M.E Sem-II COMP. (CBGS) 24/05/2016

Emerging Wireless Technologies and future Mobile Internet

ME - sem - II - comp (CBGS)

Q. P. Code : 662400

3 Hours **Total Marks assigned: 80**

N.B. (1) Attempt any four questions.
(2) Assume suitable data, if necessary.

1. (a) Explain data link layer protocol for Wireless Sensor Network in detail (10)

   (b) What are different requirements of future Network. (10)

2. (a) Explain SDR architecture and discuss how to overcome its limitations. (10)

   (b) Explain AODV with its advantages and limitations? (10)

3. (a) Explain the enabling protocols for emerging vehicular application. (10)

   (b) Explain the DCF access mechanism of IEEE 802.11 WLAN. (10)

4. (a) List and explain the characteristics for design of a new architecture for delay—tolerant network (10)

   (b) Explain cognitive Radio Network in detail. (10)

5. (a) What are services and functions that are provided by MAC layer of LTE? (10)

   (b) Discuss the UMB air interface protocol Architecture. (10)

6. Write a note on (20)
   (a) Importance of KioskNet
   (b) Power saving option in UMB
   (c) Security Challenges of future wireless Internet
   (d) Location based security services

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ME (Comp) CBGS Storage Area Networks ... 20/5/16
Sem - II

Q.P. Code : 661901

Duration: 3 Hours **Total Marks assigned: 80**

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

(2) Attempt any **three** of remaining **five** questions.

(3) Draw the **relevant** diagram neatly.

1	a.	Explain types of zoning	05
	b.	Compare DAS, NAS, SAN technologies	05
	c.	An application has 4,000 users at a peak of 3 IOPS each with a read/write ratio of 1:2 calculate the IOPS requirement for RAID 1 and RAID 3.	05
	d.	Discuss benefits of SAN.	05
2	a.	What is NAS? List the components of NAS? Explain various benefits of NAS.	10
	b.	Explain restoration process in incremental and cumulative backups.	10
3	a.	Explain Topologies for iSCCI connectivity.	05
	b.	Discuss SNIA storage virtualization taxonomy.	05
	c.	Explain Copy-on-Write Frozen Image technology	10
4	a.	An application specifies a requirement of 200GB to host a database and other files. It also specifies that the storage environment should support 1000 IOPS during its peak processing cycle. The disks available for configuration provide 66GB of usable capacity, and the manufacturer specifies that they can support a maximum of 200 IOPS. Compute and explain the theoretical basis for the minimum number of disks that should be configured to meet the requirements of the application	10
	b.	Explain how CAS can be used in banking application.	10
5	a.	Explain in detail about serverless backup with respect to backup killer app.	10
	b.	Explain FC-AL and FC-SW connectivity	10
6		Write short note on (any two)	20
	a.	Data Replication killer app for SAN technology	
	b.	Extent-Based File Systems	
	c.	Basic SAN Security Mechanism.	

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(305) M.E (Comp) Sem II CBGS 13157 M e

Cyber security

QP Code : 15035

(3 HOURS) **[80 Marks]**

N.B. (1) Question No.1 is compulsory.
(2) Attempt any three out of remaining five questions.
(3) Assume necessary data if required.
(4) Figures to the right indicate full marks.

Q.1.(a) What is cybercrime? How do you define it? (5)
Q.1.(b) How to prevent being a victim of ID theft? (5)
Q.1.(c) List and describe types of cyberstalkers in brief. (5)
Q.1.(d) Explain the difference between computer forensics and electronic discovery. (5)

Q.2.(a) What is incident response system? Describe incident handling and incident management. (10)
Q.2.(b) What are the various risks associated with cloud computing environment? (10)

Q.3.(a) What are the security challenges posed by Mobile devices? (10)
Q.3.(b) What is SQL Injection and what are the different countermeasures to prevent the attack? (10)

Q.4.(a) What is meant by "insider threat" How does it affect organization? (10)
Q.4.(b) Describe what is required in setting up a computer forensics laboratory? What tools are required on hardware and software side? (10)

Q.5.(a) What are the key provisions of Indian IT Act 2000? Describe in detail. (10)
Q.5.(b) Describe SPS algorithm to thwart Phishing attacks? (10)

Q.6.(a) What are the 2008 amendments to Indian IT Act address the cybercrime issues? (10)
Q.6.(b) Discuss the some of key differences between an "audit" and a "cyberforensics investigation"?(10)

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BB-Con. 9068-16.

