

King Saud University

College of Computer and Information Sciences

Information Systems Department

Course Code/Title: IS466 (Decision Support System)

TOTAL MARKS: 10

Exam: Midterm II

Semester / Year: Spring 2016-17

Exam date: May , 2017

Time Allowed: 30 minutes

Student ID: _____ **Name:** _____

EXAM POLICYÐICS:

- Read the paper carefully, should have any query be asked within first 15 minutes.
- Closed-book exam, no course-related papers are allowed.
- During examination, any form of communications with peer students is strictly forbidden.
- Students will not be allowed to attend the exam if arrived 20 minutes after the exam starts.
- Mobile phones should strictly be off.

QUESTIONS/ Questions TOTAL STUDENT OUTCOMES: This exam covers the following student outcomes (SOs):

Outcomes Covered	Questions	TOTAL
	Question 1	/6
	Question 2	/5
	Total	/10

FEEDBACK SUMMARY:

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Question No. 1. Consider the following forecasting technique applied to stationary time series:

Time	1	2	3	4	5	6
Time Series	200	220	180	160	210	230

(a) Find the forecast and errors applied to following stationary time series for (i) 3-period moving average technique (ii) 3-period weighted moving average technique with probabilities $P(0.5, 0.3, 0.2)$? (2 points)

Time	1	2	3	4	5	6
Time Series	200	220	180	160	210	230
3-period moving average				200.00	186.67	183.33
Error for 3-Period MA				-40.00	23.33	46.67
3-period weighted moving average				196.00	178.00	189.00
Error for 3-Period WMA				-36.00	32.00	41.00

(b) Find the performance measure using mean square error (MSE) for (i) 3-period moving average technique (ii) 3-period weighted moving average technique forecasting techniques? (2 points)

(i) $MSE = 1440.79$

(ii) $MSE = 1333.67$ Optimal

(c) Find the performance measure using mean absolute difference (MAD) for (i) 3-period moving average technique (ii) 3-period weighted moving average technique forecasting techniques? (2 points)

(i) $MSE = 36.67$

(ii) $MSE = 36.33$ Optimal

Question No. 2. Consider the payoff table, furnish the regret table and find the optimal decision under the “Minimax Regret Criterion”? (4 points)

Decision	The Payoff Table				
Alternative	Large Rise	Small Rise	No Change	Small Fall	Large Fall
Gold	-100	100	200	300	0
Bond	250	200	150	-100	-150
Stock	500	250	100	-200	-600
C/D account	60	60	60	60	60
Currency	200	150	150	-200	-150
Prior Prob.	0.2	0.3	0.3	0.1	0.1

Decision	The Regret Table					
Alternative	Large Rise	Small Rise	No Change	Small Fall	Large Fall	Maximum Regret
Gold	600	150	0	0	60	600
Bond	250	50	50	400	210	400
Stock	0	0	100	500	660	660
C/D account	440	190	140	240	0	440
Currency	300	100	50	500	210	500