T. E. Sem V. I. T. → MES

C.B.G.S.

25/05/15

QP Code : 3410

(3 Hours) **[Total Marks : 80**

N.B : (1) Question No. **1 is compulsory.**

(2) Solve any **three** questions out of remaining questions.

(3) **Figures** to the **right** indicate **full** marks.

(4) Assume suitable **data** where **necessary**.

1. (a) What is embedded system? Discuss various components of embedded system. **5**

(b) Describe the instructions of 8051 , SWAP A and MOVX @ DPTR, A with one example. **4**

(c) Explain PSW register of 8051. **5**

(d) Describe the features of ARM that makes it suitable for embedded system. **6**

2. (a) Explain in detail ARM 7 pipelining. **10**

(b) Explain addressing modes of 8051. **10**

3. (a) Write a assembly language program for 8051 to find largest number from a data block of ten bytes that present in internal memory locations 20 H to 29H. Store the result in memory location 2A H . **10**

(b) What is Event register? Explain the use of Event function with respect to embedded operating systems. **10**

4. (a) Write a assembly language program to generate a rectangular waveform of frequency 1 KHz and 30% duty cycle at pin P1.0 using 8051. Assume 8051 is operating at frequency 12 MHz. **10**

(b) Describe the flow of ARM development tools for embedded system design **10**

[PTO

5. (a) How RTOS manages the memory? Give the memory management strategy of RTOS in embedded system. 10

(b) Explain various modes of operation of serial port in 8051 10

6. (a) Explain automated meter reading system in detail . 12

(b) Explain how semaphores can be used to solve shared data problem. 8

T.E. (I.T.) V
ADMS C.B.G.S.
23/5/15

QP Code : 3415

TIME - 3 Hrs **Marks – 80**

1. **Question 1 is compulsory**
2. **Answer any 3 out of the remaining questions.**

Q 1

a) Explain the Triggers in SQL with two examples. (05)
b) What are the different characteristics of a Data Warehouse? (05)
c) What are ACID properties of a transaction? (05)
d) What is the role of meta data in a data warehouse? (05)

Q 2

(a) Design a schema in SQL for a Library System. Show one example each for PRIMARY KEY and FOREIGN KEY constraint. Create one assertion for the following Constraint:
" No member can borrow more than three books at a time" **(10)**

(b) You have to design and implement a database that manages information about publishers, authors, and books. Some information includes :
• A publisher has a name and an address for the headquarters. Each publisher also has a set of branches, each branch having an address and two phone numbers.
• An author has a name and an address.
• A book is published by a publisher and has a list of authors associated with it. An author can publish several books and a book can be published by at most one publisher.

i. Design an ODL schema for the above database. (05)
ii. Write in OQL the following query:
List the name of the author who has published the most books with publisher "McGraw Hill" (05)

Q 3. Explain the following concepts with the help of examples
a) SQL Injection (05)
b) Access Control in a Database (05)
c) Snowflake Schema (05)
d) Factless Fact Table (05)

Q 4 (a) Consider the following database that has to be distributed:
PATIENT (Number, Name, SSN, Amount_Due, Dept, Doctor, Med_treatment)
DEPARTMENT (Dept, Location, Director)
STAFF (Staffnum, Director, Task)
i. Show 2 examples of horizontal fragmentation (03)
ii. Show 2 examples of vertical fragmentation (03)
iii. Show 2 examples of derived fragmentation (04)

(b) Consider a data warehouse storing sales details of various goods sold, and the time of the sale. Using this example describe the following OLAP operations
(1) Slice (2) Dice (3) Rollup (4) Drill down (10)

[TURN OVER

Q 5.

