NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY

FACULTY OF BUILT ENVIRONMENT

DEPARTMENT OF QUANTITY SURVEYING

PART II SECOND SEMESTER EXAMINATIONS – JUNE 2010

TECHNIQUES OF GATHERING INFORMATION AND REPORT WRITING– AQS2203

Time: 3 hours Total Marks: 100

INSTRUCTIONS:

Answer any four questions, all questions carry equal marks.

QUESTION ONE

Discuss different reasons and models for doing research in general and for a particular programme or project of your choice. (25 marks)

QUESTION TWO

a) By giving examples, explain four research typology and their applications in real life situations. (16 marks)

b) Describe different sources of knowledge and data. (9 marks)

QUESTION THREE

Explain fully the following terms or phrases as used in research:-

a) Triangulation (5 marks)

b) Deductive logic (5 marks)

c) Experimental design (5 marks)

d) Participatory observation (5 marks)

e) Snowball technique (5 marks)

QUESTION FOUR

Outline the fundamental differences between qualitative and quantitative research approaches and explain why you would prefer any one of these in a research for the built environment. (25 marks)

QUESTION FIVE

Explain sampling error and sampling bias and how these could be reduced or avoided in a research sojourn. (25 marks)

QUESTION SIX

An academic report or research project follows a standard sequence.

a) Discuss the flow of the research process. (10 marks)

b) Outline the precedures and requirements for the production of the dissertation document. (15 marks)

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PART II SUPPLEMENTARY EXAMINATIONS – AUGUST 2010

TECHNIQUES OF GATHERING INFORMATION AND REPORT WRITING– AQS2203

Time: 3 hours Total Marks: 100

INSTRUCTIONS:

Answer any four questions, all questions carry equal marks.

QUESTION ONE

Explain why a Quantity Surveying firm would carry out a research project in the year 2010 in Zimbabwe. (25 marks)

QUESTION TWO

Describe different types of probability and no-probability sampling techniques and expalin the choice for any one of these for the existing shopping mall. (25 marks)

QUESTION THREE

Using examples, give fundamental differences between the following terms or phrases as used in research.

a) Deductive and inductive logics (5 marks)

b) Stratified and purposive sampling techniques (5 marks)

c) Sampling error and sampling bias (5 marks)

d) Problem statement and hypothesis (5 marks)

e) Research design (5 marks)

QUESTION FOUR

Some researchers would prefer qualitative over quantitative research approaches. Discuss.

(25 marks)

QUESTION FIVE

Describe the following research techniques

a) Triangulation (12 marks)

b) Observation (7 marks)

c) Interviews (6 marks)

QUESTION SIX

a) Describe the construction of different types of questionnaires and discuss their advantages and disadvantages. (13 marks)

b) Outline the structure or form in which the academic document is presented.

(12 marks)

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PART I SECOND SEMESTER EXAMINATIONS – JUNE 2010

LAW: CONSTRUCTION AND ENGINEERING I – AQS1205

Time: 3 hours Total Marks: 100

INSTRUCTIONS:

Answer any four questions, all questions carry equal marks.

QUESTION ONE

a) What is an offer? (2 marks)

b) For an offer to be valid there are some requirements which need to be satisfied. Discuss these requirements with the aid of examples and case law authorities. (10 marks)

c) Discuss various ways in which an offer can be terminated. (10 marks)

d) Clarify what is meant by the term cosensus ad idem. (3 marks)

QUESTION TWO

a) What is law? (2 marks)

b) Inorder to have a valid contract, both parties must have capacity to the contract however; certain groups of people may not have full capacity. Discuss these groups of people. (8 marks)

c) Briefly discuss the law of contract outlining the requirements for a valid contract. (15 marks)

QUESTION THREE

a) What is misrepresentation? (2 marks)

b) Discuss various forms of misrepresentation stating examples where possible. (10 marks)

c) What are the remedies for misrepresentation? (8 marks)

d) Outline various ways of improperly obtaining consensus. (5 marks)

QUESTION FOUR

a) Give brief explanations on each of the following types of mistakes :-

i) Error in negotio ($2\ ^1/_2$ marks)

ii) Error in persona ($2\ ^1/_2$ marks)

iii) Error in substantia ($2\ ^1/_2$ marks)

iv) Error in corpore ($2\ ^1/_2$ marks)

b) What are the causes for breaching of contract and the remedies applied. (10 marks)

c) What do you understand by delict of tresspass? (5 marks)

