularity
- b) Windows programming
- c) Parallel programming



Total No. of Questions : 11]

SEAT No. :

P3372

[Total No. of Pages : 2

[5253] - 23

T.E. (Information Technology)

**HUMAN COMPUTER INTERACTION AND USABILITY  
(2008 Pattern)**

*Time :3 hours]*

*[Max. Marks :100*

*Instructions to the candidates:*

- 1) *Answer questions 1 or 2, 3 or 4 and 5 or 6 from Section I and Question No. 7 or 8, 9 or 10, 11 from section - II.*
- 2) *Figures to the right indicates full marks.*

**SECTION - I**

- Q1)** a) Describe the human vision system as input channel and enlist any four factors that affect the user-interface design. [8]
- b) Distinguish human short - Term Memory and Long - Term Memory. [8]

OR

- Q2)** a) What is ergonomics? Why do we need to study ergonomics? Explain two applications of ergonomics in computing domain. [8]
- b) What is reasoning? Discuss with example Inductive versus Deductive Reasoning. [8]

- Q3)** a) Explain elements of WIMP interface? What are its advantages and disadvantages? [10]
- b) Express your opinion - "A design should be User - Centric". [8]

OR

- Q4)** a) Describe briefly four different interactions styles used to accommodate the dialog between user and computer. Specify advantages and disadvantages of each interaction style. [10]
- b) Describe various paradigms of interaction. [8]

- Q5)** a) How is HCI study useful in software process?  
Draw the usability engineering life - cycle. [8]
- b) Why is context important in selecting and applying guidelines and principles for interface design? Illustrate your answer with examples. [8]

**P.T.O.**

OR

- Q6)** a) How will you apply the usability engineering process for designing an online ticket booking system? [8]  
b) Explain the golden rules of interface design. [8]

**SECTION - II**

- Q7)** a) Compare: Formative Evaluation versus Summative Evaluation. [8]  
b) Briefly explain DECIDE framework. [8]

OR

- Q8)** a) Illustrate with examples different user-interface evaluation techniques. [8]  
b) Explain in brief Hutch world case study evaluation framework. [8]

- Q9)** a) Explain the GOMS model with suitable example. [8]  
b) Draw and explain HTA diagram of an online bus reservation task. [8]

OR

- Q10)** a) What is Cognitive Model? Discuss with example. [8]  
b) Explain with example the use of state transition diagram for dialogue design. [8]

**Q11)** Write short notes on ANY THREE. [18]

- a) Human aspects in designing groupware systems.  
b) Ubiquitous computing.  
c) Methods of information visualization.  
d) Applications of Augmented Reality.