(a) Clearly state the differences between OLTP and OLAP **(10)**

(b) With the help of a diagram explain the architecture of a Data Warehouse **(10)**

Q 6. Write short notes on any two of the following: (10 marks each)

(a) ETL Functions of a data warehouse

(b) Advanced recovery techniques in a database

(c) Indexing Techniques in a Database

T.E(I)(CBS) (I.T.).
CG & VR

19/5/15

Q.P. Code : 3408

(3 Hours) **[Total Marks : 80**

N.B. : (1) Question **No. 1** is **compulsory.**
(2) Attempt **any three** out of **remaining** questions.
(3) **Figures** to the **right** indicate **full marks.**

1. (a) Expalin Besenham's line drawing algorithm with suitable example. **10**
   (b) Explain bitmap and vector based graphics. **5**
   (c) Compare CMYK and RGB colour model. **10**

2. (a) Explain sutherland - Hodgeman polygone clipping algorithm with suitable example. **10**
   (b) What are the different types of projections? Derive the matrix representation for perspective transformation in xy plaine and on negative z axis. **10**

3. (a) Compare mesh and features based wraping method. **10**
   (b) Explain in detail any VR toolkit. **10**

4. (a) Explain Flood Fill Algorithm using 8 connected approach. What are its advantages over Boundary Fill Algorithm. **10**
   (b) Derive mathematical representation of Bezier curve. State their properties. **10**

5. (a) Describe Halftoning, Thresholding and Dithering in detail with application in real world. **10**
   (b) Explain B-spline curve. **10**

6. (a) What are diffrent applications of computer graphics. **5**
   (b) Advantages of 3D marphing over 2D marphing. **5**
   (c) Explain even-odd method for inside test of polygon. **5**
   (d) Explain collision detection in VR. **5**

T.E. Sem V I.T. CBGS O.S. 13/05/15

QP Code : 3404

Total Marks : 80 **Duration : 3 Hrs**

N.B : 1) Q.1 is compulsory .

2) Attempt Any 3 out of remaining .

3) Assume suitable data wherever required .

Q.1 Answer any four:

a) What is a system call? Explain any four system calls. 5

b) Write a note on File Access methods 5

c) Explain Internal & external Fragmentation 5

d) Explain various RAID levels. 5

e) Discuss message passing 5

Q.2 a) what are the problems associated with Critical region? How to overcome the problems using Semaphore? 10

b) What is scheduling? Give different scheduling policies & their comparison. 10

Q.3 a) Discuss various approaches for I/O Buffering provided by OS. 10

b) Differentiate between Paging & Segmentation. Also explain Various Page replacement algorithms. 10

Q.4 a) Explain Objectives & Functions of OS . 10

b) Discuss in detail various disk scheduling algorithms . 10

Q.5 a) What is a thread? Explain user Level Threads & Kernel Level Threads 10

b) What is meant by Interprocess communication? Explain Shared memory & message passing . 10

Q.6 Write a note on: 20

a) Process control Block

b) Android OS

c) Process state transition Diagram

d) Producer consumer problem

T.E. sem V (CBSU) (I.T)

Open Source Technologies.

4/6/15

Q.P. Code : 3417

(3 Hours) **[Total Marks : 80**

N.B. : (1) Question **No 1** is **compulsory** solve **any 3** questions from remaining **five** questions.
(2) Assume **suitable data** wherever necessary.
(3) **Figures** to the **right** indicate **full** marks.

1. (a) What is partitioning? Explain hosting parts of the Linux File system on Separate partitions. **10**
   (b) Write the purpose of the following global configuration directives of http. conf **10**
   (i) Keepalive
   (ii) KeepaliveTimeout
   (iii) MaxClients
   (iv) ServerLimit
   (v) StartServers.

2. (a) List out and explain the directories where the Apache RPM installs files. **10**
   (b) What is daemon process. Explain daemon characteristics and basic coding rules. **10**

3. (a) What is shell programming ? Explain with examples how expressions are evaluated in shell programming. **10**
   (b) Explain the grep command using c, i and v options. Explain with examples. **10**

4. (a) What is file permissions? What are the different ways of setting file permissions ? Explain. **10**
   (b) What are the packages required to configure secure server with SSL ? How can we obtain digital certificate from certifying authority? **10**

5. (a) What is RAID ? What are its different types ? What are different levels of RAID ? **10**
   (b) Explain the features of linux in detail with different linux distributions. **10**

6. (a) What is inode ? Why are the inode unique only within a file system? How does map the inode to its filename ? Bring out four important differences between soft and hard links. **10**
   (b) Explain different types of DNS servers. **10**