QUESTION FIVE

a) Differentiate between the Law of Contract and the Law of Tort. (5 marks)

b) Discuss the types of wrongs which are dealt with in the Law of Tort giving examples where applicable. (5 marks)

c) What are the general defences in Tort? (5 marks)

d) Remedies for tortious behaviour include damages and injuction. Briefly discuss these damages giving examples. (10 marks)

QUESTION SIX

a) What are the liabilites of a sub-contractor to the main contractor in the event of a breach of any term of the sub-contract? Relate your answer to the Law of Tort and Contract. (15 marks)

b) Briefly outline the reasons why sub-contracting is prevalent in the construction industry. (10 marks)

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PART I SECOND SEMESTER EXAMINATIONS – JUNE 2010

MEASUREMENT I – AQS1203

Time: 3 hours Total Marks: 100

INSTRUCTIONS:

Answer all questions.

QUESTION ONE

Write short notes on the following:-

a) Abbreviations and symbols (5 marks)

b) Entering dimensions (5 marks)

c) Alterations to dimensions (5 marks)

d) Provisional sums and prime cost items (5 marks)

e) Abstracting (5 marks)

QUESTION TWO

a) Bills of Quantitites form a significant part of the documents that form the building contract. Discuss this statement basing on the purposes of Bills of Quantities and the prime objective of measurement. (15 marks)

b) Discuss the working up process. (10 marks)

QUESTION THREE

Using the attached plan, prepare a Bills of Quantities for the foundations and doors.

Please note Attach all the necessary documents that result from the processes that are undertaken to come up with a bill starting from the plan up to the bill.
(50 marks)

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PART II SECOND SEMESTER EXAMINATIONS – JUNE 2010

BUILDING CONSTRUCTION III – AQS2201

Time: 3 hours Total Marks: 100

INSTRUCTIONS:

Answer any four questions.

QUESTION ONE

a) Outline the properties of a good damp proofing material. (4 marks)

b) Discuss three possible ways in which dampness penetrates into buildings.

(9 marks)

c) Illustrate with aid of diagrams any one method of water proofing basements.

(10 marks)

d) Illustrate how the top of a brick parapet wall can be treated to avoid dampness penetrating downwards. (2 marks)

QUESTION TWO

a) By giving examples distinguish between temporary and permanent exclusion of ground water. (12 marks)

b) Define piling and where it can be employed. (5 marks)

c) Illustrate how precast concrete piles are sunk. (8 marks)

QUESTION THREE

a) Identify and discuss 5 types of construction plant /equipment and where they can be used. (10 marks)

b) With aid of diagrams distinguish between putlog and independent scaffolding.

(10 marks)

c) How are workmen and objects avoided from falling down while using scaffolding?

(5 marks)

QUESTION FOUR

a) Discuss the traditional wall underpinning method. (10 marks)

b) Under what circumstances is underpinning considered? (5 marks)

c) Shoring is one of the best methods of temporarily supporting structures. Illustrate how to support a wall when creating a window opening. (10 marks)

QUESTION FIVE

a) Outline the necessary steps to be taken from the time when formwork has been set in position to the time of dismantling. (10 marks)

b) Illustrate the slab and beam formwork. (10 marks)

c) What is the importance of formwork in construction? (5 marks)

QUESTION SIX

a) Identify and discuss any 5 methods of demolition. (20 marks)

b) What are the necessary precautions to be taken when carrying out demolitions?

(5 marks)

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PART II SECOND SEMESTER EXAMINATIONS – JUNE 2010

BUILDING DESIGN ECONOMICS – AQS2210

Time: 3 Hours Total Marks: 100

Instructions
Answer ANY Four Questions. All Questions Carry Equal Marks.

