

17/6/2011

SEIT Sem - IV (R)  
Computational Mathematics

Con. 3131-11.

RK-1962

(3 Hours)

[Total Marks : 100

- N.B. : (1) Question No. 1 is compulsory.  
(2) Attempt any four questions from the remaining six questions.  
(3) Statistical tables will be provided on request.

1. (a) A sample of 100 students is taken from a large population, the mean heights of students in this sample is 160 cm. Can it be reasonably regarded that is the population, the mean height is 165 cm and standard deviation 10 cm. 5
- (b) If  $f(1) = 4$ ,  $f(2) = 4$ ,  $f(7) = 5$  and  $f(8) = 4$ . Find  $f(5)$  using Lagrange's interpolation formula. 5
- (c) The lifetime of a certain brand of electric bulb may be considered a random variable with mean 1200 hrs. and standard deviation 250 hrs. Using central limit theorem, find the probability that the average life time of 60 bulbs exceeds 1250 hrs. 5
- (d) Define the terms : (i) Feasible Solution (ii) Optimal Solution (iii) Basic and Non Basic variables (iv) Basic Feasible solution (v) Degenerate Basic Feasible solution. 5
2. (a) The first four moments of a distribution about the value 4 of a variable are  $-1.5$ ,  $17$ ,  $-30$  and  $108$ . Find the first four central moments. 6
- (b) Solve using Gauss Jordan Method - 6
- $$\begin{aligned} 2x + y + 4z &= 16 \\ 3x + 2y + z &= 10 \\ x + 3y + 3z &= 16 \end{aligned}$$
- (c) In a distribution exactly normal 7% of items are under 35 and 89% of the items are under 63. Find probability of items lies between 45 and 55. 8

3. (a) A certain injection administered to each of the 12 patients resulted in the following increase of blood pressure :- 6

5, 2, 8, -1, 3, 0, 6, -2, 1, 5, 0, 4.

Can it be concluded that the injection will be in general accompanied by an increase in B.P ?

- (b) Maximize :  $z = x_1 - 2x_2 + 4x_3$  6

Subject to  $x_1 + 2x_2 + 3x_3 = 7$

$$3x_1 + 4x_2 + 6x_3 = 15$$

Find all basic solutions to the above problem.

- (c) Fit a Poisson distribution to the following data and test goodness of fit :- 8

x	0	1	2	3	4	5
f	142	156	69	27	5	1

4. (a) Find a root of  $x^3 - x - 4 = 0$  using Bisection method. 6

- (b) A car hire firm has two cars which it hires out day by day. The number of demands for a car on each day is distributed as Poisson variate with mean 1.5. Calculate the proportion of days on which (i) neither car is used (ii) some demand is refused. 6

- (c) Evaluate :  $\int_0^1 \frac{dx}{1+x}$  by using (i) Trapezoidal rule (ii) Simpson's  $(\frac{1}{3})^{\text{rd}}$  Rule 8

(iii) Simpson's  $(\frac{3}{8})^{\text{th}}$  Rule Take  $h = 0.25$ .

Compare the results with exact value.

[TURN OVER

17/6/2011

SE IT SEM II (R)

Computational mathematics

P4-Exam-May-11-160

Con. 3131-RK-1962-11.

2

5. (a) If on an average one ship in every 10 is wrecked. Find probability that out of 5 ships expected to arrive, 4 at least will arrive safely. 6

- (b) Solve using Gauss Seidal Method - 6

$$6x + 3y + 12z = 35$$

$$8x - 3y + 2z = 20$$

$$4x + 11y - x = 33$$

Correct to 3 decimal places.

- (c) The following marks have been obtained by a class of students in Stats (out of 100) :- 8

Paper I	45	55	56	58	60	65	68	70	75	80	85
Paper II	56	50	48	60	62	64	65	70	74	82	90

Find the equations of lines of regression.

