

Computer Science 1

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Science Computer Science

TYBSc

University of Mumbai

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- N.B. (1) Answers to the two sections must be written and submitted separately.
 (2) All questions are compulsory and Mixing of sub-sections is not allowed.
 (3) Figures to the right indicate full marks.
 (4) Symbols have their usual meaning unless otherwise stated.
 (5) Use additional data if required but state it clearly.
 (6) Illustrations and in-depth answers will be appreciated.

Section I

- Q.1 a Explain the grammar of a language as a 4-tuple. 05
 b Describe the hashing table organization. How is it efficient than binary search organization? 06
 c Define a DFA. Develop a regular expression and corresponding DFA for identifying a fractional number of kind nn.nn, where n is an integer. 06
- OR
- Q.1 p Define and illustrate derivation and reduction. 05
 q Explain the working of a stack as an allocation data structure. 06
 r Write a detailed note on bottom up parsing. 06
- Q.2 a Comment on the role of symbol table and mnemonics table in the working of an assembler. 05
 b Giving examples, describe the processing of positional and keyword parameters in a macro. 06
 c State the advantages of an interpreter. Describe the types of an interpreter. 05
- OR
- Q.2 p Explain the two pass structure of an assembler. 05
 q Write notes on:
 i) Program relocation
 ii) Public definitions and external references
 r What is a user interface? Illustrate and explain the structure of a user interface. 05
- Q.3 a Illustrate the action of a compiler as a serial activity. 06
 b Describe how a structure declaration is handled by a compiler. 05
 c Enlist various storage classes. Comment on the implementation of internal and external controlled storage classes. 06

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OR

- Q.3 p Generate the matrix intermediate form for, $a=(b+c)*c+d*(b+c)$ 06
 Comment on the optimization of the generated matrix.
- q Describe the data structures used by the compiler. 05
- r Explain the implementation of a block structure and a recursion by a compiler. 06

Section II

- Q.4 a Explain in brief the transmission impairments. How the decibel and signal to noise ratio are used to measure the impairments? 06
- b Write a detailed note on transmission modes and their significance. 05
- c Explain the term multiplexing. Illustrate and describe the digital multiplexing. 06

OR

- Q.4 p With suitable examples, describe the terms Shannon capacity and Nyquist formula for a channel. 06
- q Explain the unguided media of transmission. How the fiber-optic cable proves better than a coaxial cable? 05
- r What is a virtual circuit network? Explain its advantages over the circuit switched network. 06
- Q.5 a Describe the functions of the data link layer. 05
- b Give a comparison between HDLC and PPP. 06
- c Brief on the random access of transmission medium. Explain how CSMA/CA method is better than CSMA for random access. 05

OR

- Q.5 p Illustrate a method for data error detection and its correction. 05
- q What protocols are used for flow control of noisy channels? Explain in detail any one of them. 06
- r Describe the working of fast Ethernet as a midway of traditional and gigabit Ethernet. 05
- Q.6 a Mention the advantages of IPv6 over IPv4. Also comment on transition of IPv4 to IPv6. 05
- b What is an autonomous system? Briefly describe an inter-autonomous system protocol. 06
- c Explain the working and applications of UDP. 06

OR

- Q.6 p Describe the functions of the network layer. 05
- q Explain TCP as a connection oriented and a reliable protocol. 06
- r Write short notes on: 06
- i) DNS domains
 - ii) FTP