QUESTION ONE

Explain the following concepts and show their relevance to the construction industry

a) Cost benefit analysis (7 marks)

b) Feasibility study (6 marks)

c) Sensitivity analysis (6 marks)

d) Cost budgeting (6 marks)

QUESTION TWO

The design of a building often dictates the method of construction and materials to be used in the construction of that building. Identify any **five** building design variables and show their effect on the cost of a building. (25 marks)

QUESTION THREE

Prefabrication of building elements facilitated mass production of buildings to meet demand for shelter especially after the Second World War. Explain in detail 'system building' as a method of mass production of buildings showing its benefits to clients of the building industry. (25 marks)

QUESTION FOUR

Using examples, explain the process of cost planning. What importance is cost planning to a client of the construction industry. (25 marks)

QUESTION FIVE

A vacant and partially derelict deconsecrated church building in the centre of a large provincial town is being offered at $ 2 500 000. A local property development company is interested in converting the building into a small specialty shopping centre on two floors. The reconstructed building will be approximately 3000m^2 gross in size providing about 2000m^2 of net lettable floor space divided into 18 units of between 50m^2 and 250m^2**.** Rental income is predicted to average out at around $300 per m^2. An investment return of 7.5% is sought. Building costs are estimated at $550 per m^2. Bridging finance is available at 1.4 % per month and the development will probably take 21 months to complete and let. Developer's profit is set at 15% of capital value while professional fees are 12.5% of building costs.

On the basis of the above information and any other assumptions you may wish to make, prepare a development budget for this project, and advise the developer accordingly.

(25 marks)

QUESTION SIX

a) Identify and explain what constitutes of 'total building cost' to a client of the building industry. (12 marks)

b) 'Quantity surveyors do not control costs on construction projects'. Discuss (13 marks)

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PART IV SECOND SEMESTER EXAMINATIONS – JUNE 2010

PROPERTY DEVELOPMENT AND ESTATE MANAGEMENT – AQS4207

Time: 3 Hours Total Marks: 100

Instructions
Answer ANY Four Questions. All Questions Carry Equal Marks.

QUESTION ONE

In investment cycles, property is considered a very good investment during hyperinflation periods. Using the Zimbabwean economic scenario of 2008, explain the advantages and disadvantages of investing in real property compared to the equities market. (25 marks)

QUESTION TWO

Outline the mixture of roles played by the various actors in the development process and show how they can be brought together in order to achieve maximum benefit to a property developer. (25 marks)

QUESTION THREE

Explain the following methods of valuation showing where they are most applicable in the real property industry.

a) Comparative method (5 marks)

b) Residual method (5 marks)

c) Contractors method (5 marks)

d) Profits method (5 marks)

e) Investment method (5 marks)

QUESTION FOUR

The property development industry is generally dissatisfied with the delays and uncertainties that it experiences and sometimes the ad hoc nature of decisions made by the planning system.

Critically evaluate this assertion by highlighting the various sources of delay emanating from the planning system. Is it justifiable to label the planning system as the major hindrance to investment in the property development industry? (25 marks)

QUESTION FIVE

a) Explain what you understand by property management (10 marks)

b) React to the view that without property managers, most high rise buildings would be inefficiently managed. (15 marks)

QUESTION SIX

"Property has the unique characteristic of being simultaneously a medium of investment, a major input to the productive capacity of the economy, and the output of an important sector, the development and construction industry". (Understanding the property cycle: A research Report for RICS 1994). Discuss this statement with reference to Zimbabwe and explain its relevance to a property manager. (25 marks)

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PART I SECOND SEMESTER EXAMINATIONS – JUNE 2010

PRINCIPLES OF MACROECONOMICS – AQS1204

Time: 3 Hours Total Marks: 100

Instructions

Answer ANY Four Questions. All Questions Carry Equal Marks.

Start each question on a fresh page and write clearly.

Whole question may be attempted in any order.

QUESTION ONE

(a) (i) Briefly describe the income and expenditure approaches of measuring national income. (6 marks)

(ii) What are the shortcomings of national income statistics? (6 marks)

(b) From the data below, calculate the Net National Product at factor cost.

Imports	10 000
Gross Domestic Private Investment	500
Government Expenditure	1000
Exports	25 000
Value of Physical increase in stock	6 000
Net Property Income from Abroad	1 200
Consumer Expenditure	58 000
Capital Consumption	800

(13 marks)

QUESTION TWO

(a) Briefly define import substitution industrialization and assess its relevance to the Zimbabwean economy. (10 marks)

(b) Discuss the effectiveness of a wage and price freeze for a developing country economy. Cite relevant examples to demonstrate the impact of the policy. (15 marks)

QUESTION THREE

a) What are the arguments for and against trade restrictions? (10 marks)

b) The following is data which shows a summary of Eldorado's balance of payments for a particular year. The items are presented in random order:

	$Billions
Visible exports	400
Net Private Investment	320
Visible Imports	480
Repayment to IMF loan	100
Balancing item	120
Invisible exports	240
Change in reserves	?
Invisible imports	200