6. (a) Two batches of 12 animals are taken for inoculation. The numbers of dead and surviving animals are given. Can the inoculation be regarded as effective against the disease at 5% level of significance? 6

	Dead	Survived
Inoculated	2	10
Non-Inoculated	8	4

- (b) Find cube root of 15 by Newton Raphson's method upto four places of decimal. 6

- (c) The diameter say  $X$  of an electric cable is assumed to be a continuous random variable with p.d.f. ;  $f(x) = 6x(1-x)$  ;  $0 \leq x \leq 1$ . 8

(i) Is it probability distribution function?

(ii) Obtain cumulative distribution function.

(iii) Compute  $P\left\{X \leq \frac{1}{2} / \frac{1}{3} \leq X \leq \frac{2}{3}\right\}$

(iv) Determine  $K$ , so that  $P(X < K) = P(X > K)$ .

7. (a) Using Newton's difference formula find  $f(4.4)$  from the table - 6

$x$	0	2	4	6	8	10	12
$f(x)$	12	7	6	7	13	32	77

- (b) Fit a straight line to the following data - 6

$x$	1	2	3	4	5	6
$y$	49	54	60	73	80	86

- (c) Using Simplex method solve the following L.P.P. :- 8

Maximize :  $z = 3x_1 + 2x_2$

Subject to :  $x_1 + x_2 \leq 4$

$$x_1 - x_2 \leq 2$$

$$x_1, x_2 \geq 0$$

Con. 3014-11.

( 3 Hours)

[ Total Marks : 100

N.B. (1) Question No.1 is compulsory.

(2) Attempt any four questions out of the remaining six questions.

(3) Figures to the right indicate full marks.

(4) Assume suitable data whenever required but justify the same.

1. Attempt any four of the followings- 20
  - a) Explain the relationship between FM and PM.
  - b) Explain harmonic distortion and inter-modulation distortion.
  - c) Classify and explain the various noises that affect communications.
  - d) Show how companding reduces the quantization error. Give compander characteristic.
  - e) What is peak clipping and diagonal clipping in diode detectors?
  
2. a) In an FM system, the audio frequency is 1 kHz and the audio voltage is 2Volts. 10  
The deviation is 4 kHz. If the AF voltage is now increased to 8 Volts and its frequency is dropped to 500 Hz, find the modulation index in each case and approximate bandwidth of the signal.  
b) State and prove the sampling theorem for low pass band limited signal. Explain 10  
aliasing errors.
  
3. a) In an AM receiver having no RF stage, the loaded Q of the aerial coupling circuit 10  
is 125. If the intermediate frequency is 465 KHz, find-
  - (i) The image frequency and its rejection at 1MHz and 30MHz.
  - (ii) The IF required to make the image rejection ratio as good at 30MHz as it is at 1MHz.  
b) What are the different methods of FM generation? Sketch the circuit and explain 10  
the principle of reactance modulator? Why direct modulation is not preferred for generation?
  
4. a) Explain slope overload and hunting error in Delta modulation. Find the condition 10  
to avoid slope overload error.  
  
b) The AM transmitter develops an unmodulated power output of 400W across  $50\Omega$  10  
load. The carrier is modulated by a sinusoidal signal with a modulation index of 0.8.  
Assuming  $f_m = 5\text{KHz}$  and  $f_c = 1\text{MHz}$ , find-
  - (i) Find  $V_c$  and write equation of AM.
  - (ii) Find the total power of the modulated wave.

[ TURN OVER

5. a) Sketch the circuit of a practical diode detector and explain its working. What is negative peak clipping ? Calculate the maximum modulation index that the above detector can tolerate without causing negative peak clipping. 10
- b) Explain the term thermal noise. Prove that noise voltage is given by  $V_N = \sqrt{4KTBR}$ . 10  
Also for an electronic device operating at  $17^{\circ}\text{C}$  with bandwidth of 10kHz, determine-  
i) thermal noise power in dBm, ii) rms noise voltage for a 100 ohm internal resistance and 100 ohm load resistance.
6. a) What is multiplexing in communication systems? Draw the block diagram of TDM- PCM systems to transmit voice channels. 10
- b) Explain the following terms in brief- 10  
i) Pilot Carrier System,  
ii) Independent sideband system.
7. Write short notes on any three of the followings; 20  
i) International standards for communication systems and frequency assignments;  
ii) Applications of multiplexing techniques in satellite, Optical and Wireless communications;  
iii) Basic digital transmission methods.  
iv) Properties of Fourier transforms.
-

30/5/11

S F IT @TV (Rev)  
Internet Programming

Con. 3917-11.

