

# **SECONDARY EXAM END TERM 1 EXAM 2017**

## **MARKING SCHEME-MATHEMATICS**

### **Form 2**

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FORM IT MATHEMATICS  
MARKING SCHEME

1.  $\frac{0.064 \times 0.125 \times 10^6}{0.008 \times 0.001 \times 10^6}$  ✓

$= \frac{64 \times 125}{8 \times 1}$

$= 3 \sqrt[3]{1000}$   
 $= (10^3)^{1/3}$  ✓  
 $= 10$  ✓

3

2.

$\frac{3}{4} + \frac{12}{7} = \frac{4}{7}$  of  $\frac{7}{3}$

$\left(\frac{10}{7} - \frac{5}{8}\right) \times \frac{2}{3}$

$\frac{3}{4} + \frac{12}{7} = \left(\frac{4}{7}\right)$  of  $\frac{7}{3}$

$\frac{4}{7} \times \frac{7}{3} = \frac{4}{3}$

$\frac{3}{4} + \frac{12}{7} = \frac{4}{3}$

$\frac{14}{7} \times \frac{3}{4} = \frac{9}{7}$

$\frac{3}{4} + \frac{9}{7} = \frac{21 + 36}{28}$

$= \frac{57}{28}$  ✓

$\frac{10}{7} - \frac{5}{8} = \frac{80 - 35}{56}$

$= \frac{45}{56} \times 2$

$\frac{57}{28} \times \frac{28}{16}$

$= 3 \frac{4}{5}$  ✓

3

3.  $= 90(12 - 4)$

$= 90 \times 8$

$= 720$

$20 + 40 + 110 + 130 + 22 + 16 + \frac{1}{2}x = 720$  ✓

$\frac{7}{2}x + 440 = 720$

$\frac{7}{2}x = 280$

$x = 280 \times \frac{2}{7}$

$= 80$  ✓

Largest angle  $= 80 \times 2$   
 $= 160^\circ$  ✓

3

4.

$\left(\frac{27}{64}\right)^{-1/3} \times \left(\frac{2}{-3}\right)^2 \times \left(\frac{1}{16}\right)^{-1/4}$

$\left(\frac{64}{27}\right)^{1/3} \times \left(\frac{2}{3}\right)^2 \times \left(\frac{16}{1}\right)^{1/4}$  ✓

$\left(\frac{2^6}{3^3}\right)^{1/3} \times \frac{4}{3} \times (2^4)^{1/4}$

$= \frac{2^2}{3} \times \frac{4}{3} \times 2$

3

P

5. ~~3x + 4y~~  
 $3x + 5y = 129250$   
 $2x - 4y = 22000$   
 $2(3x + 5y) = 129250$   
 $3(2x - 4y) = 22000$  } ✓  
 $6x + 10y = 258500$   
 $6x - 12y = 66000$   
 $22y = 192500$   
 $y = 8750$  ✓  
 $2x = 22000 + 4(8750)$   
 $x = 28500$  ✓

6.  $3.375^3 \times 10^{-3}$   
 $= 38.44 \times 10^{-3}$   
 $= 0.03844$  ✓  
 $\sqrt[3]{3.375}$   
 $= 3.375^{\frac{1}{3}} \times 10^{2\frac{1}{2}}$   
 $= 18.37$  ✓  
 $\frac{3}{0.03844 - 18.37}$   
 $= \frac{3}{-18.33}$   
 $= 3 \times \frac{1}{-1.833 \times 10^{-1}}$   
 $= 3 \times 0.5456 \times 10^{-1}$  ✓  
 $= -0.1637$  ✓

7. c d  
 10 20  
 8 ? (2)  
 $\frac{20 \times 10}{8}$  ✓  
 $= 25 \text{ days}$  ✓

