



PROGRAM : NATIONAL DIPLOMA: *BUILDING*

SUBJECT : **PRICE ANALYSIS & ESTIMATING 3**

CODE : **PRAE 331**

DATE : SUMMER SSA EXAMINATION 2015
8 DECEMBER 2015

DURATION : (SESSION 2) 11:30 - 14:30

WEIGHT : 50: 50

TOTAL MARKS : 80

ASSESSOR : MR OB IDEBI

MODERATOR : MR B. ILORI

NUMBER OF PAGES : 6 PAGES

INSTRUCTIONS : ANSWER ALL THE QUESTIONS

REQUIREMENTS : ANSWER BOOKS

INSTRUCTIONS TO CANDIDATES:

PLEASE READ ALL THE QUESTIONS AND THE INFORMATION
BEFORE ATTEMPTING ANY QUESTIONS

PRICE ANALYSIS AND ESTIMATING (PRAE 331) - INFORMATION SHEET

INFORMATION TO BE USED IN THE ANSWERING OF THE QUESTIONS

Use the following Labour rates: *Artisan R90.00/hr all in*
 Labourer R20.00/hr all in
 Operator R45.00/hr all in
 8 Hour days

PRELIMINARIES

Prices:

| | |
|--|-------------|
| Electricity Connection plus usage. Units R1.55 Connection and deposit | = R3500.00 |
| Water Connection plus usage. Per Kilolitre R6.00. Connection and deposit | = R900.00 |
| Gate for entrance to site | = R10000.00 |
| Fence from subcontractor per metre | = R15.00/m |
| The Insurance rate per R100 000.00 of construction is | = R100.00 |

EARTHWORKS

Specification:

All excavations will take place in pick able material

Constants:

- 1 Labourer excavates 1m³ of pickable material not exceeding 2m dp in 8 hours
- 1 Labourer excavates 1m³ of pickable material exceeding 2m dp and not exceeding 4m in 12 hour
- Carting away from site to spoil heap at 10km/hr
- It takes 90 seconds to fill the wheelbarrow and 5 seconds to empty the wheelbarrow

CONCRETE, FORMWORK AND REINFORCEMENT

Specification:

- All cement to be 32N
- Concrete to trenches is 1:3:6
- Concrete to surface bed with machine is 1:2:4

Constants:

- It takes 8 labour hours to mix 3 aggregate material
- It takes 8 labour hours to mix no fines concrete
- It takes 3 hours to place 1 m³ of concrete in trenches for 1 labourer

Concrete by machine: (When you mixing more than 25m³ of concrete in 1 item for academic purposes)

- A 760/540 Concrete mixer delivers 540 litres of wet concrete per 3 minute cycle
- A 750 litre dumper can take the entire load of concrete to where it is needed in one trip
- A Dumper driver is an operator and so is the concrete mixer operator
- 3 labourers are needed to pour and 2 labourers are needed to level the concrete on a surface bed per cycle
- 9 Labourers are needed to fill the mixer in a 1:2:4 mix. 4 on Stone, 2 on sand and 3 on cement
- In mixing concrete by machine it is a maximum of **540 litres** per cycle

Prices:

| | |
|-----------------|-------------|
| 1 bag cement | = R75 |
| 1 m3 River sand | = R340 |
| 1 m3 19mm Stone | = R380 |
| Concrete Mixer | = R1100/day |
| Dumper | = R900/day |

MASONRY**Specification:**

All bricks to be 115x230x75mm nominal size SABS approved stocks and red cement smooth face brick

All brickwork to be in cement and building sand 1:5 mix

All cement to be 32N

Constants:

It takes 5 labour hours to mix 2 aggregate material

A bricklayer and labourer lays 600 stock bricks per day

A bricklayer and labourer lays 450 face bricks per day

A labourer joints 30m2 of face brick per hour

100ml of mortar is used to joint 1m2 of face brick

Prices:

| | |
|--------------------|---------|
| 1 m3 Building sand | = R280 |
| 1000 Stock Bricks | = R1500 |
| 1000 Face Bricks | = R2300 |

