Department of Computer Science & Engineering

Begum Rokeya University, Rangpur

4th Year 1st Semester Final Examination – 2012 (Session: 2008-2009)

Course Code: CSE 4101 **Course Title:** Artificial Intelligence

Full Marks: 50 Time: 03:00 hrs

(Answer any Five. Figures in the right margin indicate full marks.)

1. (a) What is Artificial Intelligence? Write the applications of AI. 5
   (b) Define in your own words the following terms: 5
   i.Agent, Agent function & Agent program ii. Rationality, Autonomy.

2. (a) Describe the properties of task environments. 5
   (b) Explain why problem formulation must follow goal formulation. 3
   (c) Write the difference between Breadth first search and Depth first search. 2

3. (a) What is the difference between declarative and procedural knowledge? 2
   (b) Briefly describe the meaning of knowledge representation and knowledge acquisition. 4
   (c) Define: i) Heuristic knowledge ii) Belief iii) Uninformed Search iv) Structured Knowledge. 4

4. (a) Define Monotonic and Non-Monotonic reasoning with example. 3
   (b) Describe Truth Maintenance System with example. 3
   (c) What is an associative network? With an example explain how knowledge can be stored in an associative network? 4

5. (a) Describe three problems in hill-climbing algorithm. 3
   (b) Write A* search algorithm. 3
   (c) Describe any two non heuristic searches. 4

6. (a) Define neural network. 2
   (b) Describe back propagation algorithm. 5
   (c) What is learning rule? Write the differences between unsupervised & supervised learning. 3

7. Write short note: 10
   i) Expert System ii) Genetic Algorithm iii) Visual Prolog iv) Hopfield Network

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4th Year 1st Semester Final Examination – 2012 (Session: 2008-09)

Course Code: **CSE 4103** Course Title: **Compiler Design**

Full Marks: **50** Time: **03:00 hrs**

(Answer any Five. Figures in the right margin indicate full marks.)

1. (a) What are the advantages of a compiler over an interpreter and an interpreter over a compiler? 2
   (b) With the help of a diagram explain the phases of a compiler briefly. 4
   (c) What are the characteristics of a high-level programming language What do you mean by *syntax* and *semantics* of a language? 2+2=4

2. (a) What is lexical analyzer? Mention its role in a compiler. 2
   (b) With appropriate example define *token, pattern* and *lexeme*. For the following C code fragment, give the *tokens* and their associated *patterns* as well as the *lexemes* generated by a lexical analyzer. 2+4=6

   int i=1, j=2; while(i){ scanf("%d", &i); if(i == j) break;}// end of while

   (c) With the help of an example, explain why lexical analyzer cannot report any source-code error? What are the different error-recovery techniques used during lexical analysis? 2

3. (a) Explain the concept of input buffering in lexical analysis. 2
   (b) What is symbol table? What types of information are stored in it? Why is it required? 3
   (c) What is the problem in recognizing reserved words and identifiers? Discuss different methods used to resolve this problem. 1+3=4

4. (a) What is the need for separating the parser from the scanner? 2
   (b) Convert the regular expression (a+b)*+ab* into a CFG. 2
   (c) What conditions does a grammar require to hold to be LL(1)? 2
   (d) Why top-down parsing is not suitable with left-recursive and non left-factored grammars? Eliminate *left-recursion* from the following grammar. 1+3=4

   S → aB | aC | Sd | Se
   B → bBc | Cc
   C → g

5. (a) Given the grammar - 2+3+2+3 =10

   S → (L) | a
   L → L,S | S

   i) Make necessary changes to make it suitable for LL(1) parsing.
   ii) Construct FIRST and FOLLOW sets.
   iii) Construct the predictive parsing table.
   iv) Show the moves made by the predictive parser on the input **(a,(a,a))**

6. (a) Explain *handle-pruning* with the help of the grammar S→SS+|SS*|**a** and input string **aaa*a++**. Give a *shift-reduce* parse for the given string. 2+2=4
   (b) What conflicts might arise during *shift-reduce* parsing? Give examples of each. 1+2=3
   (c) What symbols should you consider as *synchronizing tokens* during *panic mode* recovery in predictive parsing? 2

(d) What are the reasons for using LR parsing technique?

7. (a) Given the grammar -

$S \rightarrow SA \mid A$

$A \rightarrow a$

i) Construct the collection of sets of SLR items and their GOTO function

ii) Construct the SLR parsing table

Department of Computer Science and Engineering
Begum Rokeya University, Rangpur.
4th Year 1st Semester Final Examination, 2019.

Course Title: Project Management
Course Code: CSE- 4105 **Full Marks: 50**

Answer Any Five from the Given Questions

(Note: Numbers in the right margin indicate marks for each question.)

