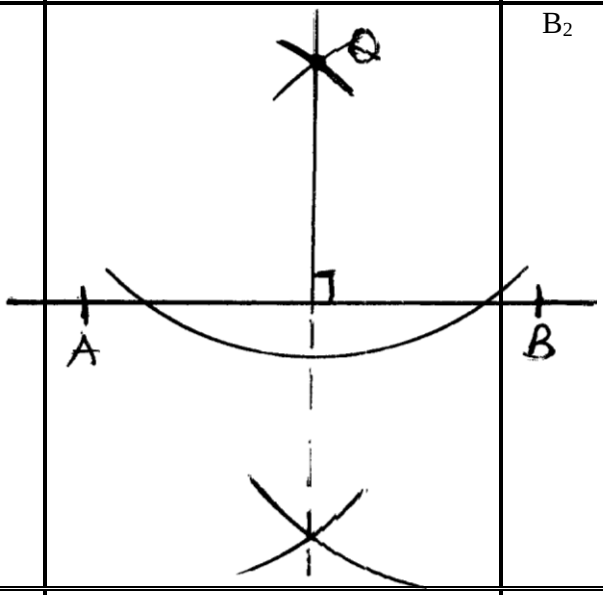
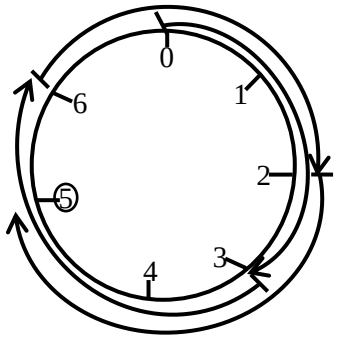
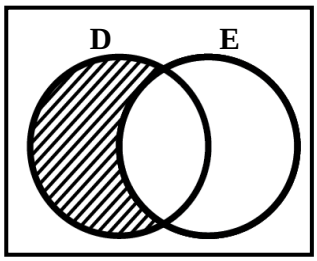
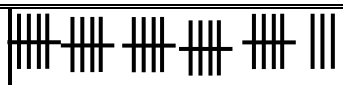
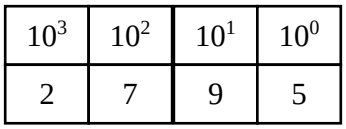
THE SIPRO PRE-PLE SET II MATHEMATICS MARKING GUIDE – 2022

NO.	LEVEL	SOLUTION	AWARD	REASON	TECHNICAL ADVICE
1.	P.2	15 ÷ 3 **= 5**	 B_2	 For 5.	Help candidates to revise 4 operations.
2.	P.7	2^2 | 2^1 | 2^0 1 | 1 | 1 two $(1 \times 2^2) + (1 \times 2^1) + (1 \times 2^0)$ $(1 \times 2 \times 2) + (1 \times 2) + (1 \times 1)$ 4 + 2 + 1 $\mathbf{7_{ten}}$	M_1 A_1	For the method. For the answer.	Revisit operation on bases.
3.	P.6	T o t | h 8 9 . 9 | 6 8 9 . 9 + 0 . 1 9 0 . 0	M_1 A_1	For the method. For the method.	Award M0, A0 for T o t h 8 9 . 9 6 + 1 9 9 . 0
4.	P.7	{a,c}, $\varnothing$	B_2	For correct answer. Accept { }, {a,c}.	Make a review on listing both subsets and proper subsets.
5.	P.7		B_2	For the perpendicular line.	Emphasise accuracy and neatness.
6.	P.7	(324 ÷ 9) + (153 ÷ 9) (324 + 153) ÷ 9 477 ÷ 9 **= 53**	M_1 A_1	For the method. For the answer.	Revisit distributive property in all operation.
7.	P.6	Ending time = S.T. + duration 60min = 1hour 1 min = $\frac{1}{60}$ hour 150min = $\frac{1}{60} \times \frac{150}{1}$ hours $= \frac{5}{2}$ hours			Make a review on converting am and pm in 24 hour clock system.