(REVISED COURSE)

RK-1956

(3 Hours)

[Total Marks : 100

- N.B. : (1) Question No. 1 is compulsory.  
(2) Attempt any **four** questions out of remaining six questions.  
(3) Assume **suitable** data if required.

1. a) Write Java script to validate a form consisting of Name, Age, Address, Gender (radio button), state and country (Drop down menu). 10  
b) With neat labeled diagram explain the SOA architecture. 10
2. a) Compare and contrast  
i) Get and Post HTTP method      ii) HTML and DHTML 10  
b) What are cookies? Explain in detail its use in session tracking. 10
3. a) Design any application which makes use of the following controls :  
i) Text box ii) Radio button iii) List Box iv) Labels v) Check Box 10  
b) What is XSL? Explain the different elements of XSL. 10
4. a) Write ASP code for filling online student information for admission. Use suitable data . 10  
b) What is the need for CSS. 5  
c) What do you mean by web feeds. 5
5. a) Write HTML code which includes anchors, backgrounds, images, lists and tables to display your resume. 10  
b) Explain Relational database systems. 5  
c) What do you mean by domain name systems. 5
6. a) Explain JDBC drivers and JDBC API in detail. 10  
b) Write a JSP code for password verification which takes the data from the database. 10
7. a) Write ASP code to search your roll no. in university database and display the result in the form. 10  
b) Explain the different ASP objects in detail. 10

- N.B. :** (1) Question No. 1 is **compulsory**.  
 (2) Attempt any **four** out of remaining **six** questions.  
 (3) Assume **suitable** data if **necessary** and state the assumptions **clearly**.

1. (a) Compare BIU and EU of 8086 microprocessor. 5  
 (b) With a neat diagram, explain Harvard architecture of PIC microcontroller. 5  
 (c) Explain Data Memory of 8051 microcontroller. 5  
 (d) Explain synchronous communication of 8051 microcontroller and find TH1 value required to obtain baud rate 4800. (Assume crystal frequency : 11.0592 MHz) 5
  
2. (a) Design 8086 microprocessor based system in minimum mode with following specifications : 10  
 (i) CPU with 8 MHz clock  
 (ii) 64 KB RAM using 16 KB devices  
 (iii) 32 KB EPROM using 8 KB devices  
 Draw neat schematic and memory map.  
 (b) Explain mixed language programming with example. 10
  
3. (a) Explain hardware and software interrupts of 8051 microcontroller. 10  
 (b) Write an assembly language program for 8086 microprocessor to check whether the given alphanumeric string is a PALINDROME. Use at least two string instructions. 10
  
4. (a) Explain the register file structure and stack of PIC microcontroller. 10  
 (b) Interface the following components with 8051 microcontroller. 10  
 (i) 32 K x 8 EPROM  
 (ii) 32 K x 8 RAM  
 (iii) DS 12887 RTC.
  
5. (a) What is segmented memory and what are its advantages ? Explain logical and physical address in 8086. 8  
 (b) Design the 8051 microcontroller based system to read the analog voltages in the range of 0-9 V and display the voltage on 7 segment LED display. Write the necessary software in C language. 12
  
6. (a) Explain the addressing modes of 8086 microprocessor with examples. 10  
 (b) Write an assembly language program for 8051 microcontroller to generate a square wave of 2 KHz on pin P1-0 assuming crystal frequency 12 MHz. Justify the mode of operation. 10
  
7. Write short notes on any **four** :- 20  
 (a) Serial communication of 8051  
 (b) Comparison of Min and Max mode of 8086 microprocessor  
 (c) Watch Dog timer of PIC microcontroller  
 (d) Assembler directives  
 (e) Various Jump instructions of 8051 microcontroller.