1.	(a)	Why Project Management has become such a popular business tool in recent years?	1.5
	(b)	What are the key characteristics all project posses?	3
	(c)	What are the six criteria of successful IT projects? Why is IT project success often so difficult to assess?	2.5+1
	(d)	Why one should go through the project management maturity model?	2
2.	(a)	How does the success of a project vary with the context of an organization?	1
	(b)	Identifying various stakeholders define how do they play role in developing a project.	3
	(c)	Consider a medium sized company that has decided to launch using project management in a wide variety of it's' operations. As part of their operational shift they are going to adopt project management office somewhere within their organization. Make an argument for the type of PMO they should be adopting (weather, station, control tower or resource pool). What are some of key decisions criteria that will help them? Which model makes most sense?	1.5+2.5
	(d)	Classify various organizations according to their structure.	2
3.	(a)	How do the duties of project managers reinforce the role of leadership? Describe in brief.	3
	(b)	What are some key differences between leadership and managers?	3
	(c)	Define Project Champions. What are the characteristics one should posses to be a project champion?	1+3
4.	(a)	What are the basic steps in assembling a project team? Show with a flowchart.	3.5
	(b)	What are the characteristics of an effective project team? Define each character in brief.	3.5
	(c)	When a conflict is introduced in project? How does it motivate the project team?	1+2
5	(a)	Define term strategic assessment. Write the type of risk.	1+2
	(b)	Explain risk evaluation technique in the project .	7
6.	(a)	Describe the various stages of contracts in software development process.	4
	(c)	As a project manager would you accept the cost adjustments associated with the learning curves affect or not? Under what circumstances would learning curve cost be appropriately budgeted into a project?	3
	(d)	Assume you are a project cost engineer calculating the cost of a repetitive activity for your project. There are a total of 20 iterations of this activity required for the project. The project activity takes 2.5 hours at its steady rate and learning rate is 75%. Calculate the initial output time for the first unit produced.	3
7.	(a)	Define the following term: i)Early start ii) Late Start iii) Late finish iv) float	.75×4=3
	(b)	The float associated with each project tasks can only be derived following the completion of the forward and backward passes. Explain why this is true?	2

(c) Assume we have a set of activities, their expected durations and immediate predecessors. Construct an activity network; identify the critical path and all activity slack times.

Activity	Predecessors	Expected Durations
A	-	6
B	A	7
C	A	5
D	B	3
E	C	4
F	C	5
G	D,E	8
H	F,G	3

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4th Year 1st Semester Final Examination – 2012 (Session: 2008-09)

Course Code: **CSE 4106** Course Title: **Computer Graphics & Multimedia**

Full Marks: **50** Time: **03:00 hrs**

(Answer any Five. Figures in the right margin indicate full marks.)

1.	(a)	Define Aspect ratio and frame buffer.	2
	(b)	Describe the construction and working principle of both "beam-penetration" and "shadow-mask" methods for a color CRT monitor.	5
	(c)	What are the classifications of graphics software? Discuss about them.	3
2.	(a)	Describe DDA algorithm with its advantages and disadvantages.	3
	(b)	Discuss how decision parameters are calculated in Midpoint Circle drawing algorithm.	4
	(c)	To illustrate the Bresenham's line drawing algorithm, digitize the line with end point (20, 10) and (30, 18). The line has a slope of 0.8, with $\Delta x=10$ and $\Delta y=8$.	3
3.	(a)	What is geometric transformation? Discuss the concept of general pivot-point rotation.	1+2=3
	(b)	Define "homogeneous coordinate". Represent translation, rotation and scaling operations in matrix from using homogeneous coordinate.	1+4=5
	(c)	How does boundary-fill algorithm work?	2
4.	(a)	Define "World co-ordinate" and "Viewing co-ordinate".	2
	(b)	Deduce an expression for window-to-viewport transformation.	2
	(c)	Discuss Cohen-Sutherland line clipping algorithm.	5
	(d)	How many types of clipping are there in computer graphics?	1
5.	(a)	Describe parallel projection and depth cueing in aspect of 3D.	4
	(c)	Distinguish between Interpolation and Approximation Spline.	1
	(d)	Explain Hermite Spline method for interpolating piecewise cubic polynomial.	5
6.	(a)	Define sweep representation. How Ray-casting methods are used to implement CSG?	4
	(b)	What is Octrees? What are the classifications of Fractals?	3
	(c)	Define Fractals Dimension. How Self Similar fractal generate Koch curve?	1+2=3
7.	(a)	What is the final outcome, when all colors are mixed all together?	1
	(b)	Briefly describe RGB color model.	4
	(c)	What is Multimedia? Discuss the various classifications of multimedia.	4
	(d)	What is Anti-aliasing?	1

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4th Year 1st Semester Final Examination – 2012 (Session: 2008-2009)

Course Code: CSE 4108 **Course Title:** Wireless Networking

Full Marks: 50 Time: 03:00 hrs

(Answer any Five. Figures in the right margin indicate full marks.)

1. (a) Write the comparison between Ad Hoc and Infrastructure Network topologies. 3
   (b) Define and classify interference in a cellular architecture. 2
   (c) Draw hexagonal cellular architecture with cluster size of N=7,4 and indicate the value of i,j, where $N= i^2+ij+ j^2$. 5

2. (a) Draw the frame structure of TDMA and derive its efficiency. 5
   (b) In an FDMA system the total spectrum bandwidth is 12.5 mhz. Each channel is of 30 khz and the guard band is 10 khz. Find out the total number of channels available in the system. 3
   (c) Give a relative comparison between TDMA and FDMA. 2

3. (a) Illustrate handoff scenario at cell boundary. 4
   (b) Why use umbrella cell in cellular system. 2
   (c) What do you mean by Erlang B formula. 2
   (d) Describe paging system. 2

4. (a) Prove that for a hexagonal geometry, the co-channel reuse ratio is given by $Q=\sqrt{3N}$. 3
   (b) Describe the best capacity expansion techniques in aspect to cost benefit analysis. 3
   (c) Broadly describe free space propagation model. 4

5. (a) Derive an equation which provides the exact received E-field for the two-ray ground reflection model. 5
   (b) Describe those factors which influencing small scale fading. 3
   (c) What is impulse response? 2

6. (a) Write the difference between Okumura model and Hata model. 2
   (b) Describe back propagation algorithm. 5
   (c) What is learning rule? Write the differences between unsupervised & supervised learning. 3

7. Write short note: 5+5=10

   a) CDMA **b)** WAP **c)** GPRS **d)** Okumura model