YEAR 2011 WORKING AND ANSWERS

SECTION A

1

$$= \frac{4 \times 12 \times 21}{3 \times 18 \times 14} = \frac{4}{3} = 1\frac{1}{3}$$

2

$$0.451 + 1.002 = 1.453$$

$$1.453 + 0 = 1.45$$

3

1h = 60min

1h	84min
2h	24min
− 1h	56min
0h	28min

Minutes: 60 + 24 = 84; 84 − 56 = 28

Hours: 2 − 1 = 1; 1 − 1 = 0

4

2. 6. 18. 54. 162 . 486

×3 ×3 ×3 ×3 ×3

5

$$\frac{3}{7} \times 21 = (21 \div 7) \times 3$$

$$= 3 \times 3$$

$$= 9$$

6

LCD after reducing = 28

$$\frac{9}{12} = \frac{3}{4} \times 28 = 21 \ldots\ldots (iii)$$

$$\frac{14}{49} = \frac{2}{7} \times 28 = 8 \ldots\ldots (ii)$$

$$\frac{21}{147} = \frac{1}{7} \times 28 = 4 \ldots\ldots (i)$$

$$Smallest\ fraction = \frac{21}{147}$$

7

$4s = 44cm$

$\frac{4s}{4} = \frac{44}{4}$

$s = 11cm$

A = S x S

= 11cm x 11cm

= 121cm²

8

$$= 50 - \left(\frac{30}{100} \times 50\right) litres$$

$$= 50litres - 15litres$$

$$= 35litres$$

9

$$= (6 \div 3)x^{2-1}y^{4-2}$$

$$= 2xy^2$$

10

$$= ab + 3c$$

$$= a \times b + 3 \times c$$

$$= 2 \times \bar{1} + 3 \times 3$$

$$= \bar{2} + 9$$

$$= 9 - 2$$

$$= 7$$

11

$$= \frac{5}{3} \times 18{,}000Frw$$

$$= 30{,}000Frw$$

12

$$P = S \times 8$$

$$= 6cm \times 8$$

$$= 48cm$$

13

2,000,000 = Two million

450,000 = four hundred fifty thousand

\+ 5 = five

2,450,005 = *Two million, four hundred fifty thousand, five.*

14

$$3men = 4kg$$

$$1man = \frac{4}{3}kg$$

$$12men = \left(\frac{4}{3} \times 12\right)kg$$

$$= 16kg$$

15

$$I = \frac{P \times T \times R}{100}$$

$$= \frac{3{,}000{,}000 \times 2 \times 10}{100}$$

$$= 600{,}000Frw$$

16

Teacher's guidance

17

$$A = \frac{b \times h}{2}$$

$$= \frac{4cm \times 7cm}{2}$$

$$= 14cm^2$$

18

$$P = C + D$$

$$= \frac{1}{2}\pi D + D$$

$$= \frac{1}{2} \times \frac{22}{7} \times 70cm + 70cm$$

$$= 110cm + 70cm$$

$$= 180cm$$

19

$$= \left(\frac{25-2}{2}\right) = \frac{22}{2} = 11years$$

20

$$200F = 1bk$$

$$1F = \frac{1}{200}bk$$

$$2{,}100F = \frac{1}{200} \times 2{,}100$$

$$= 10books\ and\ bal\ of\ 100F$$

21

$$V = S \times S \times S$$

$$= 6.3cm \times 6.3cm \times 6.3cm$$

$$= 250.047cm^3$$

22

$$550F = 1dollar$$

$$1F = \frac{1}{550}dollar$$

$$11{,}000{,}000F = \frac{1}{550} \times 11{,}000{,}000$$

$$= 20{,}000dollars$$

23

Difference is in the last two digits.

$$= (80 - 61) + 1$$

$$= 19 + 1$$

$$= 20notes$$

24

$$A = \frac{D_1 \times D_2}{2}$$

$$= \frac{12cm \times 18cm}{2}$$

$$= 96cm^2$$

25

$$= \frac{\sqrt{27 \times 75}}{5}$$

$$= \frac{\sqrt{2025}}{5}$$

$$= \frac{45}{5}$$

$$= 9$$

26

$$= 100\% + 10\% + 5\%$$

$$= 115\%$$

$$= \frac{115}{100} \times 110{,}000Frw$$

$$= 126{,}500Frw$$

27

1st year	2nd year
$= \frac{P \times T \times R}{100}$	$= \frac{P \times T \times R}{100}$
$= \frac{300{,}000 \times 1 \times 5}{100}$	$= \frac{315{,}000 \times 1 \times 5}{100}$
= 15,000Frw	= 15,750Frw
= 300,000 + 15,000	= 300,000 + 15,750
= 315,000Frw	= 330,750Frw

