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

PAPER ID : 1306 Roll No. | | | | | | | | | | |

B.Tech.

(SEM. II) THEORY EXAMINATION 2010-11

INFORMATION TECHNOLOGY

Time : 3 Hours *Total Marks : 100*

Note :—(1) There are **FIVE** questions in the paper. Attempt **ALL** questions.

(2) Attempt **ALL** questions at one place.

(3) Make necessary assumption, if required.

1. Attempt any **four** parts of the following :— **(4×5=20)**

(A) Define Information Technology. List any five areas of application of IT and explain what do you mean by IT enabled services.

(B) Discuss various data types used for representing information. What are differences between value of information and quality of information ?

(C) What do you mean by Data Compression ? Explain the differences between Loss-Less and Lossy data compression techniques.

(D) Define Entropy of Information. Compute the self information and entropy of following message stream : 'ABBAACDAABCDABB'

(E) What are differences in Shannon Fano and Huffman Codes ? Generate Shannon Fano code for each symbol included in a message stream to be communicated over a channel. The symbols and their frequency of occurrences in the message stream are :

'A .25', 'B .1', 'C .2', 'D .05', 'E .4'.

(F) What is LZW compression scheme ? Discuss its advantages over LZ78 compression technique.

2. Attempt any **four** parts of the following :— **(4×5=20)**

(A) Draw a schematic showing functional units of a digital computer. Explain the function of each unit.

(B) What are storage devices ? Discuss main differences between magnetic and optical storage devices.

(C) What do you mean by programming language ? List the differences in machine, assembly and high level languages. What are fourth generation languages ? Explain in brief.

(D) What are Data Flow Diagrams ? Discuss main differences between control flow oriented program design and data flow oriented program design.

(E) List and explain various steps of software development life cycle. Explain the differences in unit testing, integration testing and system testing.

(F) What do you mean by software quality assurance ? What do you mean by capability maturity model ? List the salient features of this model.

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

(A) What are logic gates ? What are differences between logic gates and flip-flop ? Draw a neat schematic of SR and JK flip-flop and explain its function with the help of characteristic table.

(B) What do you mean by analog signals ? List the differences between analog and digital signals. List and explain various issues in the analog to digital conversion.

(C) What do you mean by the term modulation ? What are differences between amplitude, frequency and phase modulation ?

(D) What do you mean by multiplexing of signals ? Define time division multiplexing and explain how it is different from frequency division multiplexing.

(E) What do you mean by computer networks ? Explain star, tree and ring topology.

(F) What do you mean by ISDN ? Explain the salient features of ISDN and illustrate the usage of ISDN.

4. Attempt any **two** parts of the following : (2×10=20)

(A) What do you mean by e-commerce ? Explain the salient features of B to B and B to C e-commerce. Define the term electronic data interchange (EDI) and list the benefit of EDI.

(B) What are electronic payment system ? What are differences between debit cards and credit cards ? Draw schematic of electronic payment system and explain how a customer purchase the goods/services using credit card.

(C) What are digital signatures ? List the requirements of a digital signature system. Draw a schematic and show various steps of public digital signature system.

5. Attempt any **two** parts of the following :— **(2×10=20)**

(A) What do you mean by data management ? Why data management is so important to various organization ? Draw a schematic showing architecture of a database management system and explain the function of various components.

(B) What do you mean by data integrity ? Explain how the data integrity is preserved using database management systems.

(C) Write short notes on any **two** of the following :—

(i) ERNET

(ii) e-governance

(iii) multimedia.