Calculate:

i) The Balance of Trade (3 marks)

ii) The Balance on Current Account (4 marks)

iii) The Balance for Official Financing (4 marks)

iv) What will be change in reserves as a result of these flows? (4 marks)

QUESTION FOUR

a) "Keynesians argue that a budget deficit will stimulate the economy. The historical evidence of the Zimbabwean economy is highly inconsistent with this view. For the past 10 years, deficit spending has been associated with recessions, not expansions." Discuss this observation about Zimbabwe's economy. (15 marks)

b) What is meant by exchange rate devaluation? (5 marks)

c) Distinguish between depreciation and devaluation. (5 marks)

QUESTION FIVE

a) Briefly define any two instruments of monetary policy. (10 marks)

b) What are the consequences of inflation and what policy measures can the authorities take to reduce inflationary pressures? (15 marks)

QUESTION SIX

Identify two types of unemployment that exist in the Zimbabwean economy and suggest how government can solve each of the different types of unemployment? (25 marks)

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DEPARTMENT OF QUANTITY SURVEYING

PART I SECOND SEMESTER EXAMINATIONS – JUNE 2010

THEORY OF PRACTICE OF QUANTITY SURVEYING AND PROJECT MANAGEMENT II – AQS1201

Time: 3 Hours Total Marks: 100

Instructions

Answer ANY Five Questions. All Questions Carry Equal Marks.

QUESTION ONE

a) What is meant by the term "contract" and "contract sum". (5 marks)

b) Write brief notes on the documents that form part of a building contract. (9 marks)

c) The "form of contract" contains 3 parts. Discuss them. (6 marks)

QUESTION TWO

a) Define the term "Architect Instructions" and "Variations" (4 marks)

b) In which situation may "Variations" arise? (4 marks)

c) Discuss several ways of valuing variations. (12 marks)

QUESTION THREE

a) There are 2 methods of calculating fluctuations, briefly describe these methods. (8 marks)

b) Explain the difference betweeen prime cost sums and provisional sums. (5 marks)

c) Why does a main contractor charge profit and attendance on nominated sub contractor's amounts? (4 marks)

d) What limits the main contractor from carrying out work for a P.C sum? (3 marks)

QUESTION FOUR

a) Briefly define Value Management and Project Management? (4 marks)

b) What are the 3 stages to the value management process? (6 marks)

c) Describe the process of identifying project risks? (10 marks)

QUESTION FIVE

a) What is the general procedure of preparing interim valuations? (5 marks)

b) Briefly describe the items that are incorporated in the preparation of interim valuations.

(15 marks)

QUESTION SIX

You have been asked by your boss to prepare a Final Account for the Ascot Shopping Centre project. The following information has been submitted.

	$	$
Contract sum		18 000.00
Preliminary and general	1 800.00	
Contigency	100.00	
Provisional Sums		
Profit 2.5%		
Attendance 1%		
Electro- craft Electrical Works		
BQ Provision	1 500.00	
Remeasurement	850.00	
Cool Aid Pvt Ltd - Air Conditioning		
BQ Provision	800.00	
Remeasurement	850.00	
Schindler Lifts		
BQ Provision	3 500.00	
Remeasurement	3 500.00	
Variation Orders		
Otis Electrical – Escalators		
Architect instruction No 1	1 200.00	
Plumbing		

Architect Instruction No 2	350.00	
Architect Instruction No 3		
Plaster in lieu of bagging to ceilings		500.00
Bagging to ceiling		3 000.00
Architect Instruction No 4		
Plaster in lieu of facings		3 200.00
Facing		1 000.00
Architect Instruction No 5		
Brick paving	5 500.00	
Prime Cost Amounts		
Profit 10%		
Fixing 10%		
Ironmongery		
BQ provision	4 500.00	
Remeasurement	4 500.00	
Coldroom Door		
BQ Provision	1 050.00	
Remeasurement	2 200.00	
Items Measured Provisional		
Foundations		
BQ Provision	950.00	
Remeasurement	850.00	
Plumbing		
BQ Provision	720.00	
Remeasurement	720.00	

Fluctuations

Main contractor	384.00
Elector-craft	250.00
Cool Aid Pvt Ltd	65.00
Otis Electrical	45.00
Chubb	62.00

(20 marks)