8.  $\sqrt[4]{2849 \times 0.00574}$   
 $36.89$

| No                     | Log                         |
|------------------------|-----------------------------|
| 2849                   | 3.4547                      |
| 0.00574                | 3.7589                      |
|                        | <u>1.2136</u>               |
| 36.89                  | 1.5669                      |
|                        | <u>1.6467</u>               |
|                        | $1.6467 \times \frac{1}{4}$ |
|                        | <u>4 + 3.6467</u>           |
|                        | 4                           |
| $0.816 \times 10^{-1}$ | $\sqrt[4]{1.9117}$          |
| $= 0.816$ ✓            | (4)                         |



$$9. \text{ Volume} = \frac{4}{3} \pi r^3$$

$$= 179.59 \text{ cm}^3 \checkmark$$

$$\text{mass} = 179.59 \times 10$$

$$= 1795.9 \text{ g} \checkmark$$

$$= 1.7959 \text{ kg} \checkmark$$

(3)

$$10. \frac{7800 \times 87.5}{100} \checkmark$$

$$= 6825 \checkmark$$

$$6825 \times \frac{2}{100}$$

$$= 136.5 \checkmark$$

(3)

$$11. \frac{x-2}{x} - \frac{3x+2}{4x} = \frac{\quad}{4x}$$

$$\frac{4(x-2) - (3x+2)}{4x}$$

$$\frac{4x-8-3x-2}{4x} \checkmark$$

$$\frac{x-10}{4x} \checkmark$$

$$b) \frac{x-10}{4x} = \frac{1}{2}$$

$$2(x-10) = 4x$$

$$2x-20 = 4x$$

$$-2x = 20$$

$\checkmark$

(3)

$$12. 30 = 2 \times 3 \times 5 \checkmark$$

$$90 = 2^2 \times 3^2 \times 5^2 \checkmark$$

$$60 = 2^2 \times 3 \times 5 \checkmark$$

$$150 = 2 \times 3 \times 5^2 \checkmark$$

$$110 = 2 \times 5 \times 11 \checkmark$$

$$= 2 \times 9 \times 5$$

$$= 90 \checkmark$$

(4)

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$$14. d = x$$

$$m = 3x$$

in twelve yrs time

$$d = x + 12$$

$$m = 3x + 12$$

$$2(x+12) = 3x+12 \checkmark$$

$$2x+24 = 3x+12$$

$$x = 12 \checkmark$$

(3)

$$\text{man} = 12 \times 3$$

$$= 36 \checkmark$$

$$15. \frac{21 \times 360}{60}$$

a)

$$= 126 \checkmark$$

$$b) \frac{126}{360} \times 2 \pi r \times 8 \checkmark$$

b)

$$= 17.59 \text{ cm} \checkmark$$

(3)



$$16 \text{ Let } r = 5.818181$$

$$100r = 581.8181$$

$$99r = 576$$

$$r = \frac{576}{99}$$

$$= \frac{64}{11} \text{ or } 5\frac{9}{11}$$

SECTION B

$$17 \text{ (a)} \quad \frac{120}{100} \times 500 = \text{sh } 600 \quad \checkmark$$

$$\frac{130}{100} \times 600 = \text{sh } 780$$

$$\frac{150}{100} \times 780 = \text{sh } 1170 \quad \checkmark$$

$$\text{b) } R = \frac{130}{100} x = 1.3x$$

$$\frac{150}{100} \times 1.3x = 1.95x$$

$$\therefore 1.95x = 1560$$

$$x = \text{sh } 800$$

$$\text{c) } 1000 \times \frac{120}{100} \times \frac{130}{100} \times \frac{150}{100} = \text{sh } 2340$$