		= $2\frac{1}{2}$ hours **Hours min** | **Hours min** 08 : 20 hours | 8 : 20 - 00 : 00 hours | + 2 : 30 10 : 50 am	M_1 A_1	For the method. For the answer.	**Accept:** 08 : 20hr + 02 : 30 10 : 50hr.
8.	P.5	Mean = Sum of data / Number of data $\frac{7}{9} + \frac{2}{9} + \frac{1}{9} + \frac{4}{9} = \frac{7+2+1+4}{9}$ $= \frac{14}{9}$ $\frac{14}{9} \div \frac{4}{1}$ $\frac{14}{9} \times \frac{1}{4_2} = \frac{7 \times 1}{9 \times 2}$ $= \frac{7}{18}$	M_1 A_1	For the method. For $\frac{1}{18}$	Apply the use of statistical terms in fractions.
9.	P.7	4 x 3 = n(finite 7) 4 laps of three's  n= 5(finite 7)	B_1 B_1	For an illustration. For n = 5	Expose candidates on how to use a dial when operating.
10.	P.6	Sh. 7500 = 1kg Sh. 1 = $\frac{1}{7500}$ kg Sh. 45000 = $\left(\frac{1}{7500} \times 45000\right)$ kg = $\frac{450^{6}}{75_{1}}$ kg = 6kg	M_1 A_1	For the method. For the answer.	Accept any other method leading to correct answer.
11.	P.7	3.95×10^2 $\frac{395}{100} \times 10 \times 10$ $\frac{395}{100} \times 10 \times 10$ **= 395**	M_1 A_1	For the method. For the answer.	Make a review on expanding using standard form.

12.	P.5		B_2	For correct shading.	Help candidates to identify different regions on the Venn diagram.
13.	P.5	a = 7 + 2 b = 7 – 2 a - b (7 + 2) – (7 – 2) 7 + 2 – 7 + 2 7 + 2 + 2 – 7 11 – 7 **4**	M_1 A_1	For the method. For the answer.	Accept: A – b (7 + 2) – (7 – 2) 9 – 5 4
14.	P.7	Let the fraction be K K = 0.2333----- 10 x K = 0.2333------ x 10 10k = 2.333 10k = 2.333 – K = 0.2333 --- 9k = 2.1 1 $\frac{9K}{9} = \frac{2.1}{9}$ 1 K = 2.1 ÷ 9 = $\frac{21}{10} \div \frac{9}{1}$ = $\frac{21^7}{10} \times \frac{1}{9_3}$ = $\frac{7}{30}$	 M_1 A_1	 For the method. For $\frac{7}{30}$	Expose candidates to a variety of such related equations. Accept: $\frac{23}{100} - \frac{2}{10}$ $\frac{7}{\cancel{21}\ 90}$ 30 $\frac{7}{30}$
15.	P.6	D = 200m T = 2minutes S = $\frac{D}{T}$ = 200m ÷ $\frac{2}{60}$ hours = $\frac{200m}{1} \times \frac{60}{2_1}$ hours **= 6000m/hour** 100m = 1km 1m = $\frac{1}{1000}$km 6000m = $\left(\frac{1}{1000} \times 600\right)$ km = 6km **= 6km/hour**	M_1 A_1	For the method. For the answer.	- Make a review on distance, time and speed. -Convert km/hour to m/sec.

16.	P.4	 (5 + 5) + (5 + 5) + (5 + 3) 10 + 10 + 8 **28 buses.**	B_1 B_1	For identifying the tallies. For 28 buses.	Award B_0 for 28.
17.	P.7	3cm x 12 edges **= 36 cm**	M_1 A_1	For the method. For the answer.	Help candidates to identify edges, faces, vertices.
18.	P.5	2^{nd} 5^{th} 4 , (9) , 16 , 25 , (36) Square numbers $\frac{\cancel{36}^{4}}{\cancel{9}_{1}}$ **= 4**	B_1 B_1	For 36 For 4	Make a review on types of numbers.
19.	P.7	$\frac{1}{2}y + y = 3$ $\frac{1}{2}y + \frac{y}{1} = \frac{3}{1}$ $\begin{pmatrix}\frac{1}{2}y \times \cancel{2}^{1}\\ \cancel{2}_{1}\end{pmatrix} + \begin{pmatrix}\frac{y}{1} \times 2\end{pmatrix} = \begin{pmatrix}\frac{3}{1} \times 2\end{pmatrix}$ $y + 2y = 6$ $3y = 6$ $\frac{\overset{1}{3y}}{\cancel{3}_{1}} = \frac{\cancel{6}^{2}}{\cancel{3}_{1}}$ **y = 2**	 M_1 A_1	 For the method. For the answer.	Help candidates to work out equations with fractions.
20.	P.5	 $(2x10^3)+ (7x10^2)+(0x10^1)+(5x10^0)$	B_2	For expanding using powers.	Accept: 2000 + 700 + 90 + 5 (2x1000) + (7x100) + (9x10) +(5x1) $(2x10^3) + (7x10^2) + (9x10^1) + 5 \times 10^0$
SECTION B					
21.a)	P.7	Int ∠ sum = 180^0 (n – 2) = 180^0 (6 – 2) = 180^0 (4) 180^0 x 4 720^0	M_1 A_1	For the method. For the answer.	Make a review on interior angles and apply them in our daily lives. Accept: 180^0 x 4 **= 720^0**
(b)		Centre angle = $\frac{360^0}{6}$ **= 60^0** $3h^0 - 12^0 = 60^0$ $3h^0 - 12^0 + 12^0 = 60^0 + 12^0$ $3h^0 = 72^0$ $\frac{13h^0}{\cancel{3}_{1}} = \frac{72^0}{\cancel{3}_{1}}$ $h^0 = 24^0$ $\frac{h^0}{1^0} = \frac{24^0}{1^0}$ **h = 24^0**	B_1 B_1 B_1	For 60^0. For the equation. For value of h.	Accept: $6(3h - 12) = 360^0$ $\cancel{6}\left(\frac{3h - 12}{\cancel{6}}\right) = \frac{360}{6}$ $3h - 12 = 60^0$ $3h - 12 + 12 = 60 + 12$ $\frac{3h}{3} = \frac{\cancel{72}}{3}$ **h = 24^0**

