Strathmore
UNIVERSITY

INSTITUTE OF MATHEMATICAL SCIENCES
BBS FINANCIAL ECONOMICS
END OF SEMESTER EXAMINATION
BSE 4122: BEHAVIORAL FINANCE

DATE: Wednesday, 25th July 2018 Time: 2 Hours

Instructions

1. This examination consists of **FIVE** questions.
2. Answer **Question ONE (COMPULSORY)** and any other **TWO** questions.

Question 1

a) Differentiate the following terms/concepts:

i. Fundamental risk and noise-trader risk **(4 marks)**

ii. Base Rate Neglect and gamblers fallacy **(4 marks)**

iii. Exponential and hyperbolic discount functions **(4 marks)**

b) The following table shows the composition of Tom's portfolio as of 1 January 2017 along with information about the first purchase price for each stock holding.

Table 1 Tom's portfolio as of 1 January 2017

Stock	No of stocks	First purchase price
A	120	80
B	30	100
C	23	50
D	34	12

Since the beginning of 2017 Tom has actively traded in four different stocks: A, B, C, D. On 7 January 2017, Tom purchased 20 C-shares and 10 D-shares. On 15 February he sold 5 C-shares, and purchased 10 A-shares and 12 D-shares. On 4 April he sold 10 A-shares and 5 C-shares, and purchased 6 B-shares. On 6 April he purchased 20 C-shares. On 20 May he sold all of his A, C, and D shares.

Table 2 shows the price movements of A-, B-, C-, D-, and E- shares during 2017:

Day	A-share	B-share	C-share	D-share	E-share
07-January	Ksh95	Ksh100	Ksh50	Ksh23	Ksh10
15-February	Ksh110	Ksh120	Ksh52	Ksh27	Ksh9
04-April	Ksh70	Ksh80	Ksh57	Ksh40	Ksh15
06-April	Ksh85	Ksh70	Ksh54	Ksh40	Ksh13
20-May	Ksh120	Ksh25	Ksh60	Ksh47	Ksh15

i. Calculate the disposition effect for Tom for the period from 1 January 2017 till now. Please use the same method as Odean (1998) in his main analysis and the first purchase price as reference point. **(6 marks)**

ii. Provide two arguments why the disposition effect may be considered suboptimal behavior from the standard economic point of view. **(4 marks)**

c) In 1979, Daniel Kahneman and Amos Tversky introduced "prospect theory," a descriptive theory of how people choose between risky gambles. Briefly explain the five key assumptions of prospect theory. **(8 marks)**

(TOTAL: 30 MARKS)

Question 2

a) Overconfidence does not quickly dissipate via learning because of the existence of contributing biases. Explain. **(7 marks)**

b) Financial decision-making is related to investor emotions. Discuss this statement in detail. **(13 marks)**

(TOTAL: 20 MARKS)

Question 3

a) "Calendar anomalies are at odds with semi-strong market efficiency." Discuss. **(6 marks)**

b) Two of the most fundamental patterns in the cross-section of average returns are momentum and long-term reversals. Two other patterns that may be related to these are post-earnings announcement drift and the value premium.

The three best-known behavioral finance models of these patterns are:

- Barberis, Shleifer, and Vishny (1998), "A Model of Investor Sentiment," *Journal of Financial Economics* [BSV]

- Daniel, Hirshleifer, and Subrahmanyam (1998), "Investor Psychology and Security Market Under- and Over-reactions," *Journal of Finance* [DHS]
- Hong and Stein (1999), "A Unified Theory of Underreaction, Momentum Trading, and Overreaction in Asset Markets," *Journal of Finance* [HS]

Recall that BSV involves ideas like "conservatism" and "representativeness"; DHS talks about "overconfidence" and "self-attribution bias"; while HS's model refers to "newswatchers" and "momentum traders".

Pick TWO of these three models. For each of the two models you picked, describe as best you can how the model explains the empirical facts listed at the start of the question. (Note that not all of the models explain all four facts; but they each explain at least three of them). **(14 marks)**

(TOTAL: 20 MARKS)

Question 4

a) Sue is an exponential discounter. Her discount function, which illustrates her preference for money at various points in time, is characterized as follows:

$\partial(t)=1/(1.07)^t$ for t=0,1,2,…

Bob on the other hand is a hyperbolic discounter. His discount function is:

$$\partial(t) = 1 \quad \text{for } t=0$$
$$= 0.8/(1.03)^{t-1} \quad \text{for } t=1,2,\ldots.$$

i. What would Sue/Bob rather have: sh1 today or sh1.10 next year? Explain. **(5 marks)**

ii. What would Sue/Bob rather have: sh1 next year or sh1.10 the year after that? Explain. **(5 marks)**

b) Describe three mistakes surrounding retirement and pensions and give behavioral explanations for each of them. **(10 marks)**

(TOTAL: 20 MARKS)

Question 5

a) Alice is offered a choice between

Lottery A (0.8, 4,000; 02, 0) and

Lottery B (1, 3,000)

She chooses B. Which of the following will Alice choose if she satisfies the axioms of expected utility?

Lottery C (0.2, 4,000; 0.8, 0) and

Lottery D (0.25, 3,000; 0.75, 0) **(5 marks)**

b) Consider a person with the following value function under prospect theory:

$$v(z) = z^{.8} \quad \text{when } z \geq 0$$
$$= -3(-z)^{.8} \quad \text{when } z < 0$$

This individual has the following weighting function:

$$\pi(p) = \frac{p^{\gamma}}{(p^{\gamma} + (1-p)^{\gamma})^{\frac{1}{\gamma}}}$$

where we set $\gamma = 0.65$.

Which of the following prospects would the person choose? **(5 marks)**

Prospect A (0.001, -5000)

Prospect B (-5)

c) According to corporate finance theory an ongoing capital investment project should be terminated as soon as the net present value of the project's continuation becomes negative. However, in practice managers can be reluctant to terminate a losing project. Behavioral corporate finance provides an explanation for this reluctance. Describe this behavioral explanation. Try to be systematic in your explanation (for example, build the explanation on a listing of the underlying behavioral foundations). **(10 marks)**