CARPENTRY AND JOINERY**Constants:**

A carpenter and 1 labourer nails 100m of timber per day

A carpenter and 1 labourer nails 50m of Brandering per day

It takes a carpenter and 1 labourer 30 minutes to set up 1 door frame

A carpenter and 2 labourers hang 15 door per day with electric tools (priced in p&gs)

Price the lockset labour with the price of the door

Allow 3.9m of Brandering per m2 of ceiling

Use 5 nails per m2 for nailing branders to underside of rafters and to walls and allow 30% waste on nails

Use 2 nails per m for nailing battens to top of rafters and allow 30% waste on nails

Use 2 Clips per Ridge Cap

Use 2 Trees per Ridge Cap

Tiles per m2 if pitch is 17 to 25 degree = 10.42 Number

Tiles per m2 if pitch is 26 degree or not more than 30 degrees = 9.66 Number

Two operators pack 100 m2 of tiles per day

Two operators pack 100 m of ridge per day including clips and trees

Prices:

| | |
|--|---------------|
| 38 x 38 Sawn SAPine for Brandering and battens | = R7.31/m |
| 38 x 76 Sawn SAPine for Purlins | = R16.20/m |
| 50 x 76 Sawn SAPine for Purlins | = R21.45/m |
| 38 x 114 Sawn SAPine for Rafters | = R19.38/m |
| 100 x 4.5mm wire nails (79 per kg) | = R22/kg |
| 75 x 3.75mm wire nails (143 per kg) | = R22/kg |
| For profiles to set up door frames use 3m long | |
| 114 x 38mm Sawn SAPine, 6 uses per profile 2 nails per board | = R58.14/each |
| Internal Panel door | = R450/each |

| | |
|---|--------------------------|
| External Panel door | = R850/each |
| 4.5 x 45mm Screw for hanging of doors. Packet of 350 (allow 5% waste) | = R140/packet |
| Dry Ridge roll coverage | = R253/roll 20m |
| Ridge clips | = R2.00/each |
| Ridge Tree | = R17.00/each |
| Concrete roof tiles | =R10.84/each |
| 75mm Coved Cornice | =R18.00m including waste |
| 6.4MM Gypsum plaster Board including 20% waste | R58/m ² |
| Bischoff strips for 6.4mm Gypsum Board | R10.00 including waste |
| 1.700 x 2.032 2 Leave Door | R600.00/pair |
| 25mm screws for ceilings add 5%waste screws at 450mm | R10.75/100 |
| Use 500g putty per metre of glazing | R20.00/2kg |
| 4mm Clear glass | R240/m ² |
| 3mm Obscure glass | R360/m ² |
| 32mm Steel Nails at 450mm centres 600nails per kg | R80/kg including Waste |
| Use 5 nails /m of cornice | |
| Use 3 litres of Rhinolite/10m of 75mm coved cornice. Rhinolite | R240.00bag(40litres) |

IRONMONGERY

Constants:

Price the lockset labour with the price of the door

Prices:

| | |
|--------------------------------|-------------|
| 3 Lever Mortice Lockset | = R185/each |
| 2 Lever Mortice Lockset | = R110/each |
| Conversion Kit for Double door | R100/each |
| 75mm barrel bolts | R21.00each |
| 100mm Brass Butt Hinges | R90.00/each |

METALWORK

Prices:

An example of a frame 813 x 2032 x 1.2mm Pressed Steel Door Frame = R300/each

PLASTERING

Specification:

All plaster to be in cement and plaster sand 1:5 mix

All screeds to be in cement and river sand 1:4 mix.