22. P.7

Items	Quantity	Unit cost	Total
Rice	2 1/2 kg	Sh. 4,800	Sh. 12,000
Meat	0.5kg	Sh. 16,000	Sh. 8,000
Sugar	2 1 kg	Sh. 3,500	Sh.8,750
Soap	2 bars	Sh. 6500	Sh. 13,000
Total			**Sh. 41,750**

Rice

2 1/2 x sh.4800

2400

5/2 x sh. 4800

1

Sh. 12,000

Meat

sh.8000 ÷ 0.5

sh. 8000 ÷ 5/10

2

sh. 8000 x 10/5 1

sh. 8000 x 2

sh. 16,000

Sugar

8750

3500

875/350 = 2 1/2 kg

Or 2.5kg

Soap

Sh. 12000

Sh. 8000

+ Sh. 8750

Sh. 28750

41750

- 28750

Sh. 13000

B_1 For each correct answer with working. Award B_0 minus the units.

B_1

B_1

B_1

B_1

23.a) P.7

Increase = Sh. 500,000

- Sh. 480,000

Sh. 20,000

% Increase = Increase / Original amount x 100%

1 25

Sh. 20,000 / 480,000 x 100%

24

6

= 25/6%

= **4 1/6%**

M_1 For the method.

A_1 For the answer.

Make a review on how to find rate, time and principal.

(b)

Amount = P + SI

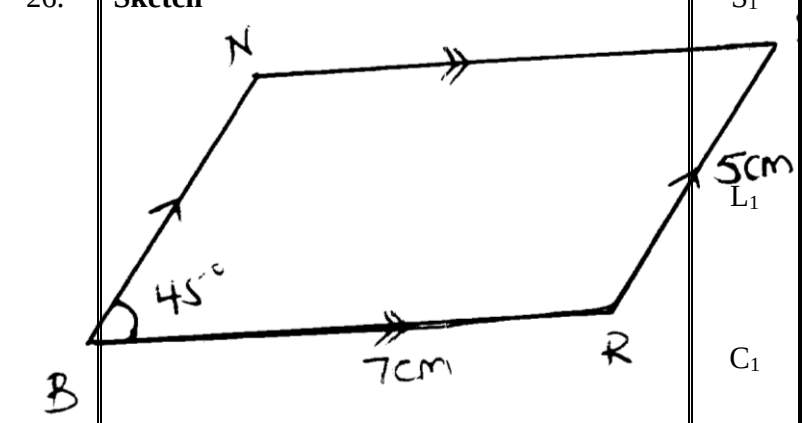
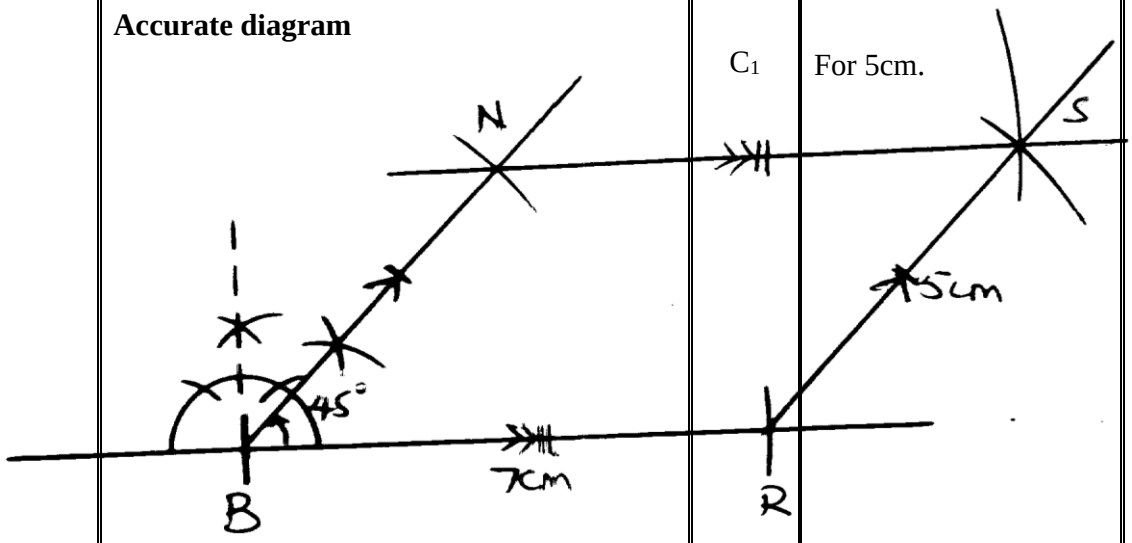
Sh. 264,000 = P + (P x R x T)

