

END OF TERM 1R 2016 EXAM
FORM 1 MATHEMATICS MARKING SCHEME

1.
$$\frac{\frac{5}{2} + \frac{1}{5} \div (\frac{5}{6} \times \frac{12}{5})}{\frac{17}{10}}$$

$$= \frac{\frac{5}{2} + \frac{1 \times 1}{5 \times 2}}{\frac{17}{10}} = \frac{13}{5} \div \frac{17}{10} \quad \checkmark \text{ M1}$$

$$= \frac{13 \times 10}{5 \times 17} \quad \checkmark \text{ M1}$$

$$= 1\frac{9}{17} \quad \checkmark \text{ A1}$$

2. let the no. of bags be x

hospital $-\frac{1}{4}x$

School $-\frac{1}{2} \times \frac{3}{4}x = \frac{3}{8}x$

Green grove $-\frac{1}{3} \times \frac{3}{8}x = \frac{1}{8}x$

$$\text{Total distributed} = \frac{1}{4}x + \frac{3}{8}x + \frac{1}{8}x = \frac{3}{4}x \quad \checkmark \text{ M1}$$

$$\frac{1}{4}x - \frac{1}{8}x = 6 \quad \checkmark \text{ M1}$$

$$\frac{1}{8}x = 6$$

$$\therefore x = 48 \text{ bags} \quad \checkmark \text{ A1}$$

3. $5a - 4b - 2[a - (2b + c)]$

$$= 5a - 4b - 2[a - 2b - c] \quad \checkmark \text{ M1}$$

$$= 5a - 4b - 2a + 4b + 2c$$

$$= 3a + 2c \quad \checkmark \text{ A1}$$

$$\begin{array}{r}
 4. \quad \frac{4x4 + 20}{-6x2 - 6} \quad \checkmark \quad M1 \\
 = \frac{16 + 20}{-12 - 6} \\
 = \frac{36}{-18} \quad \checkmark \quad M1 \\
 = -2 \quad \checkmark \quad A1
 \end{array}$$

③

$$5 \quad (g) \quad 7532 \quad \checkmark \quad B1$$

$$\begin{array}{l}
 (h) \quad \text{Total value} = 5 \times 100 \quad \checkmark \quad M1 \\
 \quad \quad \quad = 500 \quad \checkmark \quad A1
 \end{array}$$

②

$$\begin{array}{l}
 6. \quad \text{Remainder on Thursday} = 1948 - 750 = 1198 \quad \checkmark \quad B1 \\
 \quad \text{Remainder on Friday} = 1198 - (150 + 240) = 208 \quad \checkmark \quad B1 \\
 \quad \text{No. of Oranges sold on Saturday} = 208 + 560 = 768 \quad \checkmark \quad A1 \quad ④ \\
 \quad \text{Amount of Money on Saturday Sales} = 768 \times 8 = \text{Sh } 6144 \quad \checkmark \quad B
 \end{array}$$

$$\begin{array}{r|l}
 7/ & 2 \quad 48 \quad 60 \\
 & \underline{2 \quad 24 \quad 30} \\
 & 3 \quad 12 \quad 15 \\
 & \underline{\quad \quad 4 \quad 5}
 \end{array}$$

✓ B1

$$\begin{array}{l}
 \text{C.S.} = 2^2 \times 3 = 12 \quad \checkmark \quad B1 \\
 \text{Area} = 12 \times 12 = 144 \quad \checkmark \quad B1
 \end{array}$$

$$8. \begin{array}{c|ccc} 3 & 9 & 15 & 21 \\ 3 & 3 & 5 & 7 \\ 5 & 1 & 5 & 7 \\ 7 & 1 & 1 & 7 \\ & 1 & 1 & 1 \end{array}$$

$$Lcm = 3 \times 3 \times 5 \times 7 = 315 \text{ Min. } \checkmark M1$$

$$= 5 \text{ h } 15 \text{ Min.}$$

$$\text{They last met at} = 11:00 \text{ p.m.} - 5 \text{ h } 15 \text{ } \checkmark M1$$

$$= 5:45 \text{ p.m. } \checkmark A1 \quad 3$$

9. Makoka : Ngau : Odhiambo

$$2 : 3$$

$$2 : 5$$

$$M : N : O = 4 : 6 : 15 \checkmark B1$$

$$\text{Odhiambo's contribution} = \frac{15}{25} \times 120,000 \checkmark M1$$

$$= 72,000 \checkmark A1 \quad (3)$$

$$10. \begin{cases} 2t + 3s = 390 \\ 5t + 2s = 810 \end{cases} \checkmark \text{ for 2 eqns. } B1$$

$$4t + 6s = 780$$

$$15t + 6s = 2430$$

$$11t = 1650$$

$$t = \frac{1650}{11} = 150 \checkmark B1$$

$$2 \times 150 + 3s = 390$$

$$3s = 90$$

$$s = 30 \checkmark B1$$

$\therefore$ 1 part A flower with sh150 and 1 part B sh30 (3)

