

(3 Hours)

[Total Marks : 100

- N.B. :** (1) Question No. 1 is **compulsory**.
 (2) Attempt any **four** questions from question No. 2 to 7.
 (3) All questions carry **equal** marks.

1. (a) Define the following :— 10
 (i) Creation
 (ii) Innovation
 (iii) Entrepreneur
 (iv) Technology
 (v) Wealth Creation.
 (b) Give definition of Creative Accounting and Double-Entry Book Keeping System. 10
2. (a) Shyam has the following financial details :— 10
 Sales Rs. 8000 Assets Rs. 15,000
 General Expenses Rs. 4,000 Liabilities Rs. 3,000
 Trading Expenses Rs. 3,000 Cash Outflows Rs. 12,000
 Cash inflows Rs. 10,000 Closing Capital Employed Rs. 12,000
 Opening Capital Employed Rs. 11,000
Required : Prepare Shyam's :—
 (i) Profit and Loss Account
 (ii) Balance Sheet
 (iii) Cash Flow Statement.
 (b) Define and explain the features of Profit and Loss account, Balance Sheet and Cash Flow statement. 10
3. (a) What do you mean by Accounts ? Explain various methods of Depreciation. 10
 (b) What do you mean by Finance ? Explain the importance of financial accounting and management accounting for a firm in a competitive market scenario ? 10
4. (a) What do you mean by Cost Accounting ? Explain the Activity Based Costing in detail. 10
 (b) From the following balances from the book of Mr. Ram. Prepare trail balance as on 31/12/2009 :— 10

Heads of A/c	Balance (Rs.)
Sales	22,000
Opening Stock	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

20 Dec

S.E. IT / Sem IV

P4-E.xam.-Oct.-10-73

Con. 6638-10.

Networking Technology for Digital
Devices GT-6552

(3 Hours)

[Total Marks : 100

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

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

1. (a) What is CRC ? Write the algorithm for computing checksum and explain with 10
suitable example.
- (b) Explain how TCP controls congestion. 10
2. (a) Explain ISO OSI reference model in detail. 10
- (b) What is buffering ? Explain different types of buffering. 10
3. (a) Explain CSMA/CD. 10
- (b) Explain different distributed computing model with example. 10
4. (a) Explain various issues in networking security. 10
- (b) What is internetworking ? Describe the devices used in the internetworking. 10
5. (a) Explain Remote Procedure Call. 10
- (b) Explain how the failure handling is done. 10
6. (a) What is Multiplexing ? Explain different types of multiplexing. 10
- (b) Explain Stop and Wait Protocol and Sliding Window Protocol. 10
7. Write short notes on :- 20
 - (a) ALOHA
 - (b) SNMP
 - (c) ARP, RARP
 - (d) BGP.

S.E. / IT / Sem. IV /

P4-Exam.-Oct.-10-73
Con. 6638-10.

Networking Technology for Digital

GT-6552

(3 Hours) Devices

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(3 Hours)

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

1. (a) Explain the term information and explain its significance. 5
 (b) Give Robin-Miller Test of identifying prime numbers. 5
 (c) Explain properties of modular Arithmetic. 5
 (d) Differentiate Block Cyphers from steam cyphers. 5
2. (a) Explain security feature in DES algorithm. 10
 (b) Explain Diffie-Hellman Algorithm. Which attack is it vulnerable to ? 10
3. (a) Name the source coding techniques used in the following types of files and classify them as Lossy or Lossless :- 10
 (i) •mpg (ii) •bmp (iii) •gif (iv) •zip (v) •jpg.
 (b) Explain the term Entropy in information theory and also prove that entropy is maximum when all source aoutputs have equal probability. 10
4. (a) Explain role of Fermat's little theorem and chinese Remainder theorem in Information theory. 10
 (b) Compare Symmetric Versus Asymmetric Key Cryptography. 10
5. (a) Explain RLE compression technique. 10
 (b) Explain convolution code in brief. 10
6. (a) Explain the following term with example :- 10
 (i) Hamming bound
 (ii) Linear code properties
 (iii) Code efficiency
 (iv) Syndrome
 (v) Weight of code.
 (b) Explain Adaptive Huffman encoding technique. Encode the data pattern "accabbcdadaad" using above technique. 10
7. Write short notes on (any four) :- 20
 (a) Digital Signature
 (b) Dictionary Method of Compression
 (c) Probable Hacks on Cryptography
 (d) One Way Hash Function
 (e) Classes of Complexity.

(3 Hours)

[Total Marks : 100

- N.B. :** (i) Question no. 1 is compulsory.
(ii) Attempt any Four (04) out of the remaining Six(06) Questions.
(iii) Figures to the Right Indicate Full Marks.
(iv) Assume Suitable Data if necessary.