$$100 \Rightarrow 10\% \text{ reduction}$$

$$= \frac{90}{100} \times 2340$$

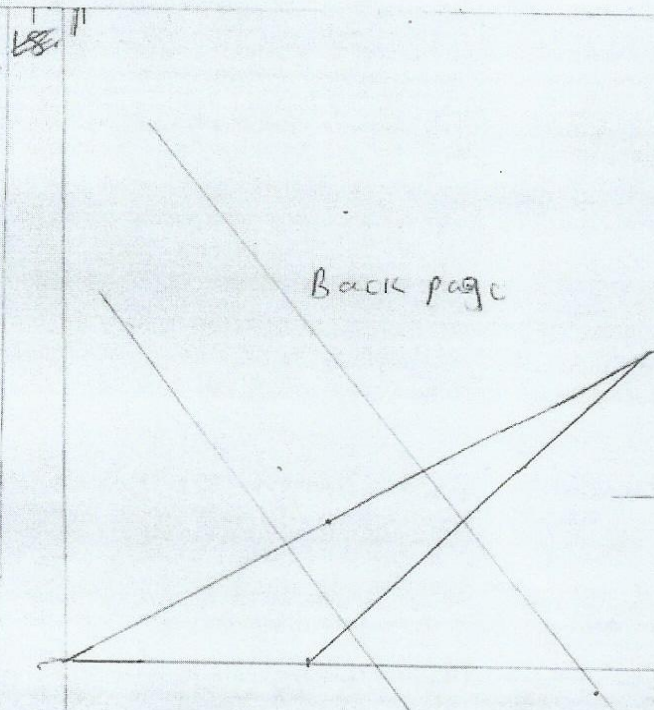
$$\text{S.P} = \text{sh } 2106 \quad \checkmark$$

B.P for retailer

$$= 1000 \times \frac{120}{100} \times \frac{130}{100}$$

$$= \text{sh } 1560 \quad \checkmark$$

$$\therefore \% \text{ profit} = \frac{2106 - 1560}{1560} \times 100 \quad \checkmark$$



