USN | | | | | | | | | | **15CS72**

Seventh Semester B.E. Degree Examination, July/August 2022
Advanced Computer Architecture

Time: 3 hrs.   Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1 a. With neat sketches, explain the Flynn's classification of computer architecture. **(06 Marks)**
   b. With a neat diagram, explain different types of shared memory multiprocessor models.
   (10 Marks)

OR

2 a. Explain the different levels of parallelism in program execution on modern computers.
   (08 Marks)
   b. For the following coarse-grain program graph with two processor p_1 and p_2. [Refer Fig.Q2(b)]
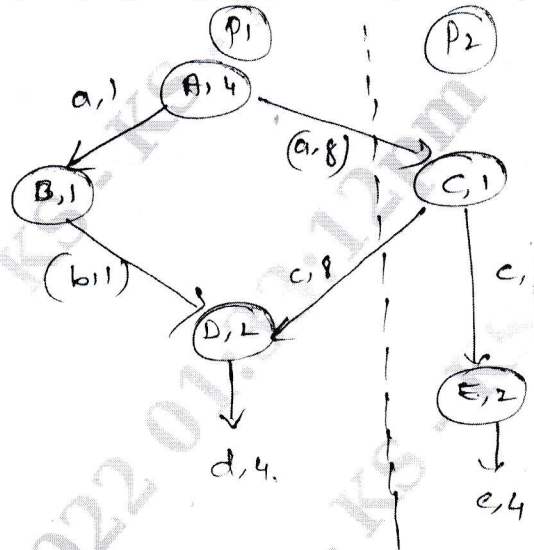

Fig.Q2(b)

Draw the following:
   (i)   Schedule chart without node duplication
   (ii)   Coarse-grain graph with node duplication.
   (iii) Schedule chart with node duplication.
   (08 Marks)

Module-2

3 a. Explain the concept of instruction pipeline and also define basic definitions associated with instruction pipeline operations. **(08 Marks)**
   b. Draw the neat sketch of a typical superscalar RISC processor architecture consisting of an integer unit and floating point unit. Also discuss the pipelining in super scalar processor.
   (08 Marks)

OR

4 a. With a neat diagram, explain the four levels of memory hierarchy. **(08 Marks)**
   b. Explain the concept of address translation mechanism using TLB and various forms of page table. **(08 Marks)**

Module-3

5 a. With a neat diagram, explain the back plane bus specification, its interface and slot connections. **(08 Marks)**

   b. Describe the sequential consistency model along with its necessary conditions to be satisfied. Also define 5 axioms for the same. **(08 Marks)**

OR

6 a. Explain the idea of internal data forwarding in pipeline. Also define three types of logic hazards which will affect out of order execution. **(08 Marks)**

   b. With suitable examples, explain four types of block placement schemes for cache memory. **(08 Marks)**

Module-4

7 a. Explain the schematic design of a row of cross point switches in a cross bar network. **(08 Marks)**

   b. With a proper illustration, explain snoopy bus protocol for cache coherence problem. **(08 Marks)**

OR

8 a. Explain different types of vector instructions along with diagrams. **(08 Marks)**

   b. With a neat diagram, explain the concept of distributed shared memory with virtual memory mapping (SVM). **(08 Marks)**

Module-5

9 a. Describe four operational models used in programming multiprocessor systems. **(08 Marks)**

   b. List out different language features set as a guidelines for developing user friendly programming environment. **(08 Marks)**

OR

10 Write short notes on:
   a. Operand forwarding
   b. Register renaming
   c. Branch prediction
   d. Reorder buffer **(16 Marks)**

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15CS73

Seventh Semester B.E. Degree Examination, July/August 2022
Machine Learning

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1   a.   What is Machine Learning? List the applications of Machine learning.   **(03 Marks)**
     b.   Explain with neat diagram, the choices in designing a learning system.   **(10 Marks)**
     c.   Describe briefly the issues in machine learning.   **(03 Marks)**

OR

2   a.   Describe the Find-S algorithm. Explain its working by taking enjoy sport concept and training instances given below:

Ex	Sky	Air Temp	Humidity	Wind	Water	Forecast	Enjoy Sport
1	Sunny	Warm	Normal	Strong	Warm	Same	Yes
2	Sunny	Warm	High	Strong	Warm	Same	Yes
3	Rainy	Cold	High	Strong	Warm	Change	No
4	Sunny	Warm	High	Strong	Cool	Change	Yes

(08 Marks)

     b.   Describe candidate elimination algorithm with example.   **(08 Marks)**

Module-2

3   a.   With an example describe decision tree representation.   **(04 Marks)**
     b.   Discuss the characteristics of appropriate problems for decision tree learning.   **(04 Marks)**
     c.   Write the basic decision tree learning algorithm (ID3)   **(04 Marks)**
     d.   Discuss the capabilities and limitation of ID3.   **(04 Marks)**