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PART IV SECOND SEMESTER EXAMINATIONS – JUNE 2010

PROFESSIONAL PRACTICE AND PROCEDURE – AQS4209

Time: 3 Hours Total Marks: 100

Instructions
Answer ANY Four Questions. All Questions Carry Equal marks

QUESTION ONE

Give 5 unprofessional conducts you know and explain why should they be considered unprofessional in the upholding of the Quantity Surveying profession. (25 marks)

QUESTION TWO

What is the procedure followed by the Quantity Surveyors Council of Zimbabwe when carrying out an inquiry into the unprofessional conduct of a registered Quantity Surveyor?(25 marks)

QUESTION THREE

Describe and explain the improtance of the Zimbabwe Institute of Quantity Surveyors and Quantity Surveyors Council of Zimbabwe as professional bodies in Zimbabwe? (25 marks)

QUESTION FOUR

a) Most professional firms are formed as partnerships. Give reasons why it is like that. (12 marks)

b) Explain the advantages and disadvantages of partnerships. (13 marks)

QUESTION FIVE

a) Why should there be a test of professional competency before one is registered to practice? (12 marks)

b) What is the significance of the minimum professional fees chargeable by a Registered Quantity Surveyor? (13 marks)

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PART IV SECOND SEMESTER EXAMINATIONS – JUNE 2010

INTERNATIONAL CONSTRUCTION: CONTRACTS AND ARBITRATION – AQS4210

Time: 3 Hours Total Marks: 100

Instructions
Answer ANY Four Questions. All Questions Carry equal marks.

QUESTION ONE

Your client, A is aware of the existence of arbitration and litigation as a means of resolving commercial disputes and wishes more information about each method. He asked you to explain to him the similariites and differences between each method. (25 marks)

QUESTION TWO

a) What are the essentials of a valid building contract? (12 marks)

b) What is the procedure and importance of a pre-qualification process when looking for a contractor on construction project? (13 marks)

QUESTION THREE

Describe the following tendering procedures and on which type of project will they be most appropriately used.

a) Selective tendering (12 marks)

b) Two stage selective tendering (13 marks)

QUESTION FOUR

At the end of a construction project a final account is prepared, state and explain the conditions that will make a final account binding and conclusive. (25 marks)

QUESTION FIVE

a) Why are preliminary costs estimates prepared? (10 marks)

b) In preparing a construction project cost estimate what factors should an estimator consider? (15 marks)

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PART I SECOND SEMESTER EXAMINATIONS – JUNE 2010

ENGINEERING SURVEYING – AQS1208

Time: 3 Hours Total Marks: 100

Instructions

Answer ANY Five Questions. All Questions Carry equal marks.

Carry out all necessary checks.

Untidy work will be penalised.

Diagrams drawn should be labelled.

Requirements

A non- programable calculator.

QUESTION ONE

a) A properly adjusting tilting level was set up at a point P and the following consecutive readings 0, 663m; 0,841m and -0,939m were taken on a staff positioned at points A, B and C respectively. The level then moved to a point Q and furtherreadings at C and D were as follows; 1,198m and 1,100m respectively. Reduce and check the levels using the height of collimation method. Reduced level of A was given as +94,115m. (15 marks)

b) What are the advantages and disadvantages that are associated with both the Rise and Fall and height of collimation methods? (3 marks)

c) What is reciprocal levelling? (2 marks)

QUESTION TWO

a) Define the following terms as used in compass survey.

i) Isogonal lines (3 marks)

ii) Agonic lines (3 marks)

iii) Magnetic meridian (4 marks)

b) Eliminate the effect of local attraction from the following compass bearing. Show the adjustment and the adjusted value.

AB=N30^0 00'E	BC=S40^0 00'E	CD=S45^0 00'W
BA=S30^0 00'W	CB=N45^0 00'W	DC=N55^0 00'E
DA=N55^0 00'W	AD=S60^0 00'E	

(10 marks)

QUESTION THREE

A levelling exercise was carried along the track in an underground haulage. It has been decided to regrade the track on an even grade from station 1 to station 8. Thereafter, the haulage is to be advanced on a grade of 0, 50%. The required grade elevation at station 1 is 937,480m ie 1,00m above the existing track. Calculate the height above the existing track, required grade to be placed to regrade the track between station 1 and 8 and also at 9 to suit the new grade.

(NB Calculate the cut and fill) (20 marks)

QUESTION FOUR

a) What are the responsibilities of an Engineering Surveyor on a Construction scheme?

