n-IV/IT | Paper / Subject Code: 32401 / Microcontroller and Embeded Systems | May-19.

ice based.

Time: 3 Hours Marks: 80

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)

a. Explain the significance of bits of CPSR of ARM7.

b. Discuss the major application areas of an Embedded System.

c. Draw the functional pin diagram of ADC 0808.

d. Differentiate between Real-Time Operating System and General Purpose Operating System.

e. Explain the instructions of 8051 microcontroller – MOVX, ADC, SJMP, ANL, JNB

Q. 2. a) Briefly explain about Inter Process Communication. (10)

b) 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)

b) Discuss the various operating modes of ARM7 processor. (10)

Q. 4. a) Compare the features of Arduino and Raspberry Pi embedded target boards. (10)

b) Explain the SFRs- TMOD, IE & SCON. (10)

Q. 5. a) Explain different addressing modes of single register load/store instruction of ARM7 processor. (10)

b) 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)

b) Discuss the interrupt structure of 8051 microcontroller. (08)

c) Discuss various embedded microcontroller cores used in embedded System.- RICS,CISC,ARM and DSP (07)

V Choice Base IT **Paper / Subject Code: 32403 / Advanced Data Management Technology** / MAY 2019

(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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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 uses 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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