$$11. \quad \frac{1}{4x} = \frac{5}{6x} - 7$$

$$12x \times \frac{1}{4x} = \frac{5}{6x} \times 12x - 7 \times 12x \quad \checkmark M1$$

$$3 = 10 - 84x$$

$$84x = 7 \quad \checkmark M1$$

$$x = \frac{7}{84} = \frac{1}{12} \quad \checkmark A1 \quad 3$$

$$12. \quad \frac{0.18 \times 4}{\sqrt{3.24 \times 4}}$$

$$\sqrt{3.24 \times 4} = 2\sqrt{3.24}$$

$$= 2\sqrt{\frac{324}{100}}$$

$$= 2 \times \frac{18}{10} = 2 \times 1.8 \quad \checkmark A1$$

$$\frac{0.18 \times 4}{\sqrt{3.24 \times 4}} = \frac{0.18 \times 4^2 \times 10}{2 \times 1.8 \times 10} \quad \checkmark M1$$

$$= \frac{1.8 \times 2}{1.8}$$

$$= 0.1 \times 2 = 0.2 \quad \checkmark A1 \quad (3)$$

$$13. \quad \begin{array}{r|rrr} 2 & 27 & 30 & 45 \\ 3 & 27 & 15 & 45 \\ 3 & 9 & 5 & 15 \\ 3 & 3 & 5 & 5 \\ 5 & 1 & 5 & 5 \\ & 1 & 1 & 1 \end{array} \quad \checkmark M1$$

$$LCM = 2 \times 3^3 \times 5 = 270 \quad \checkmark M1$$

$$n = 270 + 3 = 273 \quad \checkmark A1 \quad (3)$$

14(a) 3137 ✓ B1

(b) The no. is 4964 ✓ B1

$$\begin{aligned}\text{Difference} &= 4964 - 3137 \\ &= 1827 \quad \checkmark \quad \text{B1} \quad (3)\end{aligned}$$

15. No. of hrs = $4 \times 24 + (1845 - 0445)$ ✓ M1
 $= 96 + 14 = 110 \text{ hrs.}$

Time left = $110 \times 0.5 = 55 \text{ min.}$ ✓ M1

Time = $1845 - 55 = 1750 \text{ h}$
 $= 550 \text{ p.m.}$ ✓ A1 (3)

16. $\frac{3}{3} = \frac{16}{24}$

$\frac{7}{12} = \frac{14}{24}$

$\frac{5}{8} = \frac{15}{24}$

All equivalent fractions ✓ B2 ~~M1~~

Any 2 ✓ B1 ~~M1~~

In ascending order $\frac{7}{12}, \frac{5}{8}, \frac{2}{3}$ ✓ B1

$$17 \text{ (a) Area} = \frac{1}{2} \times 4 \times 6 \quad \checkmark \quad M1 M1$$

$$= 12 \text{ cm}^2 \quad \checkmark \quad A1$$

$$(b) \frac{1}{2} \times 10 \times h = 12 \quad \checkmark \quad M1$$

$$5h = 12$$

$$h = \frac{12}{5} \quad \checkmark \quad M1$$

$$= 2.4 \text{ cm} \quad \checkmark \quad A1$$

$$\therefore \text{length of fr} = 2.4 \text{ cm} \quad \checkmark \quad B1$$

$$(c) \frac{1}{2} \times 6 \times DC = 24 \quad \checkmark \quad M1$$

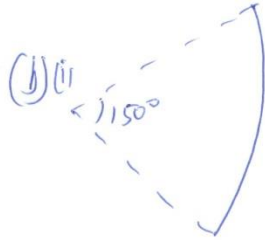
$$3DC = 24 \quad \checkmark \quad M1$$

$$DC = \frac{24}{3}$$

$$= 8 \text{ cm} \quad \checkmark \quad A1$$

10

$$\begin{aligned}
 18. (i) \text{ Area} &= \frac{1}{2}(40+14) \times 10 \quad \checkmark \text{ M1} \\
 &= \frac{1}{2} \times 56 \times 10 \\
 &= 280 \text{ cm}^2 \quad \checkmark \text{ A1}
 \end{aligned}$$



$$\begin{aligned}
 L &= \frac{150}{360} \times \frac{22}{7} \times 2 \times 10.5 \quad \checkmark \text{ M1} \\
 &= 27.5 \text{ cm} \quad \checkmark \text{ A1}
 \end{aligned}$$

