National University of Singapore
School of Computing
CS3243 Introduction to AI

Midterm Assessment

RUBRICS

Note: for all solutions, marks may be deducted for incorrect expressions or statements.

Question 1 [10 Marks]	
1(i)	• **Correct answer**: i.e., mentions "boundary", "within grid", or coordinate bounds ⇒ +1.0 marks ○ Else if given bounds are off by 1 ⇒ +0.5 marks

1(ii)	• **Correct answer**: i.e., complexity given in solutions ⇒ +2.0 marks
	  ○ Else if correct *b*, and correct *d*, but ***abs***(..) missing ⇒ +1.5 marks
	  ○ Else if incorrect *b*, but correct *d* ⇒ +1.0 marks
	  ○ Else if correct *b*, but incorrect *d* ⇒ +0.5 marks
	  ○ Note: additional marks may be deducted for other small mistakes.

1(iii)	• **Correct answer**:
	  ○ If "no going backwards" clearly mentioned ⇒ +1.0 marks
	  ○ If valid ***actions*** function specified with $b = 3$ ⇒ +1.0 marks
	  ○ If clear and valid rationale ⇒ +2.0 marks
	• **Otherwise**:
	  ○ If valid ***actions*** function specified with $b < 8$ ⇒ +1.0 marks
	  ○ If valid rationale corresponding to given ***actions*** function ⇒ +1.5 marks
	  ○ Note: additional marks may be deducted for other small mistakes.

1(iv)	• **Correct answer**:
	  ○ If *b* correct ⇒ +1.0 marks
	  ○ If *d* correct ⇒ +1.0 marks
	  ○ Error Carried Forward: only awarded for *b*, but not to *d* (as *d* is contingent on *b*)

1(v)	• **Correct answer**:
	  ○ Sensible efficiency argument ⇒ +0.5 marks
	  ○ Generalised argument ⇒ +0.5 marks

Question 2 [10 Marks]	
2a(i)	• **Correct answer** ⇒ +1.0 marks ○ Must state that it is inadmissible AND give the correct reason
2a(ii)	• **Correct answer** ⇒ +1.0 marks ○ Leniency is given if you left out either *S* or *G* (but not both).
2a(iii)	• **Correct answer** ⇒ +1.0 marks

2b(i)	• **Correct answer**:
	  ○ Iteration 1 ⇒ +0.5 marks
	  ○ Iteration 2 ⇒ +0.5 marks

2b(ii)	• **Correct answer**:
	  ○ T_6 given as output ⇒ +0.5 marks
	  ○ T_6 specified AND local minimum stated ⇒ +0.5 marks

2b(iii)	• **Correct answer** ⇒ +1.0 marks

2c(i)	• **Correct answer** ⇒ +2.0 marks
	• **Otherwise**:
	  ○ Else if $h(x_1) \leq c_2$ specified ⇒ +0.5 marks
	  ○ Else if $h(x_1) \leq c_3 + c_4$ specified ⇒ +0.5 marks
	  ○ Note: you may only claim a total of +0.5 marks even if you stated both the above but not the correct answer.

2c(ii)	• **Correct answer** ⇒ +2.0 marks