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Candidate should write his/her Roll No. here.

Total No. of Questions : 03

No. of Printed Pages : 04

**M-SFS-II-2017 (13)**  
**COMPUTER SCIENCE ENGINEERING**  
**(Optional Subject)**  
**Second Paper**

Time : 3 Hours ]

[ Total Marks : 200

**Instructions to the candidates :**

1. This question paper consists of **three** questions and all questions are compulsory.
2. Marks for each question have been indicated on the right hand margin.
3. There is no internal choice in Question No. 1, remaining questions carry internal choice.
4. The first question is of very short-answer type consisting of **15** compulsory questions. Each one is to be answered in one or two lines. Question No. 2 is short answer type, word limit is **100**. Question No. 03 is long answer/Essay type, word limit is **300**.
5. Wherever word limit has been given, it must be followed to.
6. Question should be answered exactly in the order same as mentioned in the question paper. Answer to the various parts of the same question should be written together compulsorily and no answer of the other question should be inserted between them.



15 × 4 = 60

1. Give the answer in **one-two** lines :

- (A) Write full form of FTP along with its purpose.
- (B) Which layer of TCP/IP routes packets ?
- (C) Define VoIP and its utility.
- (D) Write the difference between MAN & WAN.
- (E) Differentiate between broadcasting and multicasting.
- (F) Discuss how firewall concept can be used to protect the systems.
- (G) Differentiate between GET and POST methods with respect to data transmission. Indicate which method should be used for FORM data and for credit card information.
- (H) Write the purpose of proxy server.
- (I) What are HTML tags ?
- (J) Write the script to create a JavaScript function.
- (K) Define Data Dictionary.
- (L) What is exclusion lock ? When it is used ?
- (M) Differentiate between candidate key and primary key.
- (N) Write the purpose of ON UPDATE CASCADE in SQL query.
- (O) Consider the relation scheme R(A, B, C) with the following functional dependencies  $A, B \rightarrow C$ ;  $C \rightarrow A$ . Show that R is in 3 NF but not in BCNF.

2. Answer all questions :

10 × 8 = 80

- (A) Write a JavaScript program to create objects and arrays.

**OR**

How do you convert numbers to strings in JavaScript ?

- (B) Explain the purpose of meta tags and basic sections in HTML.

**OR**

What is difference between HTML & DHTML ?

- (C) Differentiate between security & privacy.

**OR**

How do you convert strings to numbers in JavaScript ?

- (D) Differentiate between data link layer and transport layer.

**OR**

Describe the mechanism of error correction with an example.

- (E) An image is  $1600 \times 1200$  pixels with 3 bytes/pixel. Assume the image is uncompressed, how long does it take to transmit it over 56 kbps modem channel and 1 GBPS Ethernet ?

**OR**

Differentiate between TCP/IP and UDP.

- (F) Sixteen bit messages are transmitted using hamming code. How many check bits are needed to ensure that receiver can detect and correct single bit error ? Show the bit pattern transmitted for message 1101 0011 0011 0101. Assume that even parity is used in hamming code.

**OR**

IPv6 uses 16 byte addresses. If a block of 1 million addresses is allocated every picosecond ( $10^{-12}$  seconds), how long will the addresses last ?

- (G) Differentiate between authentication and authorization.

**OR**

Explain functional and multivalued dependencies with an example.

- (H) Describe the set-intersection, Natural-join and division operations of relational algebra.

**OR**

Describe how Null values are handled in SQL.

- (I) Is JOIN a fundamental or derived operator ? Justify your answer.

**OR**

What are various authentication mechanisms ?

- (J) Assume you have database tables containing the following information :

Table I Name : student columns : Rollno Numeric (5), Name varchar (100)  
and Table II name : StudentMarks Columns : RollNo numeric (5), Subcd  
numeric(3), Marks numeric(4). Write a SQL to (i) Display the rollno, and  
total marks obtained by student OR (ii) Display the rollno of subject code  
wise toppers along with their marks.

3. Answer all questions :

**3 × 20 = 60**

- (A) Explain in detail the digital signature & certificate. How they differ from manual signatures and are safer ?

**OR**

Describe the model of web server, web cache & web browser. How they support internet surfing to end user.

- (B) Explain the TCP/IP architecture with brief description of each of the layers.

**OR**

- (a) Explain in brief the following terms : HTTP, Chat, and email  
(b) Differentiate between client-server and three tier architecture.  
(C) Explain all the normal forms with their significance in relational database design.

**OR**

- (a) Discuss the two-phase locking protocol to ensure serializability.  
(b) Write short notes on deadlock handling mechanisms.