$$19 \text{ Area of tank}$$

$$\text{(a)} \quad = 110 \times 10^4 \text{ cm}^2$$

Area of model

$$= 440 \text{ cm}^2$$

$$A.S.F = \frac{110 \times 10^4}{440}$$

$$= 2500 \quad \checkmark$$

$$L.S.F = \sqrt{2500}$$

$$= 50 \quad \checkmark$$

$$\text{Height of tank} = \frac{4 \times 50}{100} \quad \checkmark$$

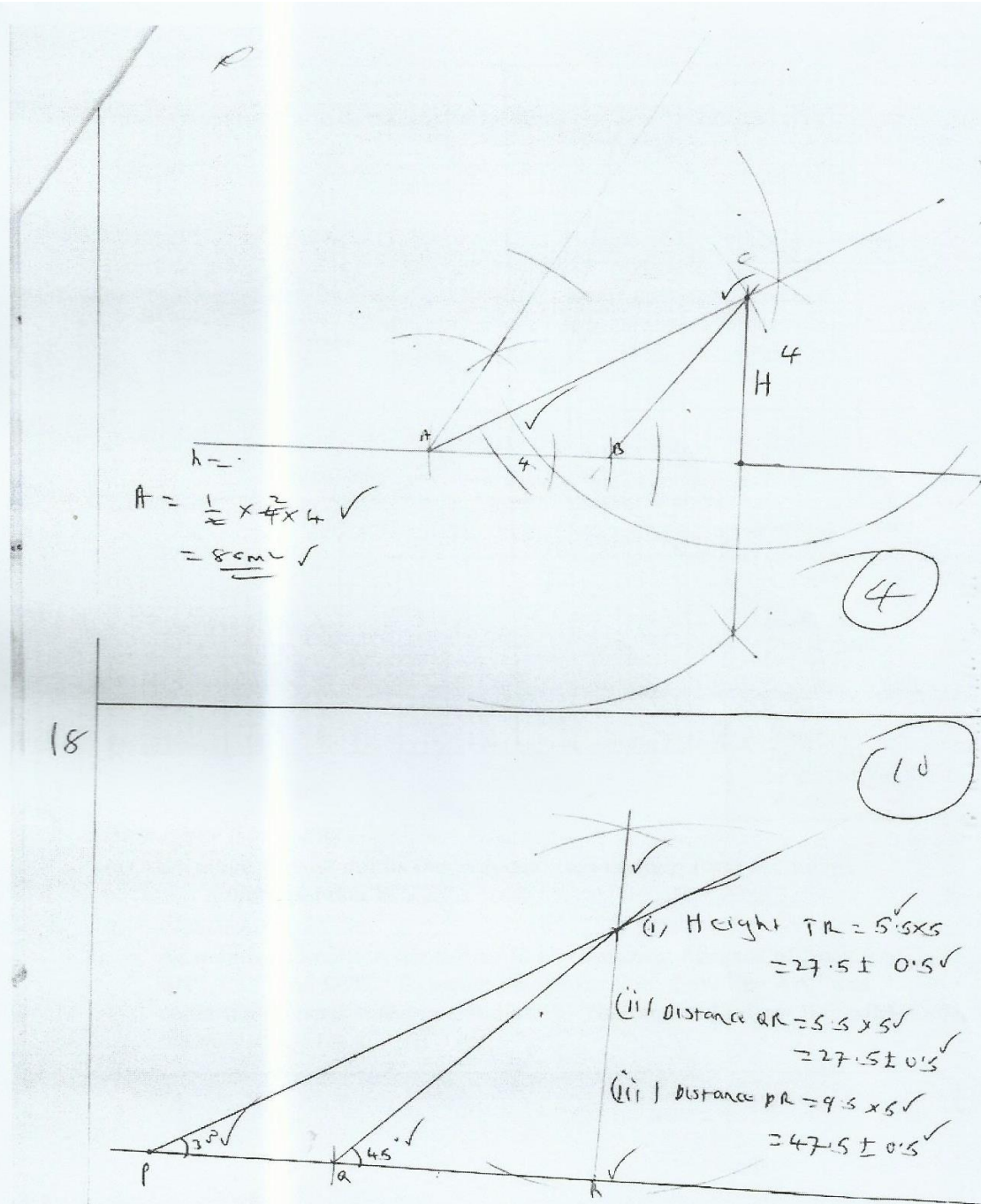
$$= 2 \text{ m} \quad \checkmark$$

$$\text{b) Diameter of model} = \frac{7 \times 100}{50}$$

$$= 14 \text{ cm} \quad \checkmark$$

$$\therefore \text{Volume of model} = \frac{4}{3} \pi r^2 h$$

$$= \frac{22}{7} \times 7 \times 7 \times 4 \quad \checkmark$$





$$c \quad V \text{ is } 50^3$$

$$= 125000 \checkmark$$

$$\therefore V = \frac{616 \times 125000}{10^6} \checkmark$$

$$= 77 \text{ M}^3 \checkmark \quad (10)$$

$$20 \quad m_1 = \frac{6-3}{-1-2} = 3 \checkmark$$

$$3 = \frac{y-3}{x+2}$$

$$y-3 = 3x+6$$

$$y = 3x+9 \checkmark$$

$$b) \quad m_2 = -\frac{1}{3} \checkmark$$

$$-\frac{1}{3} = \frac{y-6}{x+1}$$

$$x+3y = 17 \checkmark$$

$$c) \quad 3 = \frac{y-2}{x-1} \checkmark$$

$$y-2 = 3x-3$$

$$y = 3x-1$$

$$c = -1 \Rightarrow y \text{ intercept } \checkmark$$

$$0 = 3x-1$$

$$1 = 3x$$

$$x = \frac{1}{3} \Rightarrow x \text{ intercept } \checkmark$$

$$d \quad y = 3x-1$$

$$x+2y = 17$$

$$3x-y = 1 \quad \checkmark$$

$$x+3y = 17$$

$$9x-3y = 3$$

$$x+3y = 17$$

$$x = 2 \checkmark$$

$$y = 5$$

$$\text{point } (2, 5) \checkmark$$

Back page

(a) see graph (back page)