ME. (CMPN) (CBGS) - SEM: II 11/5/16

A.O.S.

QP Code : 15032

Hours : 03 Note: Solve any four Marks : 80

Q1 a) Explain design approaches to Operating systems and need for advanced Operating systems. 10

b) Explain and analyze Raymond tree based algorithm 10

Q2 a) Discuss structure of multiprocessor operating system. 10

b) Describe process synchronization techniques in multiprocessor OS And compare them w.r.t communication overhead and processing overhead. 10

Q3 a) What are the characteristics of RTOS 10

b) Determine whether the following set of periodic real time tasks is schedulable under RMS for a uniprocessor system T1=(e1=80,p1=400), T2: (e2=120,p2=600), T3:(e3=240,p3=800) .State the necessary and sufficient condition. 10

Q4 a) Discuss any two deadlock detection based algorithm 10

b) Discuss deadlock handling strategies in distributed systems 10

Q5 a) Describe components of Load distributing algorithms 10

b) Explain the concurrency control in Distributed Database Systems. 10

Q6 Write short notes on (any two) 20

a) Symbian OS.
b) Cloud OS.
c) Issues in Distributed OS.
d) Lamports clock.
e) Rate monotonic scheduling and analysis.

BB-Con. 9475-16.

ME- COMP. SEM-II [redacted] 24/5/16.

Advanced Compiler Design (CBGS)

Q.P. Code : 662100

(3 Hours) [Total Marks :100

N.B. : (1) Question no. **1** is **compulsory**.
(2) **Attempt** any **3** from the remaining questions.
(3) **Assume** suitable data if **necessary.**
(4) **Figures** to right indicate **full** marks.

1. (a) Explain Scalar replacement with aggregates along with example. 10
(b) (i) Suggest Data Structure for implementation of LALR parsers. 5
(ii) Using triples and Indirect triples represent the following statement 5
a = b * -c + b * -c

2. (a) How Boolean Expressions are handled by Intermediate Code Generation 10
(b) Explain Tail Call Optimization and Tail Recursion elimination. 10

3. (a) How run time storage management is done using static allocation and stack allocation 10
(b) Show that following grammar is LL (1) but not SLR (1). 10
S $\longrightarrow$ AaAb / BbBa
A $\longrightarrow$ ε
B $\longrightarrow$ ε

4. (a) Apply Tree transformations to simplify following addressing expression 10
a[i][j], denoted by base_ a + ((i - lo1) * (hi2 - lo2 + 1) + j - lo2) * w
(b) Consider the basic block given below, 10
t1=a*b
t2=c-d
t3 = t1 * t2
t4 = e / t3
t5 = t3 + t4
t6 = t5 * f
t7 = t1/ t3
t8 = t7 * t6
Construct DAG, Apply heuristic optimal ordering to it and apply code generation algorithm to generate code

[TURN OVER

5. (a) Explain Global register allocation algorithm and how graph coloring is applicable to it. 10

(b) What are basic blocks and how do you partition 3 address code into basic blocks 10

6. Write notes on 20

(i) loop simplification
(ii) tail merging.
(iii) Branch prediction
(iv) Code hoisting

Q.P. Code : 662100

5. (a) Explain Global register allocation algorithm and how graph coloring is applicable to it. 10

(b) What are basic blocks and how do you partition 3 address code into basic blocks 10

6. Write notes on 20

(i) loop simplification
(ii) tail merging.
(iii) Branch prediction
(iv) Code hoisting

M.E. (COMP) Sem-II (CBGS) 17/5/16

Decision Making & Adaptive Business Intelligence

QP Code : 15038

Total Marks:80
Duration:3 Hours

Note:
1) Q:1 is compulsory.
2) Attempt any three questions from remaining five questions.
3) Figures on the right, indicate full marks.
4) Assume suitable data whenever required.

