MECS JOINT EXAMINATION

**MATHEMATICS**

**121/1**

**PAPER 1**

**END OF TERM 1 - APRIL, 2023**

Form 4

**MARKING SCHEME**

|  |  |  |  |
| --- | --- | --- | --- |
| NO. | WORKING | MARKS | COMMENTS |
| 1 |  | M1A1B1 |  |
|  |  | 3 |  |
| 2 |  | M1M1A1 |  |
|  |  | 3 |  |
| 3 |  | B1M1A1B1(for both) |  |
|  |  | 4 |  |
| 4 | 1.
2. 180-120=600
 | M1A1B1 |  |
|  |  | 3 |  |
| 5 | Area of rhombus= | M1(both)M1A1 |  |
|  |  | 3 |  |
| 6 |  | B1B1B1 |  |
|  |  | 3 |  |
| 7 | C:\Users\hp\AppData\Local\Microsoft\Windows\INetCache\Content.Word\IMG_20230329_100727_259.jpg | B1B1B1 | √position of C√position of D√labelling of prism and broken hidden lines |
|  |  | 3 |  |
| 8 | 1. - =

 = 1 -  =   =   n =5 | M1M1A1  |  |
|  |  | **3** |  |
| 9 |  =13 | M1M1A1 |  |
|  |  | 3 |  |
| 10 | a)C:\Users\hp\AppData\Local\Microsoft\Windows\INetCache\Content.Word\CamScanner 03-27-2023 11.23.jpgB 5km 4km b) (i) 7km (ii)2260 | B1B1B1B1 |  |
|  |  | 4 |  |
| 11 |

|  |  |
| --- | --- |
| 2 | 2250 |
| 3 |  1125 |
| 3 | 375 |
| 5 | 125 |
| 55 | 2551 |

 | M1M1A1(for all)  | Table  |
|  |  | 3 |  |
| 12 | At 9.50am , the bus has travelledThe distance between the two vehicles at 9.50amRel . speed = 120 km/ h.Time taken to meet= Distance covered by the bus=Distance from kitale to the meeting point=50+50=100km | B1M1A1 |  |
| 13 |  | B1B1B1 |  |
|  |  | 3 |  |
| 14 |  | M1M1A1 |  |
|  |  | 3 |  |
| 15 | Distance = area under the curve= ( ½ x 4 ( 20+30) + 5 x 30 + (½ x 3 x 30) m= 100 + 150 + 45= 295m | M1M1A1 |  |
|  |  | 3 |  |
| 16 |  | M1M1A1 |  |
|  |  | 3 |  |
|  | SECTION II |  |  |
| 17 | (a)Commission(b)  (c) =10800Difference=680000-669840=10160 | B1(2nd & 3rd) B1(4th & 5th )B1M1M1A1 M1M1A1 |  |
|  |  | 10 |  |
| 18 | h1h2 20b)  h 320 220 X | M1M1M1A1M1M1M1A1M1A1 |  |
|  |  | 10 |  |
| 19 | xkm 2.5km ykm1. (i)

  (ii)   (iii) Time  | B1(must be right angled triangle)B1B1M1M1M1A1M1A1 M1A1 |  |
|  |  | 10 |  |
| 20 | (b)(c) Equation of BCEquation of CD(d) Coordinates of B( | M1A1M1A1M1A1M1A1M1A1 |  |
|  |  | 10 |  |
| 21 | (a) (i) Length = 2x - 120 Width = x – 120 Volume = (2x – 120) (x – 120) 60 = (2x2 – 240x – 120x + 14400)60 = 120x2 – 14400x – 7200 + 864000 = 120x2 – 21600x +864000 . (ii) Volume = 1920 000 cm3 (2x – 120) (x – 120) 60 = 1,920, 000 (2x – 120) (x – 120) = 32 000 2x2 – 240x – 120x +14400 = 32 000 2x2 – 240x – 120x = 17600 x2 – 180x – 8800 = 0 x= 180 +√ (-180)2 – 4 x 1 x -8800 2 x1 = 180 + √32400 + 35200 2 = 180 + 260 2 Either x = 220 or -40 x ≠ -40 x = 220 cm Length = 440 cm  (b) Area of sheet = 440 x 220  = 96 800 cm2 = 96 800 = 9.68m2 10 000 Cost = 9.68 x 1000 = sh 9680 Labour = 300 x 6 = sh 1800 Total cost = 9680 + 1800 = sh 11480 S.P. = 130 x sh.11480 100 = sh 14924 | B1M1A1M1M1M1A1B1M1A1 |  |
|  |  | 10 |  |
| 22 | 1. Juma’s earnings before increase:

 112% → 8400 100% → 8400 x 100/112=7500Akinyi’s earnings before increase;3/5X 7500Increase in Akinyi’s earnings= 14100 – 8400 = 57005700-4500=1200% increase in Akinyi’s earnings=1200/4500 x 100= 26 2/3 =26.671. No. of bags bought

= 14100/1175= 12 bagsProfit = (1762.50 -1175)x12= 7050Ratio 5700 : 8400 = 19 :28Profit for Akinyi : 7050 x 19/47 =2850Total earning for Akinyi:5700+2850= 8550 | M1A1M1A1M1A1B1M1M1A1 |  |
|  |  | 10 |  |
| 23 |  =  =  =  =  = Cost of 1 bag of beans sh. 2000Cost of 1 bag of rice sh. 1500c)Cost of 1 bag of beans =2000 × = 1600Cost of 1 bag of rice = 1500 × = 1800 1600 × 20 + 1800 × 30 = sh. 86000 | B1M1B1 M1M1A1B1M1(for any correct)M1A1  |  |
|  |  | **10** |  |
| 24 | (a) 2 = 2 x x 35 x 35 = 7700cm2(b)  = 120 + 2x = 5xx = 40cmSlant height= 60 + 40 =100cm(c) -  x 35 x 100 - x 14 x 40 11000 – 1760 = 9240cm2Base area () = x 14 x 14 = 616cm2Total surface area7700 + 616 + 9240 = 17,556cm2 | B1 ✓Area M1 ✓ExpressionM1✓ Equation A1✓AccuracyB1M1 ExpressionM1A1M1A1 |  |
|  |  | 10 |  |