



Printed Pages : 4

TIT – 101 / TIT-201

(Following Paper ID and Roll No. to be filled in your Answer Book)

**PAPER ID : 1305/1306**

Roll No.

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## B. Tech. (Sem. I & II)

SPECIAL CARRYOVER EXAMINATION, 2006-07

INFORMATION TECHNOLOGY

*Time : 3 Hours]*

*[Total Marks : 100*

1 Attempt any **four** parts of the following : **4×5=20**

- (a) Explain the term data and information by giving suitable example. Describe any three formats of representing information in digital computer.
- (b) What do you mean by entropy of information ? What does it signify ? Suppose a text is composed of three distinguished characters A, B and C. Their probability of occurrence is .5, .4, .1 respectively. Compute the entropy and find the minimum number of bits required to represent a text containing 100 such characters.
- (c) Why is Huffman coding considered better as compared to Shannon-Fano Code ? Determine the Huffman coding of the following frequencies :  
A : 20, B : 15, C : 20, D : 25, E : 5, F : 5,  
G : 2, H : 8

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- (d) Consider the text string "DI\$DID\$DIDI\$DIDIA\$DIDI". Show all the steps of LZ78 compression including dictionary formation. Explain the role of dictionary tree in compression.
- (e) Explain the different formats used for storing photographs in computer.
- (f) What do you understand by Arithmetic Coding ? What are the features which make it different from Huffman and Shanaon-Fano compression ?

2 Attempt any **four** parts of the following : **4×5=20**

- (a) Draw block diagram of digital computer and explain its various components.
- (b) Differentiate between the following :
  - (i) RAM and ROM
  - (ii) Flowchart and DFD
  - (iii) Firmware and Humanware
  - (iv) High level language and UGL.
- (c) Discuss the advantages and disadvantages of high level language and assembly level language.
- (d) What do you understand by SDLC ? – Explain.
- (e) What is meant by SEI capability maturity model ? Discuss the various levels of SEI-CMM model.
- (f) List the different software testing techniques. What is meant by Black Box testing ? How is it different from White Box testing ?

**3** Attempt any **four** parts of the following : **4×5=20**

(a) (i) Convert  $(1100101101.1101)_2$  into equivalent decimal and hexadecimal numbers.

(ii) Convert  $(962.52)_{10}$  into its equivalent binary and octal numbers.

(b) Draw the truth table for the following expression :

$$F_1 = F_2 + F_2 \text{ where } F_1(ABC) = A B + \bar{C} \text{ and}$$

$$F_2(ABC) = \overline{A B C}$$

(c) What are Flip-Flops ? Explain the working of clocked Flip-Flops.

(d) What do you understand by the term modulation ? Explain any two modulation techniques in detail.

(e) Explain different computer networks in detail.

(f) Write short notes on any **three** :

(i) ISDN

(ii) CSMA/CD

(iii) ATM

(iv) Client-Server Architecture.

**4** Attempt any **four** parts of the following : **4×5=20**

(a) What is Internet ? Discuss the import usage of Internet.

(b) What do you mean by File Transfer Protocol (FTP) ? What are the FTP sites ? Explain with suitable example, how a FTP session is established.

- (c) What is the importance of Electronic Data Interchange (EDI) in E-Commerce ? "The EDI application is a part of E-Commerce". Justify the statement.
- (d) Define the network infrastructure requirement of E-Commerce applications. What precautions must be taken in order to get safe and secure execution of business transaction on the Web.
- (e) What is meant by Public key cryptography ? What are the differences between private and public keys ?
- (f) Write short notes on any **three** :
  - (i) Telnet
  - (ii) Electronic Payment System
  - (iii) Digital Signature
  - (iv) Firewall.

**5** Attempt any **two** parts of the following : **2×10=20**

- (a)
  - (i) Discuss the usage of operating system in detail.
  - (ii) Explain the salient features of MS-Word.
- (b) Explain the architecture of DBMS in detail. Also comment on the components of DBMS.
- (c) Write short notes on any **two** :
  - (i) MS-Excel
  - (ii) NICNET
  - (iii) Application of IT in E-Commerce.