

- N.B. 1. Question No 1 is compulsory.  
 2. Solve any **three** questions out of remaining five questions.  
 3. Assume suitable data if necessary.  
 4. Figures to right indicate marks.

Q. 1. Solve any **four** out of five.

(4\*5=20)

- Explain the significance of bits of CPSR of ARM7.
- Discuss the major application areas of an Embedded System.
- Draw the functional pin diagram of ADC 0808.
- Differentiate between Real-Time Operating System and General Purpose Operating System.
- Explain the instructions of 8051 microcontroller – MOVX, ADC, SJMP, ANL, JNB

Q. 2. a) Briefly explain about Inter Process Communication.

(10)

- Write assembly language program for 8051 to find number of positive and negative numbers from a given ten 8 bit numbers stored from 50H. Store result at 60H (no of positive numbers) and 61H(no of negative numbers).

(10)

Q. 3. a) Draw and explain the functional block diagram of 8255 Programmable Peripheral Interface.

(10)

- Discuss the various operating modes of ARM7 processor.

(10)

Q. 4. a) Compare the features of Arduino and Raspberry Pi embedded target boards.

(10)

- Explain the SFRs- TMOD, IE & SCON.

(10)

Q. 5. a) Explain different addressing modes of single register load/store instruction of ARM7 processor.

(10)

- Demonstrate with example, the scheduling algorithms used in RTOS.

(10)

Q. 6. a) What are sensors used in IoT applications with the target embedded boards for measuring temperature, pressure and humidity? Explain the same.

(05)

- Discuss the interrupt structure of 8051 microcontroller.

(08)

c) Discuss various embedded microcontroller cores used in embedded System.-  
 RICS, CISC, ARM and DSP

(07)

N.B.

- 1) Question No. 1 is compulsory
- 2) Solve any three questions out of the remaining five questions.

- 1
  - a) Draw and illustrate 3-tier Web Architecture. (5)
  - b) What are the characteristics of Rich Internet Application? (5)
  - c) Explain string functions in PHP. (5)
  - d) Explain UDDI. (5)
- 2
  - a) Explain Geo-location and media query with an example in HTML5 and CSS3. (10)
  - b) Create a HTML form to accept name (TextField), address (TextArea), gender (Radio), and Country (DropDown) fields from user, store it into the My SQL database using PHP program. (10)
- 3
  - a) Write an external stylesheet and link it with HTML code. The stylesheet should include the following (10)
    - i. The web page will have the background image "img1.jpg".
    - ii. The table headings will have red background color.
    - iii. Background color of alternate paragraphs are different.
    - iv. The hyperlinks on the web page will not have underline.
  - b) Draw the diagram for AJAX Web application model and Traditional Web application model and compare them. (10)
- 4
  - a) Design a web page to maintain a Library Catalogue using XML. It should maintain the name of the book, author, publisher, and year of publishing. Format it in the tabular manner using XSLT. (10)
  - b) Explain "Window" object of JavaScript DOM. Write a JavaScript code to change the background color of the webpage automatically after every 5 seconds. (10)
- 5
  - a) Write code to process online Alumni information for your college. Create forms to get name, address, date of birth, and email id. Use check boxes for taking hobbies and radio buttons for selecting branch. Write JavaScript code to validate the following: (10)
    - i. User has filled all the fields prior to form submission
    - ii. Valid email-id (with '@' and '.')
    - iii. Age validation using DOB (>=22 years)
  - b) Write HTML5 code for embedding the audio and video elements in the web page. (10)
- 6
  - a) Explain in detail JSON mash ups with neat diagram. (8)
  - b) Explain the role of a cookie and differentiate it from sessions. Write a PHP script to check whether the cookie is set or not. (6)
  - c) Explain the features and applications of Django. (6)

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(Time: 3 Hrs)

Marks: 80

N.B. : 1. Question no. 1 is compulsory.

2. Solve any Three questions out of remaining Five questions.

- Qu-1 Attempt any **FOUR** of the following.
- a) Write short note on "Query Evaluation Plan" 5
  - b) Justify the statement "Collections of operations that form a single logical unit of work are called Transactions." 5
  - c) List and explain the commonly accepted security goals for databases. 5
  - d) List the Distribution Design Issues and explain any one in detail. 5
  - e) List and explain basic tasks involved in Data Transformation. 5
- Qu-2
- a) Show that the two-phase locking protocol ensures conflict serializability, and that transactions can be serialized according to their lock points. 10
  - b) Explain generic layering scheme for Distributed Query Processing. 10
- Qu-3
- a) Explain Temporal databases with suitable example. 10
  - b) List and explain any four OLAP Operations in a cube with suitable example. 10
- Qu-4
- a) What is the general purpose of the Data-warehouse architecture? Explain the architectural components of Data-warehouse with suitable diagram. 10
  - b) List various fragmentation strategies in distributed database and explain any one in detail. 10
- Qu-5
- a) List and explain the types of activities and tasks that compose the ETL process. 10
  - b) Explain ARIES Algorithm in detail. 10
- Qu-6 Attempt the following.
- a) Measures of Query Cost. 5
  - b) Shadow Paging. 5
  - c) Mobile Databases. 5
  - d) Factless Fact Table. 5

