NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY

FACULTY OF THE BUILT ENVIRONMENT

BACHELOR OF QUANTITY SURVEYING (HONOURS) DEGREE

PART II FIRST SEMESTER EXAMINATIONS JANUARY 2013

CONSTRUCTION ECONOMICS - AQS 2108

TIME: 3 HOURS   **TOTAL MARKS: 100**

Instructions

   a. **Answer any FOUR questions**

   b. **Show all workings where calculations are involved.**

Question 1

   a. Explain what is meant by construction economy and show how this can be achieved [15 marks]

   b. Show how government can use the construction industry as a regulator of the economy

                                                                                                              [10 marks]

Question 2

   a. What is meant by cost control   [5 marks]

   b. React to the assertion that Quantity Surveyors do not control costs on building projects

                                                                                                              [20 marks]

Question 3

a. Explain life cycle costing. How relevant is life cycle costing to the construction industry under fluctuating macro economic conditions? [15 marks]

b. A construction firm is considering the purchase of an air compressor. The compressor has the following end-of-year maintenance costs. Calculate the present equivalent maintenance cost if interest is 12% [5 marks]

Year	1	2	3	4	5	6	7	8
Maintenance costs ($)	800	800	900	1000	1100	1200	1300	1400

c. A construction company has a fleet of cars. It has been agreed that a replacement policy should be established. Using the data provided below and a discount rate of 12% find the optimum replacement period. [5 marks]

Purchase price when new $9000

Assume annual running costs arise at the end of each year.

	Year 1	Year 2	Year 3	Year 4
Running costs ($) in a year	2000	2500	3200	4100
Resale value	6500	4600	3000	1700

Question 4

a.) What is the rationale for investment appraisal in the construction industry [10 marks]

b.) Calculate the IRR and NPV of a project whose cash flow is presented below. Is the project acceptable? Support your answer. [15 marks]

Year	0	1	2	3	4
Cash flow ($)	-5000	500	1800	2400	1600

Question 5

Discuss the effectiveness with which the construction industry can respond to the level and pattern of demand in a boom and in a slump [25 marks]

Question 6

a. Explain 'time value of money' concept as it relates to construction economics [5 marks]

b. Solve the problems presented below.

   i. What annual equal payment series is necessary to repay a series of 7 end-of-year payments that begins at $2000 and increases at a rate of 100 a year with 12% interest compounded annually [4 marks]

ii. For an interest rate of 10% compounded annually, find how much can be loaned now if $2000 will be repaid at the end of 4 years   [4 marks]

iii. What is the accumulated value of $350 at the end of each year for 9 years at 12% interest compounded annually   [4 marks]

iv. How many years will be required for an investment of $3000 to increase to $6939 if interest is 15% compounded annually   [4 marks]

v. What equal series of payments must be paid in a sinking fund $6500 in 8 years at 13% compounded annually when payments are annual   [4 marks

END OF EXAMINATION

TIME: 3 HOURS   **TOTAL MARKS: 100**

Instructions

Answer any four

_____

Question 1

a.) Distinguish between conventional and discounted capital investment appraisal techniques

[5 marks]

b.) Discuss the following investment appraisal techniques

i.   Net Present Value (NPV)   [5 marks]
ii. Internal Rate of Return (IRR)   [5 marks]
iii. Payback   [5 marks]
iv. Accounting Rate of Return (ARR)   [5 marks]

Question 2

a. How many years will be required for an investment of $1000 to increase to $7400 if interest rate is 10% compounded annually?   [5 marks]

b. What is the present value of $8300, 12 years from now at 19% interest compounded annually?

[5 marks]

c. What is the amount accumulated by $3000 in 7 years at 14% compounded annually? [5 marks]

d. What series of equal payments necessary to repay $4000 in 5 years at 12% compounded annually?   [5 marks]

e. What is the present value of $1000 a year for 9 years at 8% compounded annually? [5 marks]

Question 3

Life-cycle-costing is not a worth exercise in a cyclical economic environment. Discuss.   [25 marks)

Question 4

a. A building to be demolished in 25 years time requires repainting now and will require repainting every 5 years until demolition. The cost of repainting is estimated at $3000. In ten year time $2000 is to be spent on alterations and $1500 will be spent at the end of each year on sundry repairs. What sum must be set aside now to cover the cost of all work, assuming the rate of interest is 6% per annum and ignoring the effect of taxation?   [15 marks]

b. Explain the following Explain the following commonly used methods of economic comparisons of alternative solutions to problems in the building industry

   i.   Present worth   [5 marks]

   ii.   Annual equivalent   [5 marks]

Question 5

Explain the following

   i.   Return on capital employed   [5 marks]

   ii. Depreciation   [5 marks]

   iii. Sensitivity analysis   [5 marks]

   iv. Feasibility study   [5 marks]

   v.   Cost benefit analysis   [5 marks]

Question 6

a. What is meant by construction economics   [10 marks]

b. How relevant is the construction industry to the economy of a nation   [15 marks]

END OF EXAMINATION