$$(ii) 2\pi r = 27.5 \quad \checkmark \text{ M1}$$

$$\frac{2 \times 22}{7} \times r = 27.5$$

$$r = \frac{27.5 \times 7}{44} \quad \checkmark \text{ M1}$$

$$= 4.375 \quad \checkmark \text{ A1}$$

(c) Internal dimensions are $11 \times 6 \quad \checkmark \text{ B1}$

$$\begin{aligned}
 \text{Area of path} &= 15 \times 10 - 11 \times 6 \quad \checkmark \text{ M1} \\
 &= 150 - 66 \\
 &= 84 \text{ m}^2 \quad \checkmark \text{ A1}
 \end{aligned}$$

$$19(a) (i) \text{ Amount} = \frac{30}{100} \times 86400 \quad \checkmark M1$$

$$= Sh 25920 \quad \checkmark A1$$

$$(ii) \text{ Nzau: Marese} = 112000 : 128000 \quad \checkmark M1$$

$$= 7 : 8 \quad \checkmark A1$$

$$(iii) \text{ Amount retained} = \frac{40}{100} \times 86400 \quad \checkmark M1$$

$$= Sh 34560 \quad \checkmark A1$$

$$(b) \text{ Nzau received} = \frac{7}{15} \times 25920 + \frac{1}{2} \times 25920 \quad \checkmark M1$$

$$= 12096 + 12960$$

$$= Sh 25056 \quad \checkmark A1$$

$$\text{Marese received} = \frac{8}{15} \times 25920 + 12960 \quad \checkmark M1$$

$$= 13824 + 12960$$

$$= Sh 26784 \quad \checkmark A1$$

$$20(a) \text{ Mass of water} = 3000 \times 1 \quad \checkmark M1$$

$$= 3000g \quad \checkmark A1$$

$$(ii) \text{ Mass of alcohol} = 12000 \times 0.8 = 9600g \quad \checkmark B1$$

$$(iii) \text{ Density of mixture} = \frac{3000 + 9600}{15000} \quad \checkmark M1$$

$$= \frac{12600}{15000}$$

$$= 0.84g/cm^3 \quad \checkmark A1$$

$$(b)(i) \text{ Area of x-section} = \frac{1}{2} \times 2 \times 2.5 \quad \checkmark M1$$

$$= 2.5m^2 \quad \checkmark A1$$

$$(ii) \text{ Vol. of prism} = 2.5 \times 3 = 7.5m^3 \quad \checkmark B1$$

$$(iii) \text{ density} = \frac{3.4}{7.5} \quad \checkmark M1$$

$$= 0.4533kg/m^3 \quad \checkmark A1$$

$$21. (a) 0.185 = \frac{185}{1000} \quad \checkmark M$$

$$= \frac{37}{200} \quad \checkmark A$$

$$(b) \frac{3\frac{1}{2} + 2\frac{3}{8}}{4\frac{1}{3} - 2\frac{5}{12}}$$

$$\begin{aligned} 3\frac{1}{2} + 2\frac{3}{8} &= \frac{7}{2} + \frac{19}{8} \\ &= \frac{28+19}{8} \\ &= \frac{47}{8} \quad \checkmark M \end{aligned}$$

$$\begin{aligned} 4\frac{1}{3} - 2\frac{5}{12} &= \frac{13}{3} - \frac{29}{12} = \frac{52-29}{12} \\ &= \frac{23}{12} \quad \checkmark M \end{aligned}$$

$$\begin{aligned} \frac{47}{8} \div \frac{23}{12} &= \frac{47}{8} \times \frac{12}{23} \\ &= \frac{141}{46} \end{aligned}$$

$$= 3\frac{3}{46} \quad \checkmark A$$

$$\begin{aligned} (c) \text{Amount paid in 3 months} &= 25000 + 15000 + 34000 \quad \checkmark M \\ &= 8474000 \quad \checkmark A \end{aligned}$$

$$\begin{aligned} \text{Amount remaining} &= 150000 - 74000 \\ &= 8476000 \quad \checkmark B \end{aligned}$$

$$\begin{aligned} \text{Amount paid per month} &= \frac{76000}{2} \quad \checkmark M \\ &= 8438000 \quad \checkmark A \end{aligned}$$

$$22(a) \ 8.457^2 = 71.40$$

$$\begin{array}{r} 12 \\ \hline 71.52 \end{array}$$

✓ M1
✓ A1

$$(b) \ 567.4^2 = (5.674 \times 10^2)^2$$

$$= 5.674^2 \times 10^4$$

$$= 32.19 \times 10^4$$

$$= 321900 \approx 3.219 \times 10^5$$

✓ M1
✓ A1

$$(c) \ \sqrt{456.7} = \sqrt{4.567 \times 100}$$

$$= 1.37 \times 10$$

$$= 13.70$$

✓ M1
✓ M1
✓ A1

$$(d) \ \sqrt{0.7893} = \sqrt{\frac{78.93}{100}}$$

$$= \frac{8.843}{10}$$

$$= 0.8843$$

✓ M1
✓ M1
✓ A1