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sem [V] IT Choice Base / 27/05/2019

Time (3 Hours)

[Total Marks 80]

N. B:

1. Question No. 1 is Compulsory.
2. Solve any THREE from Question No. 2 to 6.
3. Draw neat well labeled diagram wherever necessary.

- Q. 1 a) A secure e-voting system is to be designed. Discuss the security goals that must be met and enlist mechanisms for the same. (5)
- b) What is the drawback of Double DES algorithm? How is it overcome by Triple DES? (5)
- c) Define ARP spoofing with an example. Compare with IP spoofing. (5)
- d) What is the significance of a digital signature on a certificate? Justify (5)
- Q. 2 a) Encrypt "This is the final exam" with Playfair cipher using key "Guidance". Explain the steps involved. (10)
- b) Compare and contrast DES and AES. (10)
- Q. 3 a) Two users wish to establish a secure communication channel and exchange a session key after mutual authentication. Show how this can be done with the help of a KDC. (10)
- b) Given modulus  $n=221$  and public key,  $e=7$ , find the values of  $p$ ,  $q$ ,  $\phi(n)$ , and  $d$  using RSA. Encrypt  $M=5$ . (10)
- Q. 4 a) Define DOS attack. Show the different ways by which this attack can be mounted at various layers. (10)
- b) Show how Kerberos protocol can be used to achieve single sign-on in distributed systems (10)
- Q. 5 a) A user wishes to do online transactions with Amazon.com. Discuss a protocol which can be used to set up a secure communication channel and provide server side and client side authentication. Show the steps involved in the handshake process. (10)
- b) What is a firewall? Explain different types of firewalls and list their advantages. (10)
- Q. 6 a) Write short notes on (any two): i) Email security ii) Diffie Hellman algorithm iii) El-Gamal Algorithm (10)
- Q. 6 b) How does IPSec help to achieve authentication and confidentiality? Justify the need of AH and ESP. (10)

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Note: Question No 1 is compulsory

Attempt any 3 questions from remaining.

Assume suitable data whenever necessary

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- Q1. You are appointed as developer of e-comm website for Online business Portal. Design and develop website to promote the same. 20
- Q2 A) Discuss security aspects in E-commerce 10  
B) Explain Architecture of SET protocol 10
- Q3 A) Suggest strategies to migrate traditional business to online business. 10  
B) What are the different ways for electronic marketing? 10
- Q4 A) What is value chain process in E-comm? Discuss with diagram 10  
B) Discuss Technology and infrastructure in e-business 10
- Q5 A) What is Smart Card? Explain in detail 10  
B) Discuss SCM with example 10
- Q6 A) Discuss CRM strategy based on B-C Model 10  
B) What do you mean by EDI? Explain in detail. 10
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(3 Hours)

[Total Marks: 80]

- NB : 1) **Question 1 is compulsory.**  
2) Attempt any **three** questions from the **remaining** questions.  
3) **Assume** suitable **data** wherever applicable.  
4) **Draw figures** wherever applicable.

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|---|--|----|
| 1 | (a) Explain different applications of computer graphics.   | 5  |
|   | (b) Explain different types of virtual reality systems.  | 5  |
|   | (c) Prove that two successive rotation are additive.   | 5  |
|   | (d) Explain fractals   | 5  |
| 2 | (a) Explain Virtual reality architecture.  | 10 |
|   | (b) Explain Bresenham's line drawing algorithm. Explain how it is different from DDA                               | 10 |
| 3 | (a) Find the Bézier curve given 4 control points (25,25), (45,40), (60,45) and (90,10) using the step size as 0.1. | 10 |
|   | (b) List various polygon filling algorithms and explain boundary fill in detail.                                   | 10 |
| 4 | (a) Explain geometric and kinematic modeling in detail   | 10 |
|   | (b) Explain Sutherland Hodgeman polygon clipping algorithm.  | 10 |
| 5 | (a) Explain 3D transformations with suitable example for each.   | 10 |
|   | (b) Explain Liang Barsky line clipping algorithm with example.   | 10 |
| 6 | Write short note on (any four)   | 20 |
|   | (a) Antialiasing techniques  |    |
|   | (b) Application of Virtual Reality   |    |
|   | (c) Text Clipping  |    |
|   | (d) VR toolkit   |    |
|   | (e) Morphing techniques  |    |
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