Allow 5mm more than the specified thickness for all plasters

Constants:

It takes 5 labour hours to mix 2 aggregate material

A Plasterer and 1 labourer does 30m² of plaster to walls in one day

A Plasterer and 1 labourer does 30m of plaster narrow width in one day

A Plaster and 1 labourer does 60m² of floor screed per day including mixing

Allow 20% wastage on screeds

Prices:

| | |
|-------------------|--------|
| 1 bag cement | = R75 |
| 1 m3 Plaster sand | = R320 |

PAINTWORK

Constants:

- An operator does 100m² of painting per day
Allow 8m² for the 1st coat and 7m² for 2nd coat.
Allow 1kg of polyfilla for 30m² of wall
1 Labourer does 15m² of sanding Polyfilla to ceilings in 2 hour
1 Labourer does 15m² of Polyfilla to plaster in 1 hour
1 Labourer does 15m² of sanding Polyfilla to walls in 1 hour
1 Labourer applies 15m² of Polyfilla to ceilings in 1 hour

Prices:

- Plaster primer coverage at 6m² per litre. 20 Litre drum = R700/drum
Polyfilla 5kg does 100m² of spackling on plaster = R 65/ 5kg Box
100 Grit sandpaper 1 m long does 100m² of sanding polyfilled plaster = R19/1 m roll
Polyfilla 1kg does 100m² of covering screws on ceilings = R 65/ 5kg Box
100 Grit sandpaper 1 m long does 1000m² of sanding polyfilled ceilings = R19/1 m roll
20 Litre drum of PVA = R550/drum

QUESTION 1

Preliminaries

If is project is four months long. Price the following items and state whether they are Time, Value or Fixed Preliminaries

- | | | | |
|-----|--|---------|------|
| 1.1 | Insurance for a R1M project | | |
| 1.2 | 200m long 3m high fencing around site including 6m wide gate | | |
| 1.3 | Salary for foreman (Artisan plus 25%) | | |
| 1.4 | Water using 100 kilolitres per month | | |
| 1.5 | Electricity using 1000 units per month | (5 x 2) | |
| | | | [15] |

QUESTION 2

Concrete Work

- | | | | | |
|-----|--------------------------------------|----------------|----|------|
| 2.1 | Concrete to trenches (by hand) | m ³ | 20 | (5) |
| 2.2 | Concrete to surface bed (by machine) | m ³ | 75 | (10) |
| | | | | [15] |

QUESTION 3

Brickwork

- | | | | | |
|-----|--|----------------|-----|------|
| 3.1 | 1 Brick wall in superstructure | m ² | 100 | (5) |
| 3.2 | Extra Over Ordinary Brickwork for Face in Superstructure | m ² | 50 | (10) |
| | | | | [15] |

QUESTION 4

Plaster

- | | | | | |
|-----|--|----------------|-----|------|
| 4.1 | 19 mm plaster to vertical brick surfaces | m ² | 220 | (5) |
| 4.2 | 25 mm Screed to top of surface bed | m ² | 100 | (5) |
| | | | | [10] |

QUESTION 5

Ceilings

- 5.1 38 x 38mm Brandering at 450mm centres nailed to underside

| | | | | |
|-----|---|----------------|----|------|
| | of rafters to take ceiling boards | m ² | 80 | (5) |
| 5.2 | 6.4mm Gypsum Plasterboard screwed to underside of bracker. Screws at 450mm centres. | m ² | 80 | (5) |
| 5.3 | Bischoff strips to suit ceiling boards as joints between ceiling boards | m | 80 | (5) |
| 5.4 | 75mm Coved Gypsum cornice fixed to wall and ceiling with gypsum plaster | m | 80 | (5) |
| | | | | [20] |

QUESTION 6

Painting

| | | | | |
|-----|--|----------------|-----|------|
| 6.1 | Two coats PVA to plaster surfaces | m ² | 200 | (10) |
| 6.2 | Two Coats PVA to gypsum plaster ceilings | m ² | 100 | (5) |
| | | | | [15] |

QUESTION 7

Although not advisable, at times a QS may be requested to price projects Using a number of different but not very accurate systems. Give two examples of When s/he may use the following:

- 7.1 Square metre method
 - 7.2 Method by using the enclosed volume of the structure
 - 7.3 Method by counting the seats in a building
 - 7.4 Method by counting the beds in a building
 - 7.5 Method by counting the rooms a building
- (5 x 2)
[10]

[TOTAL 100]