Q1: Attempt any Four:

- A. Explain an Electronic Communication System with the help of a Block Diagram. (05)
B. Compare Analog and Digital Communication. (05)
C. Compare TDM and FDM. (05)
D. Explain Pre-emphasis in FM. (05)
E. What is Quantisation in PCM? Define Quantisation Error. (05)

- Q2: A. (i) Define Noise Factor and Noise Figure. (05)
(ii) If each stage of an amplifier has gain of 10 dB and Noise Figure of 10 dB, determine the overall Noise Figure of a two stage cascaded amplifier. (05)
B. Using a Block diagram, Explain a Low Level AM Transmitter (10)

- Q3: A. Prove the following properties of Fourier Transform:
(i) Time Shifting (05)
(ii) Convolution in Time domain. (05)
B. Determine Fourier Transform for a Rectangular Pulse of amplitude 'A' and Time Period 'T' (Range of t is from $-T/2$ to $+T/2$) (10)

- Q4: A. What are the disadvantages of a Tuned RF Receiver. Draw the circuit of a Superheterodyne Receiver and Explain the same. (10)

- B. A Sinusoidal Carrier $V_c = 100\cos(2\pi 10^5 t)$ is amplitude modulated By a sinusoidal voltage $V_m = 50\cos(2\pi 10^3 t)$. Modulation depth is 50%. Calculate the amplitude and frequency of each side band and the rms voltage of the modulated carrier. (10)
- Q5: A. What is multiplexing in communication system? Draw the block diagram of TDM-PCM system and Explain the same. (10)
- B. State and Prove Sampling Theorem (10)
- Q6: A. Explain FM detection using PLL (10)
- B. What is the disadvantage of Delta Modulation. Explain with a neat diagram, how is it removed in Adaptive Delta Modulation. (10)
- Q7: Write Short Notes on: (Attempt any Four)
- A. Satellite Communication System. (05)
- B. Satellite Communication System. (05)
- C. Friss Formula. (05)
- D. AGC Principle in Receivers. (05)
- E. Amplitude Shift Keying. (05)
- F. Frequency Shift Keying. (05)

- N.B. :** (1) Question No. 1 is compulsory.
 (2) Attempt any four questions from remaining six questions.
 (3) **Figures to the right indicate full marks.**

1. (a) Prepare forward difference table for $f(0) = 3$, $f(1) = 1$, $f(2) = 3$, $f(3) = 15$, $f(4) = 43$ and find $f(5)$, $f(6)$. 5
- (b) If the mean of the following distribution is 16, find m , n and variance :- 5
- | | | | | | | |
|----------|---|-------|-----|-----|-------|--------|
| X | : | 8 | 12 | 16 | 20 | 24 |
| $P(X=x)$ | : | $1/8$ | m | n | $1/4$ | $1/12$ |
- (c) A candidate at an election claims that, in a locality 90% voters support him. Verify his claim if in a random sample of 400 voters from a locality, 320 supported him. 5
- (d) If a random variable has the moment generating function $M_t = \frac{3}{3-t}$, obtain the mean and the standard deviation. 5
2. (a) Given
- | | | | | | |
|--------|---|----|---|----|-----|
| X | : | 1 | 3 | 4 | 6 |
| $f(x)$ | : | -3 | 9 | 30 | 132 |
- express $f(x)$ as a third degree polynomial in x , using Lagrange's interpolation formula. Also find $f'(x)$, $f''(x)$ at $x = 1$. 6
- (b) Given $6y = 5x + 90$, $15x = 8y + 130$, $\sigma_x^2 = 16$ Find - 6
- (i) \bar{x} and \bar{y}
 (ii) r
 (iii) σ_y^2 .
- (c) Out of consignment of 1,00,000 tennis balls, 400 were selected at random and examined. It was found that 20 of these were defective. How many defective balls you can reasonably expect to have in the whole consignment at 95% confidence level ? 8
3. (a) Determine all basic solutions to the following problem :- 6
- Maximise $Z = x_1 - 2x_2 + 4x_3$
 Subject to $x_1 + 2x_2 + 3x_3 = 7$
 $3x_1 + 4x_2 + 6x_3 = 15$
- (b) From the following data calculate Spearman's rank correlation between x and y - 6
- x : 36, 56, 20, 42, 33, 44, 50, 15, 60
 y : 50, 35, 70, 58, 75, 60, 45, 80, 38
- (c) Apply Gauss - Seidel iteration method to solve the equations - 8
- $20x + y - 2z = 17$
 $3x + 20y - z = -18$
 $2x - 3y + 20z = 25$.

4. (a) A manufacturer knows from his experience that the resistance of resistors he produces is normal with $\mu = 100$ ohms and standard deviation $\sigma = 2$ ohms. What percentage of resistors will have resistance between 98 ohms and 102 ohms ? 6
- (b) Find a root of $x^3 - 4x - 9 = 0$ using bisection method in four stages. 6
- (c) Nine items of a sample had the following values :- 8
45, 47, 50, 52, 48, 47, 49, 53, 51.
Does the mean of 9 items differ significantly from the assumed population mean 47.5 ?