13/6/2011

S.E IT TV (Rev)  
financial Accounting & Mgmt  
of Technology Innovation

50 : 1st half, 11-AM(I)

Con. 2911-11.

RK-1953

(3 Hours)

[ Total Marks : 100

- N.B. :** (1) Question No. 1 is compulsory.  
 (2) All questions carry equal marks.  
 (3) Attempt any four questions from remaining questions.

1. (a) Define the following :—  
 (i) Creation  
 (ii) Innovation  
 (iii) Entrepreneur and Enterprise  
 (iv) Technology  
 (v) Wealth Creation.
- (b) Give definition of creative accounting and Double Entry Book-keeping System ?
2. (a) Define and discuss the features of Profit and Loss Account, Balance Sheet and Cash Flow Statement ?  
 (b) Suresh Kumar has the following financial details :

	Rs.
Sales	8,000
General Expenses	4,000
Assets	15,000
Liabilities	3,000
Cash out flows	12,000
Trading Expenses	3,000
Cash inflows	10,000
Opening Capital Employed	11,000
Closing Capital Employed	12,000

- Required : Prepare Suresh Kumar's : (a) Profit and Loss Account  
 (b) Balance Sheet  
 (c) Cash Flow Statement.

3. (a) What do you mean by Accounts ? Explain various methods of Depreciation.  
 (b) What do you mean by Finance ? Explain the importance of Financial Accounting and Management Accounting for a firm in a competitive market ?

[ TURN OVER



4. (a) What do you mean by cost accounting ? Explain the Activity Based Costing (ABC) in detail.
- (b) From the following balances from the book of Mr. Arun prepare trail balance as on 31-12-2010.

Heads of A/c	Balances (Rs.)
Sales	22,000
Opening Stocks	6,800
Furniture	600
Patents	8,000
Purchase	12,000
Discount Allowed	400
Carriage Outward	520
Insurance	320
Legal charges	200
Rent and Taxes	2,240
Debtors	15,200
Creditors	18,000
Cash at Bank	7,280
Salaries	1,520
Return outward	520
Return inward	400
Capital	15,240
Cash in Hand	280

5. (a) Explain Always Better Control (ABC) and Economic Ordering Quantity (EOQ) techniques of Inventory Control / Management.
- (b) Explain various kinds of collaborative strategies can be adopted by a firm.
6. (a) What are the effects of Technology on growth and survival of Business Organization ?
- (b) Which are the factors that will influence innovation in an organization ?
7. Write short notes on the following :—
- Ledger, T-account and Financial Analysis
  - Effect of Technology on Society
  - Partnership and Limited companies
  - Technology and National Economy.

Con. 2907-11.

RK-1959

(3 Hours)

[ Total Marks : 100

- N.B. :** (1) Question No. 1 is **compulsory**.  
(2) Answer any **four** out of the remaining **six** questions.

1. (a) Explain different models of Distributed Computing. 5  
(b) State and explain protocols for Distributed Systems. 5  
(c) Explain OSI Reference model and compare it with TCP/IP model. 10
2. (a) Explain different types of switching and compare them. 10  
(b) Explain CRC with an example. 10
3. (a) What are different Data Link Layer protocols. Explain in detail one bit sliding window protocol. 10  
(b) Differentiate between Go Back and Selective Repeat. 10
4. (a) What are different types of routing ? With an example explain distance vector routing. 10  
(b) How one can control congestion in datagram subnet ? Explain. 10
5. (a) What are different types of IP address ? Give the total number of Networks and total numbers of Host for each type of IP address. 5  
(b) A router inside an organization receive the same packet with a destination address 190.240.34.95. If the subnet mask is /19 then find the subnet address. 5  
(c) Explain different congestion prevention policies. 10
6. (a) Explain issues in interprocess communication. How failure handling is done in interprocess communication ? 10  
(b) Explain RPC in detail. 10
7. (a) Write short notes on any **four** the following :— 20
  - (a) ATM Technology
  - (b) The TCP Connection Management
  - (c) Network Management
  - (d) CORBA
  - (e) Hubs, Gateways, Bridges
  - (f) ALOHA.