$$b) \quad A'(-6, 2), B'(-1, 1)$$

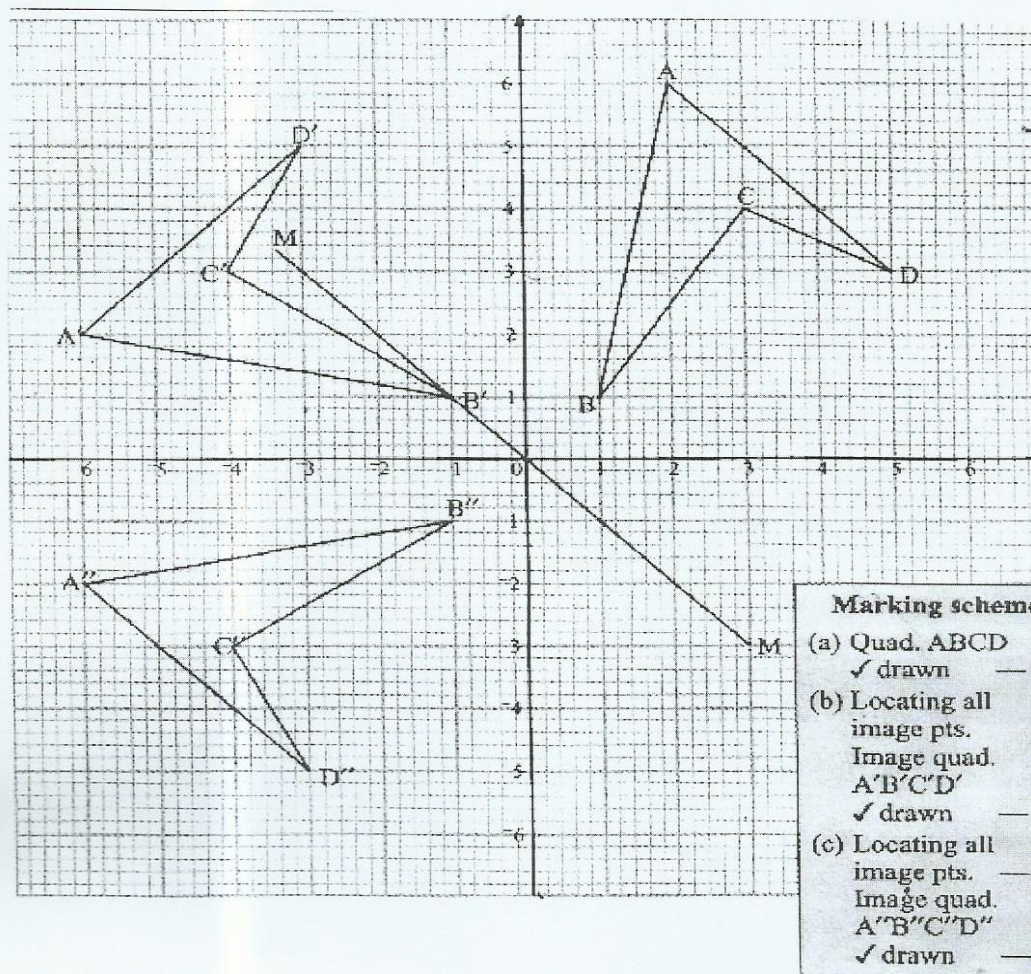
$$C'(-4, 3), D'(-3, 5)$$

$$(c) \quad A''(-6, -2), B''(-1, -1)$$

$$C''(-4, -3), D''(-3, -5)$$

$$d) \quad \text{even } y = -x \text{ or } y+x=0$$





*Note (cont'd from page 59)*

- (c) Locate all image points this way and join them to form the image quadrilateral  $A'B'C'D'$ .

## 2. Reflection

As mentioned earlier, the mirror line is the perp. bisector of lines  $AA''$ ,  $BB''$ ,  $CC''$  and  $DD''$ . To locate the mirror line, draw line  $AA''$  and construct its perp. bisector (mediator). The required mirror line  $MM$  is the mediator of  $AA''$ ,  $BB''$ , etc.