28 $TSA = 2LW + 2LH + 2WH$

$= 2(19 \times 12 + 19 \times 7 + 12 \times 7)\ cm^2$

$= 2(228 + 133 + 84)\ cm^2$

$= 2 \times 445 cm^2$

$= 890 cm^2$

29

B	+	M	=	Mix
10	+	20	=	30
x		140		160

$(10 \times x) + (140 \times 20) = (160 \times 30)$

$10x + 2{,}800 = 4{,}800$

$10x = 4{,}800 - 2{,}800$

$\frac{10x}{10} = \frac{2{,}000}{10}$

$x = 200 Frw/kg$

30 $6men = 2days$

$1man = (2 \times 6)days$

$4men = \left(\frac{2 \times 6}{4}\right) days$

$= 3days$

SECTION B

31

Part (a)

LCD = 10

$10\left(\frac{4x-2}{5}\right) = 10\left(\frac{x}{2}\right) + 10(2)$

$2(4x-2) = 5(x) + 10(2)$

$8x - 4 = 5x + 20$

$8x - 5x = 20 + 4$

$3x = 24$

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

$x = 8$

Part (b)

$= 3m - 6n - 2m + 8n$

$= 3m - 2m + 8n - 6n$

$= m + 2n$

32

$= \frac{\left(\frac{4}{15} \times \frac{45}{8}\right) + \left(\frac{5}{7} \times \frac{14}{15}\right)}{\frac{26}{9}}$

$= \frac{\frac{3}{2} + \frac{2}{3}}{\frac{26}{9}} = \left(\frac{3}{2} + \frac{2}{3}\right) \div \frac{26}{9}$

$= \left(\frac{\frac{3}{2} \times 6 + \frac{2}{3} \times 6}{6}\right) \div \frac{26}{9}$

$= \left(\frac{9 + 4}{6}\right) \div \frac{26}{9}$

$= \frac{13}{6} \div \frac{26}{9} = \frac{13}{6} \times \frac{9}{26} = \frac{3}{4}$

33

Part (a)

x	f	fx
5	2	10
7	2	14
9	2	18
10	4	40
11	2	22
12	2	24
13	4	52
Total	Tf = 18	Tfx = 180

Tfx = 180

Mean = $\frac{Tfx}{Tf} = \frac{180}{18} = 10$

34

Part (a)

1011two

+ 110two

10001two

Part (b)

B	N	R
3	72	0
3	24	0
3	8	2
3	2	2
	0	

72ten = 2200three

35

Part (a)

Set B = {s, u, r, f, a, c, e}

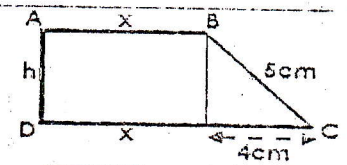
Part (b)

A∩B = {f, a, c, e}

Part (c)

A∪B = {a, b, c, d, e, f, s, u, r}

36



$h = \sqrt{H^2 - b^2}$

$= \sqrt{(5 \times 5)cm^2 - (4 \times 4)cm^2}$

$= \sqrt{25cm^2 - 16cm^2}$

$= \sqrt{9cm^2}$

$= 3cm$

$P = AB + BC + CD + DA$

$24cm = x + 5 + 4 + x + 3$

$24cm = 2x + 12$

$24cm - 12cm = 2x$

$\frac{12cm}{2} = \frac{2x}{2}$

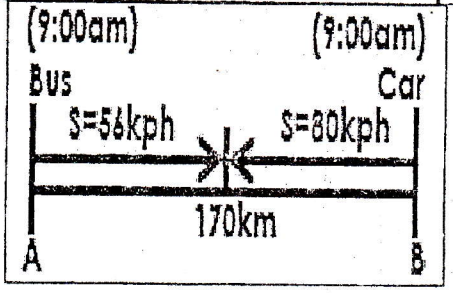
$x = 6cm$

$AB = 6cm, CD = 6 + 4 = 10cm$

$A = \frac{h}{2}(a + b) = \frac{3}{2}(6cm + 10cm)$

$= \frac{3cm \times 16cm}{2} = 24cm^2$

37



$T = \frac{D}{S_1 + S_2}\ D = S \times T$ Part (b)

$= \frac{170km}{56km/h + 80km/h} = \left(56 \times \frac{5}{4}\right) kmT = 9{:}00am + \frac{5}{4} hr$

$= \frac{170km}{136km/hr} = 70km = 9{:}00am + 1{:}15$

$= \frac{5}{4} hr = 10{:}15am$