

**REPUBLIC OF SOUTH AFRICA  
DEPARTMENT OF MINERAL RESOURCES  
EXAMINATION FOR THE MINE SURVEYORS CERTIFICATE OF COMPETENCY**

DATE: **14 October 2011**  
TIME: **12:30 to 15:30 (3 Hours)**

TOTAL MARKS: **100**  
TO PASS: **50**

**SURVEY III**

- Note:**
- (1) Work to 1 second of arc and 0,001m.
  - (2) Trigonometrical functions must be shown to six (6) decimal places.
  - (3) **All steps** and **CHECKS** must be shown.
  - (4) All **calculations** and **answers** to be **shown clearly**.
  - (5) Sketches have been reduced and are not to scale and attached herewith.
  - (6) The make and model number of your calculator **must** be written on the front cover of your answer book.

A coal mining right reserve area is represented by points X, Y, E, F, G, H, J and X. The coal seam is relatively flat. The reserve is classified as an underground reserve and will be mined by means of the bord and pillar method.

Calculate the theoretical run of mine coal tons that will be mined using the following information:

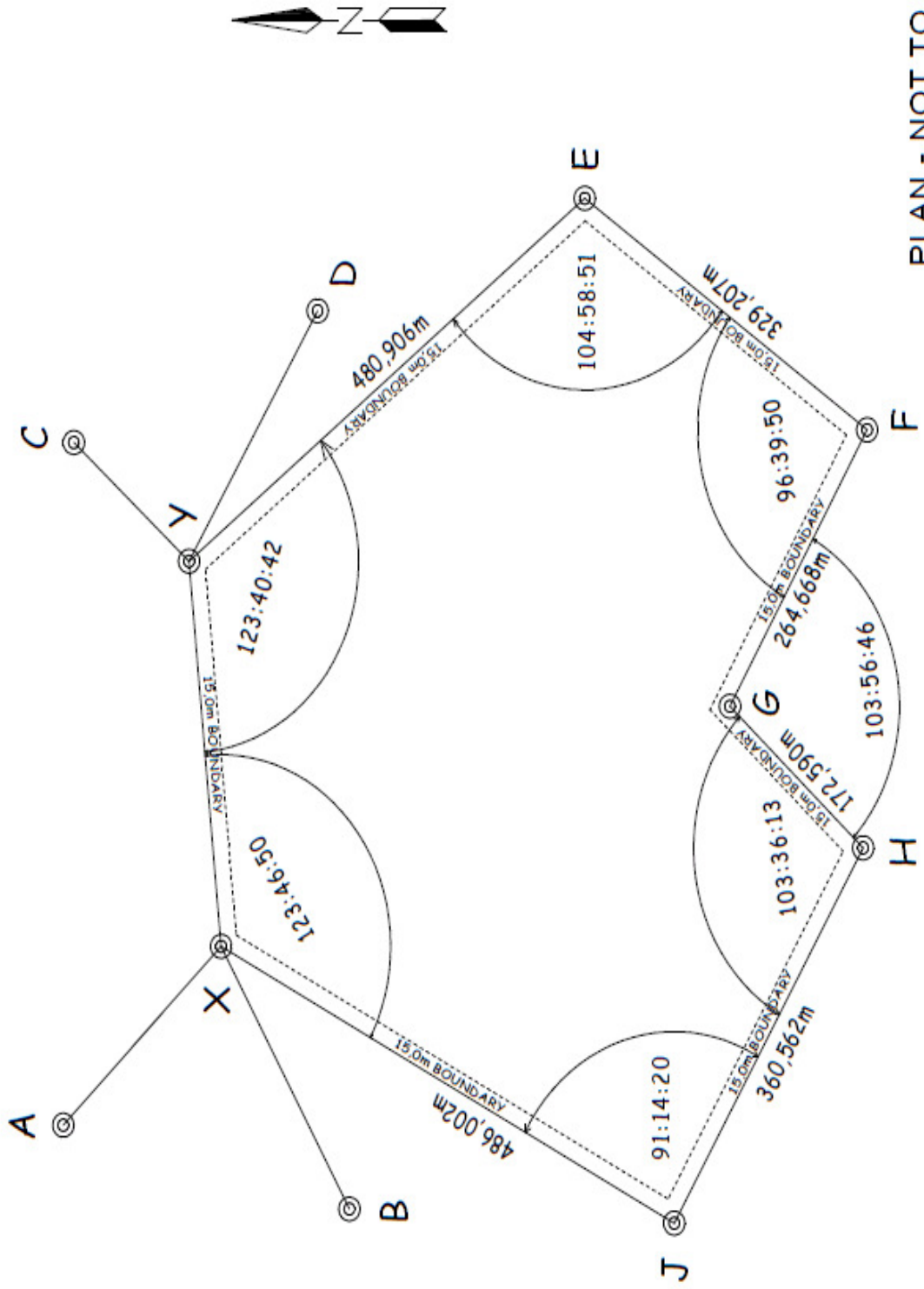
1. As per the Mines Health and Safety Act a coal pillar of 15,0m should be left on the inside of the reserve area.
2. The planned coal pillar centres is 14,0m by 14,0m.
3. The planned bord width is 6,5m.
4. The expected coal thickness is 3,0m.
5. Relative Density of the coal is 1,5t/m<sup>3</sup>.
- 6.

Co ordinates of A	Y= 960,000	X= 480,000
Co ordinates of B	Y= 1 030,000	X= 750,000
Co ordinates of C	Y= 390,000	X= 490,000
Co ordinates of D	Y= 280,000	X= 720,000
Angle	AXY	129:40:00
Angle	BXY	156:30:00
Angle	CYX	137:45:00
Angle	DYX	144:30:00

[100 marks]

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SURVEY III - OCTOBER 2011



PLAN - NOT TO SCALE

### EXAMPLE OF UNDERGROUND LAYOUT WITH 14.0m CENTRES

