MECS JOINT EXAMINATION

**MATHEMATICS**

**121/1**

**PAPER 1**

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

Form 4

**MARKING SCHEME**

|  |  |  |  |
| --- | --- | --- | --- |
| NO. | WORKING | MARKS | COMMENTS |
| 1 |  | M1  A1  B1 |  |
|  |  | 3 |  |
| 2 |  | M1  M1  A1 |  |
|  |  | 3 |  |
| 3 |  | B1  M1  A1  B1(for both) |  |
|  |  | 4 |  |
| 4 | 2. 180-120=600 | M1  A1  B1 |  |
|  |  | 3 |  |
| 5 | Area of rhombus= | M1(both)  M1  A1 |  |
|  |  | 3 |  |
| 6 |  | B1  B1  B1 |  |
|  |  | 3 |  |
| 7 | C:\Users\hp\AppData\Local\Microsoft\Windows\INetCache\Content.Word\IMG_20230329_100727_259.jpg | B1  B1  B1 | √position of C  √position of D  √labelling of prism and broken hidden lines |
|  |  | 3 |  |
| 8 | 1. - =   = 1 -  =  =    n =5 | M1  M1  A1 |  |
|  |  | **3** |  |
| 9 | =13 | M1  M1  A1 |  |
|  |  | 3 |  |
| 10 | a)C:\Users\hp\AppData\Local\Microsoft\Windows\INetCache\Content.Word\CamScanner 03-27-2023 11.23.jpg  B  5km 4km    b) (i) 7km  (ii)2260 | B1  B1  B1  B1 |  |
|  |  | 4 |  |
| 11 | |  |  | | --- | --- | | 2 | 2250 | | 3 | 1125 | | 3 | 375 | | 5 | 125 | | 5  5 | 25  5  1 | | M1  M1  A1(for all) | Table |
|  |  | 3 |  |
| 12 | At 9.50am , the bus has travelled    The distance between the two vehicles at 9.50am    Rel . speed = 120 km/ h.  Time taken to meet=  Distance covered by the bus  =  Distance from kitale to the meeting point=50+50=100km | B1  M1  A1 |  |
| 13 |  | B1  B1  B1 |  |
|  |  | 3 |  |
| 14 |  | M1  M1  A1 |  |
|  |  | 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 | M1  M1  A1 |  |
|  |  | 3 |  |
| 16 |  | M1  M1  A1 |  |
|  |  | 3 |  |
|  | SECTION II |  |  |
| 17 | (a)Commission  (b)    (c)  =10800  Difference=680000-669840=10160 | B1(2nd & 3rd)  B1(4th & 5th )  B1  M1  M1  A1  M1  M1  A1 |  |
|  |  | 10 |  |
| 18 | h1  h2  20  b)  h  320 220  X | M1  M1  M1  A1  M1  M1  M1  A1  M1  A1 |  |
|  |  | 10 |  |
| 19 | xkm 2.5km  ykm   1. (i)     (ii)    (iii) Time | B1(must be right angled triangle)  B1  B1  M1  M1  M1  A1  M1  A1  M1  A1 |  |
|  |  | 10 |  |
| 20 | (b)  (c) Equation of BC  Equation of CD  (d) Coordinates of B  ( | M1  A1  M1  A1  M1  A1  M1  A1  M1  A1 |  |
|  |  | 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 | B1  M1  A1  M1  M1  M1  A1  B1  M1  A1 |  |
|  |  | 10 |  |
| 22 | 1. Juma’s earnings before increase:   112% → 8400  100% → 8400 x 100/112=7500  Akinyi’s earnings before increase;  3/5X 7500  Increase in Akinyi’s earnings  = 14100 – 8400 = 5700  5700-4500=1200  % increase in Akinyi’s earnings  =1200/4500 x 100  = 26 2/3 =26.67   1. No. of bags bought   = 14100/1175  = 12 bags  Profit = (1762.50 -1175)x12  = 7050  Ratio 5700 : 8400 = 19 :28  Profit for Akinyi : 7050 x 19/47 =2850  Total earning for Akinyi:  5700+2850= 8550 | M1  A1  M1  A1  M1  A1  B1  M1  M1  A1 |  |
|  |  | 10 |  |
| 23 | =  =  =  =    =    Cost of 1 bag of beans sh. 2000  Cost of 1 bag of rice sh. 1500  c)Cost of 1 bag of beans =2000 ×  = 1600  Cost of 1 bag of rice = 1500 ×  = 1800    1600 × 20 + 1800 × 30  = sh. 86000 | B1  M1  B1 M1  M1  A1  B1  M1(for any correct)  M1  A1 |  |
|  |  | **10** |  |
| 24 | (a) 2 = 2 x x 35 x 35 = 7700cm2  (b)  =  120 + 2x = 5x  x = 40cm  Slant height= 60 + 40  =100cm  (c) -  x 35 x 100 - x 14 x 40  11000 – 1760 = 9240cm2  Base area ()  = x 14 x 14 = 616cm2  Total surface area  7700 + 616 + 9240 = 17,556cm2 | B1 ✓Area  M1 ✓Expression  M1✓ Equation  A1✓Accuracy  B1  M1 Expression  M1  A1  M1A1 |  |
|  |  | 10 |  |