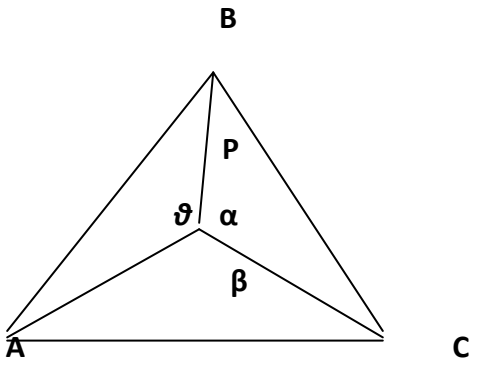
(10 marks)

b) Describe in detail methods of controlling verticality during construction of either multi -storey buidling on a vertical shaft. (10 marks)

QUESTION FIVE

A resection was carried out at a point P and the following information extracted for

observations to trigs A, B and C.



Coordinates

A -85 150,86	+ 2152 089,38	θ=65^0 34' 04"
B -89 538,72	+2146 517,84	α=132^0 51' 20"

C -88 401,35 +2157 031,46 $\beta = 161^0\ 34'\ 36''$

Resect the coordinates of P, by the Barycentric method. (20 marks)

QUESTION SIX

a) Given coordinates in metres

A +212 640,515 +7 646,103

B +212 587,339 +7 899,902

Calculate the distance and direction A to B. (10 marks)

b) In a tape offset survey the following offsets were taken from a fence to a survey line.

Chainage m	0	20	40	60	80	100	120	410	160	180
Offset m	0	5,49	9,14	8,03	10,17	13,00	8,73	4,27	1,83	0

Find the area (hectares), between the fence and the survey line. Use Simpson's rule. (10 marks)

END OF EXAMINATION

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PART II SECOND SEMESTER EXAMINATIONS – JUNE 2010

CONSTRUCTION ESTIMATES AND PRICING – AQS2205

Time: 3 Hours Total Marks: 100

Instructions
Answer Question 1 and any other four (4).

NEC Labour rates, schedule to be provided.

QUESTION ONE (Compulsory)

A church in Emakhandeni requires storage facilities. They have two options.

Option 1

Enclosing existing garage at the Pastor's marse.

(Sketch 1)

Option 2

Construction of storeroom 4, 50 x 3,00m

(Sketch 2)

The church has very limited financial resources and the general feeling is that **Option 1** could be affordable. One of the church members insists on **Option 2** and advises that he would donate money for the roofing (trusses, puslins, roofing sheets) and electrical works.

Using the approximate quantities method work out the cost estimates for both options to enable church to make a final decision.

Use the following data

Concrete grade 30

Reinforcement 90kg/m^3 in column bases

180kg/m^3 in columns

110kg/m^3 in ground floor slab

200kg/m^3 in ground beams

You can assume the prices. (40 marks)

QUESTION TWO

a) A proposed project is situated outside the contractor's normal geographical sphere of operation. List the points which the estimator must observe when he makes a site visit before deciding on the tender figure. (5 marks)

b) Calculate the unit rate to prepare and apply 2 coats emulsion paint to wood float plastered walls from the following data.

Labour:- Painter Skilled Worker 1 is paid $94,72/ 8 hour day

He applies 12m^2 for first coat in 1 hour

He applies 14m^2 for the second coat in 1 hour

Material:- Paint cost $12,00 per 5 litre

First coat 68m^2 per 5 litre

Second coat 72m^2 per 5 litre

Use 10% waste where waste is expected and 12% of labour cost for brushes and sand paper.

(10 marks)

QUESTION THREE

a) Explain what the term "all-in-labour" means? (2 marks)

b) Calculate the all-in-labour rate per hourfor a Skilled Worker Grade 1. Use the informationon NEC publication provided. (5 marks)

c) Write short notes on the following

i) Actual cost (2 marks)

ii) Estimate cost (2 marks)

iii) Quotation (2 marks)

iv) Margin (2 marks)

QUESTION FOUR

If you have received tender documents for a factory extension, the construction to be completed in 3 months. Your planning department advises you that in order to complete the work on time you will have to allow for working the normal week, 8 hours a day Monday – Friday plus 6 hours on Saturdays.

a) Calculate the all-in labour rates for a Worker Grade2 and Skilled Worker Grade 4. (The extra cost of overtime to be included in the all-in labour rate). (7 marks)

b) Explain with examples the following terms:-

i) Site overheads (4 marks)

ii) Head office overheads (4 marks)

QUESTION FIVE

a) Calculate the owning and operating cost per hour for a $3m^3$ front end loader with phnematic tyre it was purchased for $50 000.00 and is expected to have a working life of 14 000 hrs (7years).