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5. (a) Fit a straight line to the following data :- 6
- | | | | | | |
|---------------|--------|------|------|------|------|
| Year (x) | : 1951 | 1961 | 1971 | 1981 | 1991 |
| Production(y) | : 10 | 12 | 8 | 10 | 13 |
- (000 tons)
- Also estimate the production in 1987.
- (b) Apply Gauss elimination method to solve the equations - 6
- $$x + 3y - 2z = 5, \quad 2x + y - 3z = 1, \quad 3x + 2y - z = 6.$$
- (c) A firm produces two types of articles A and B. Each of the articles A requires 8
- 3 hours of hand operations and 8 hours of machine operations, each of the articles B requires 4 hours of hand operations and 4 hours of machine operations. Only 60 hours of hand operations and 100 hours of machine operations are available per week. Profit on each article of A is Rs 5 and on each article of B is Rs 6. Supposing that the firm can produce as many articles of A and B as it can, solve the problem graphically.
6. (a) A die was thrown 132 times and the following frequencies were 6
- observed :-
- | | | | | | | | |
|--------------|------|----|----|----|----|----|-------|
| No. obtained | : 1 | 2 | 3 | 4 | 5 | 6 | Total |
| Frequency | : 15 | 20 | 25 | 15 | 29 | 28 | 132 |
- Test the hypothesis that the die is unbiased.
- (b) The ratio of the probability of 3 successes in 5 independent trials to the 6
- probability of 2 successes in 5 independent trials is $1/4$. What is the probability of 4 successes in 6 independent trials ?
- (c) In an experiment a quantity G was measured as follows :- 8
- | | | | | | |
|-------|-----------|-------|----------|-------|-----------|
| G(20) | = 95.90, | G(21) | = 96.85 | G(22) | = 97.77, |
| G(23) | = 98.68, | G(24) | = 99.56, | G(25) | = 100.41, |
| G(26) | = 101.24. | | | | |
- Compute $\int_{20}^{26} G(x)dx$ by both Simpson's $\frac{1}{3}$ rule and Trapezoidal rule.
7. (a) Solve the following L.P.P. by simplex method :- 6
- Maximise $z = 3x_1 + 2x_2$
- Subject to $3x_1 + 2x_2 \leq 18$
- $0 \leq x_1 \leq 4$
- $0 \leq x_2 \leq 6$
- $x_1, x_2 \geq 0$
- (b) Using backward difference formula, find t when $p = 84$ from the following 6
- data :-
- | | | | | |
|---|-------|-----|-----|-----|
| p | : 60 | 70 | 80 | 90 |
| t | : 226 | 250 | 276 | 304 |
- (c) Find the mean and variance of poisson Distribution. 8

- N.B. :** 1) Question number 1 is compulsory.
2) Solve any 4 questions from the remaining.

1. A) Explain the domain name system with example. 05
 B) Write a style sheet such that 05
 - 1) The web page will have the background image "img1.jpg".
 - 2) The table headings will have red background colour.
 - 3) All the headings on the page will be aligned to left.
 - 4) The hyperlinks on the web page will not have underline
 - 5) Paragraphs in the web page will have left and right margins of 100px.
- C) Write a code in JavaScript to set a Cookie. Assume suitable data for it. 05
 D) Explain the difference between ASP and JSP. 05

2. A) State the properties and methods available on ASP Session Object. Write a code in ASP so that the server terminates the session automatically after 30 minutes if it remains idle. How much is the default timeout. 10
 B) Explain the differences between HTML and XML. 05
 C) What do you understand by a web service? Explain with example. 05

3. A) Explain how JSP works with a neat diagram. 10
 B) What do you understand by a mark-up language? Write HTML statements for the following:— 10
 - A) Create a checkbox.
 - B) Refresh the web page automatically after every 2 minutes.
 - C) Insert an image in the background.
 - D) Enumerated list of five items. Numbering should be in capital roman letters which starts from VI.

4. A) Explain the sequence of steps required to access a database from an ASP page with example. 10
 B) Explain the Document Object Model with an example. 10

5. A) Design a web page to maintain a CD catalogue. I should maintain the name of the music album, Songs in that album, composer, singer and year of release. Format it in the tabular manner using XSL. 10
 B) Write a JavaScript code for the following:— 10
 - A) To display a digital clock on the screen.
 - B) To change the advertisement stored in the form of image after every 5 Minutes automatically.

6. A) Explain the Servlet life cycle in detail. 05
 B) Explain Response object of ASP with its properties and methods. 05
 C) Explain the in-built objects provided in JavaScript with their properties and methods. 10

7. Write short notes on:— 20
 - A) XHTML
 - B) E-Commerce
 - C) Web System Architecture
 - D) RSS.