**MARKING SCHEME**

**FORM III OPENER EXAM 2021**

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| **No** | **Calculations** | **Marks** |
| 1 | 81x+1 + 34x = 24634(x+1) + 34x = 24634x x 34 + 34x = 246Let 34x = y81y +y= 24682y=24682 82y=334x=31$\frac{4x}{4}$ = $\frac{1}{4}$x=$\frac{1}{4}$ | M1M1A1 |
| 2 | 35x – 2y = 3532x-y=315*x* – 2y =5x22*x* – y = 1 x510*x* – 4y = 1010*x* – 5y = 5 - y = 52*x* – 5= 1$\frac{2x}{2}= \frac{6}{2}$ x=3 | M1M1A1 |
| 3 |  $\sqrt{6.458x10^{-2}}$ = 6.5613 x 10-1 = 0.654132 ($\frac{1}{4.327 x 10^{-1}}$) = 2 ( 0.2319 x 101) = 4.638(4.638)2 = 21.511 0.65413 + 21.511 = 22.16513 | M1M1M1A1 |
| 4 | 3y + 2x = 5$$\frac{3y}{3}= \frac{5}{3}- \frac{2x}{3}$$y=-$\frac{2}{3}x+ \frac{5}{3}$m1= -$\frac{2}{3}$m2=$\frac{3}{2}$$$\frac{-k-1}{2+2}= \frac{3}{2}$$-2k – 2= 12-2k=12 + 2K= -7 | M1M1A1 |
| 5 |  If 4 = 64 3 = ?= $\frac{3 x 64}{4}$ = 48cmV.sf=($ \frac{4}{3} $)3 = $\frac{64}{27}$If 27 = 810 64 = ?$\frac{64 x 810}{27}$ = 1920g | M1M1A1 |
| 6 | 3y – 30 + 7y + 50 = 90$$\frac{10y}{10}= \frac{70}{10}$$Y=7 | M1A1 |
| 7 | Numerator(2y + x) (2y – x)Denominator (2*x*2 – 4xy) + ( 3xy – 6y2)2x(x – 2y) + 3y( x – 2y)(2x +3y) (x+2y)$\frac{\left(2y+x\right)(2y-x)}{\left(2y+3y\right)-1(2y-x)}$ = $\frac{2y+x}{-2x-3y}$ | M1M1A1 |
| 8 | L1 = $\frac{x}{5}+ \frac{y}{3}=1$3*x* +5y =153*x* + 5y <15L2 = $\frac{x}{-3}+ \frac{y}{3}=1$*x – y* = -3*x – y ≥* -3L3 y= -3 y≥ -3 | M1M1A1 |
| 9 | C:\Users\JOHN MATHENGE\Documents\a.jpgPQ=-2i – 3j + k + 3i – 2j + 2k = I – 5j + 3k$\sqrt{(1)^{2}+(-5)^{2}+(3)^{2}}$ $\sqrt{34}$ = 5.831 | M1M1A1 |
| 10 | 1. R =$\frac{1}{0.003144-0.003130}$

 = 625001. $\frac{1}{0.00315-0.00313}$

 = 500001. 62500 – 50000

=12500 | M1M1A1 |
| 11 | 2*x* + $\frac{1}{2}x+x+110+130+160=\left(2x6-4\right)90$3.5*x* + 440=720$$\frac{3.5x}{3.5}= \frac{280}{3.5}$$*X*=80$$\frac{1}{2}x80=40$$ | M10A1 |
|  | **SECTION II** |  |
| 12 | 1. <APB = Sin ɵ = $\frac{4.5}{8}$

ɵ = Sin -1 0.5625=34.2 x2= 68.4°<AQB = Sin ɵ = $\frac{4.5}{6}$ ɵ = Sin -1 0.75=48.2 X2 = 96.4°1. $\frac{68.4}{360} x \frac{22}{7}x 8x8- \frac{1}{2}x8x8 Sin 68.4$

=8.47$$\frac{96.4}{360} x \frac{22}{7}x 6x6- \frac{1}{2}x6x6 Sin 96.4$$$$=12.41$$= 8.47 +12.41 = 20.881. $ \frac{1}{2}x8x8 Sin 68.4$ + $\frac{1}{2}x6x6 Sin 96.4$

$$=42.16$$=42.16 – 2088=21.26 | M1A1M1A1M1A1M1A1M1A1 |
| 14 | 1. 75 x$\frac{12}{60}=15km$
2. $\frac{15}{20}=45 minutes$
3. 95 x $\frac{3}{4}=71.25km$
 | M1 A1M1 A1 M1 A1M1 A1 M1 A1 |
| 15 | 1. $\frac{20}{3}=6\frac{2}{3}$m/s
2. -$\frac{20}{3}= 6\frac{2}{3}$m/s
3. $\frac{1}{2} \left(4+10\right)20=140m$
4. $\frac{1}{2} \left(4+1\right)20$ = 50m
5. Speed= $\frac{140}{10}=14\frac{m}{s}$
6. Distance = 20 x 4 = 80m
 | B1 B1 M1 A1M1 A1M1 A1M1 A1 |