The contractor is expecting $7^1/_2$ interest per annum on his capital outlay and he has to pay $600.00 per annum for taxes, $584.00 per amnnum insurance, approximately $760.00 for repairs and maintenance per annum and $800.00 per annum for replacement of tyres . He also has to provide fuel and lubricants at a cost of $84.00 per week. The operator for the loader is paid $28.00 per 8 hours a day. The loader works an average of 35 hours per week. (9 marks)

b) What are the items that may be included in contract bills which falls under the contractor's establishment costs? (6 marks)

QUESTION SIX

a) A foundation trench is to be excavated on ordinary ground using hand labour. The mean of the trench is 250m and it is 1, 2m deep x 1, 50m wide. Calculate the cost and time it would take 2 men to excavate the trench if each man is paid $2, 89/hour and can excavate $1m^3$ in 3,75 hours?

(10 marks)

b) List the factors that may affect the contractor's final tender sum? (5 marks)

END OF EXAMINATION

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PART IV SECOND SEMESTER EXAMINATIONS – JUNE 2010

MEASUREMENT IV-AQS4204

Time: 3 Hours Total Marks: 100

Instructions
Answer all questions in **SECTION A** and any other **TWO** in **SECTION B**

SECTION A

QUESTION ONE

a) Briefly explain factors that are considered when selecting a cable (5 marks)

b) What is diversity factor? (2 marks)

c) State the reasons why the load in an installation is divided into sub circuits (3 marks)

QUESTION TWO

Three light points in a room uniformly spaced, each controlled by one way switch are to be wired. All switches are to be placed on one position

Draw the following

a) Schematic diagram (5 marks)
b) Wiring diagram in multiline representation (5 marks)

QUESTION THREE

Figure (1) shows the floor layout plan of a residential house. The house is to be provided with electrical connections and the position of the lights, switches; power socket outlets and distribution board (D/DB) are as shown in the diagram.

Assuming the following;

a) Height of batten above the floor level =2.5m
b) Height of switches above the floor level=1.3m
c) Height of distribution board above the floor=1.5m
d) 100 watts load for each light point
e) 1000 watts load for each power socket outlet
f) Power socket outlets installed 300mm above the floor.

Stating any additional assumptions made:

1) Decide the number of sub circuits required and illustrate these on the floor layout plan (15 marks)
2) Prepare a bill of quantities for major materials (wires, breakers and conduits) required for the wiring system. (15 marks)

SECTION B

Instructions: Answer any two questions

QUESTION FOUR

Discuss the strategies used for fire protection and fire fighting in built environments (25 marks)

QUESTION FIVE

(i) Explain the significance of transportation systems in built environments. (5marks)

(ii) What are the determining factors taken into consideration when selecting a transportation system for installation on a built environment project? (8 marks)

(iii) Write brief notes about any three (3) transportation systems used on built environments (12marks)

QUESTION SIX

Suppose you are a team member representing your profession on the whole Building Design Group team working on a proposed construction project in the Greater Bulawayo metropolitan city centre. One aspect the project design team would be focusing on in their next meeting is the proposed air-conditioning system for the proposed project. Write a brief report which you would present to the project design team, as the lead designer in this respect. The report needs to explain, for the benefit of the other design team members, how a basic air conditioning system works; types from which the air conditioning system may be selected (merit/demerits); considerations and computations that need to be made in determining the size of the air conditioning system; features to check when your buyer goes to procure the air conditioning system as well as addressing installation and location issues.

(25 marks)

QUESTION SEVEN

(a) Explain the following terminology as used is HVAC systems:

(i) Air conditioning (3 marks)

(ii) Thermal comfort

(iii) Factors affecting thermal comfort (4 marks)

(b) (i) PFP and AFP. (2 marks)

(ii) When do you apply each system in selecting a protection system for a building? (4 marks)

(iii) What is meant by the term fire resistance rating? (1mark)

(c)(i) With the aid of well labelled sketches explain the key measurements and safety features that should imperatively be provided on a building elevator system. (5 marks)

(ii) How would you design energy economisation into an escalator system of a multi-story building? (4 marks)

END OF EXAMINATION