Q:1

a) Show how a fuzzifier converts the following crisp input into fuzzy input set using triangular membership function. There are two input variables: mileage and damage level of a car. Use three descriptors for each variable. Assume a car with mileage=80000 and damage level=4. [05]

b) Consider candidate selection problem. The criteria to be considered are Number of years of experience (NY), Number of years of experience in the company (NYC), Score in Written test (SWT), Score in HR test (SHRT), Age and Education. The weights to be considered are 0.158, 0.211, 0.132, 0.158, 0.184 and 0.157 respectively. Generate the ranking of candidates using WPM method. [06]

Candidate	NY	NYC	SWT (out of 500)	SHRT (out of 1000)	Age	Education (Points 1 to 100)
c1	16	5	278	742	41	78
c2	11	8	312	692	36	82
c3	22	12	436	854	49	90
c4	8	2	489	926	32	68

c) Justify that "Hill climber is deterministic whereas Stochastic hill climber is probabilistic". [05]

d) Explain the terms bagging and boosting with respect to hybrid systems for prediction. [04]

Q:2

a) Explain different data pre-processing techniques used to prepare data for prediction. [10]

b) What is multiple regression? Consider the following data set. [10]

Annual sales (in crores)	**Number of salesman**	**Annual advertisement cost (in lakhs)**
20	**8**	**28**
23	**13**	**23**
25	**8**	**38**
27	**18**	**16**
21	**23**	**20**
29	**16**	**28**
22	**10**	**23**
24	**12**	**30**
27	**14**	**26**
35	**20**	**32**

Predict annual sales for number of salesman=15 and advertisement cost=35lakhs using multiple regression.

Q:3

a) Explain evolutionary algorithm for local optimization and its flow chart with suitable example. [10]

b) Explain any distance method used for data prediction. [10]

Q:4
a) Consider a decision making problem for purchasing a car. There are 4 alternatives. The criteria to be considered are purchasing cost, fuel efficiency, passenger capacity and resale value.

Alternatives	purchasing cost (in lakhs)	fuel efficiency (in kms)	passenger capacity	resale value (in lakhs after 5 years)
C1	10.35	9.75	8	5.86
C2	12.95	10.15	8	5.50
C3	7.25	14.24	5	3.55
C4	6.78	13.25	5	2.25

The pairwise preferences for criteria are as follows:

	purchasing cost (in lakhs)	fuel efficiency (in kms)	passenger capacity	resale value (in lakhs after 5 years)
purchasing cost (in lakhs)	1	1/4	7	3
fuel efficiency (in kms)	4	1	5	1/4
passenger capacity	1/7	1/5	1	1/6
resale value (in lakhs after 5 years)	1/3	4	6	1

Determine ranking of the alternatives using AHP method. [15]

b) Justify that "During initial runs, Simulated annealing algorithm resembles Randomized search and during final runs, it resembles classical Hill climber". [05]

Q:5 a) What is a decision tree? Consider the following dataset.

ID	Income	Age	Own house
1	very high	young	yes
2	high	middle aged	yes
3	low	young	rented
4	high	middle aged	yes
5	very high	middle aged	yes
6	high	old	yes
7	medium	middle aged	rented
8	low	middle aged	rented
9	medium	old	rented
10	high	young	rented

Construct Decision tree and classify an unknown sample with (income="medium", age=young, own house=?) [10]

b) Explain architecture of an Adaptive Business Intelligence system. [10]

Q:6 Attempt any two. [20]
a) Adaptive business intelligence system for investment strategy.
b) Explain tabu search using its flow chart.
c) Write a detailed note on Ant Colony optimization algorithm.