OR

4   a.   Give entropy and information gain measure and calculate the information gain of all 4 attributes for the following training example.   **(10 Marks)**

Day	Outlook	Temperature	Humidity	Wind	Play Tennis
D_1	Sunny	Hot	High	Weak	No
D_2	Sunny	Hot	High	Strong	No
D_3	Overcast	Hot	High	Weak	Yes
D_4	Rain	Mild	High	Weak	Yes
D_5	Rain	Cool	Normal	Weak	Yes
D_6	Rain	Cool	Normal	Strong	No
D_7	Overcast	Cool	Normal	Strong	Yes
D_8	Sunny	Mild	High	Weak	No
D_9	Sunny	Cool	Normal	Weak	Yes
D_{10}	Rain	Mild	Normal	Strong	Yes
D_{11}	Sunny	Mild	Normal	Strong	Yes
D_{12}	Overcast	Mild	High	Strong	Yes
D_{13}	Overcast	Hot	Normal	Weak	Yes
D_{14}	Rain	Mild	High	Strong	No

Table Q4 (a)

     b.   Explain the issues in decision tree learning.   **(06 Marks)**

Module-3

5 a. Describe the appropriate problems for Neural Network Learning. (06 Marks)
   b. Explain perception, gradient descent and delta rule. (06 Marks)
   c. Write the gradient descent algorithm. (04 Marks)

OR

6 a. Explain the Back propagation algorithm for multilayer feed forward network. (10 Marks)
   b. Discuss the remarks on the back propagation algorithm. (06 Marks)

Module-4

7 a. Explain Brute Force MAP learning algorithm. (08 Marks)
   b. Discuss the features of Bayesian learning method. (04 Marks)
   c. Derive the expression for maximum likelihood hypothesis for predicting probabilities. (04 Marks)

OR

8 a. Explain Naïve Bayes classifier algorithm for example given in Table 4(a). (08 Marks)
   b. Explain in detail EM algorithm. (08 Marks)

Module-5

9 a. Explain K-Nearest Neighbour learning algorithm. (08 Marks)
   b. Explain Q-learning algorithm with an example. (08 Marks)

OR

10 a. Define the following with respect to Binomial distribution:
       (i) Mean and Variance
       (ii) Estimation Bias.
       (iii) Confidence interval. (06 Marks)
   b. Write a note on:
       (i) Two sided and one sided bound. (03 Marks)
       (ii) Hypothesis testing. (03 Marks)
       (iii) Comparing learning algorithm. (04 Marks)

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Seventh Semester B.E. Degree Examination, July/August 2022
Storage Area Networks

Time: 3 hrs.   Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1   a. Explain following key data centre elements with neat diagrams:
        (i) Connectivity   (ii) Storage   **(08 Marks)**
    b. Define RAID Array components and explain RAID techniques with neat diagrams. **(08 Marks)**

OR

2   a. Explain RAID 0 to RAID 6 levels with neat diagrams.   **(10 Marks)**
    b. Explain the components of intelligent storage systems with neat diagrams.   **(06 Marks)**

Module-2

3   a. Explain Fibre Channel Connectivity Architecture with three basic Inter Connectivity options.   **(08 Marks)**
    b. Explain fibre channel protocol stack and addressing with neat diagrams.   **(04 Marks)**
    c. Define Zoning. Explain types of Zoning.   **(04 Marks)**

OR

4   a. Explain two types of network based virtualization techniques in SAN with neat diagrams.
                                                                      (08 Marks)
    b. Explain the following leveraging IP protocols with neat diagrams:
        (i) iSCSI   (ii) FCIP   **(08 Marks)**

Module-3

5   a. Explain Business Continuity Planning Life Cycle with neat diagrams.   **(08 Marks)**
    b. Explain Data Deduplication and Implementation Scenario's with respect to neat diagrams.
                                                                      (08 Marks)

OR

6   a. With neat diagrams, explain types of Local Replication Technologies.   **(08 Marks)**
    b. Explain Three-Site Replication interms of Multihop and Multitarget Solutions with neat diagrams.   **(08 Marks)**

Module-4

7   a. Explain Cloud service Models with neat diagrams.   **(08 Marks)**
    b. Explain cloud computing infrastructure layers with neat diagrams.   **(08 Marks)**

OR

8   a. Explain the challenges of cloud computing interms of consumers and providers. **(06 Marks)**
    b. Explain the cloud deployment models according to NIST with neat diagrams.   **(10 Marks)**

Module-5

9   a. Explain any two storage security domains with neat diagrams.   **(08 Marks)**
    b. Explain FC-SAN Security Implementation in storage networking with neat diagrams.
                                                                      (08 Marks)

OR

10 a. Explain Information Lifecycle Management with changing values. **(06 Marks)**
    b. Define storage tiering and explain types with neat diagrams.   **(06 Marks)**
    c. Explain storage infrastructure management challenges.   **(04 Marks)**

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