Sh. 264,000 = P + (P x 5/100 x 2)

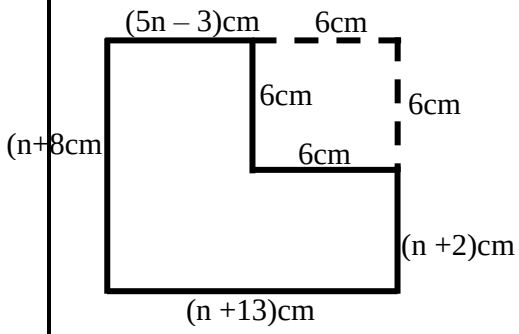
Sh. 264,000 = P + 10P/100

B_1 For the method.

		Sh. $\frac{264,000}{1} = \frac{P}{1} + \frac{P}{10}$ Sh. $264,000 \times 10 = \left(\frac{P}{1} \times 10\right) + \left(\frac{P}{10} \times 10\right)$ Sh. $2640000 = 10P + P$ Sh. $\frac{2640000}{11} = \frac{11P}{11}$ $P = \frac{\text{sh. } 2640,000}{11}$ **P = sh. 240,000**	B_1 A_1	For correct operation. For Sh. 240,000.	
24.a)	P.7	$y + 2 + 4 + 1 = 10$ $y + 7 = 10$ $y + 7 - 7 = 10 - 7$ **y = 3**	B_1 B_1	For the equation. For the value of y.	Make a review on application of statistical terms.
(b)		Average = $\frac{\text{Sum of data}}{\text{Number of data}}$ $= \frac{(70 \times 2) + (60 \times 3) + (100 \times 1)}{6}$ $= \frac{140 + 180 + 100}{6}$ 70 ~~420~~ ~~6~~ 1 **= 70**	B_1 B_1 B_1	For correct method. For correct operation. For 70.	
25.a)	P.7	1 1 1 1 1_{two} + 1 1 1_{two} 1 1 1 0_{two} $2 \div 2 = 1$ r 0 $3 \div 2 = 1$ r 1 $3 \div 2 = 1$ r 1	M_1 A_1	For the method. For the answer.	Expose candidates to operation of bases and their application.
(b)		W^2 | W^1 | W^0 1 | 0 | 4 W $(1 \times W^2) + (0 \times W^1) + (4 \times W^0) = 29$ $W^2 + 0 + 4 = 29$ $W^2 + 4 - 4 = 29 - 4$ $W^2 = 25$ $W = \sqrt[2]{W^2}$ $\sqrt[2]{25}$ $W = \sqrt[2]{5^2}$ 5 | 25 5 | 5 1 **W = 5**	B_1 B_1 B_1	For expansion. For the method. For the answer.	Expose candidates to operation of bases and their application.

26.	**Sketch**  **Accurate diagram**  	S_1 L_1 C_1 C_1	For the sketch. For 7cm. For 45^0. For 5cm.	Emphasise accuracy and neatness.
(b)	Parallelogram	B_1	For the answer.	
27. a)	Distance = S X T = 75km/h x 2 hours = 75km x 2~~hours~~ 1~~hour~~ 75km x 2 **= 150km** Time = D/S = 150~~km~~/50~~km~~/hour **= 3 hours.** Average speed = T.D.C/T.T.T = (150km x 2)/(2hours + 3hours) = 300~~km~~/5~~hours~~ **= 60km/hour.**	B_1 B_1 B_1 B_1	For distance. For 3 hours. For the method. For 60km/hr.	Make a review on the travel graph.

28. a)



$3n - 3 + 6 = n + 13$
$3n + 3 = n + 13$
$3n + 3 - 3 = n + 13 - 3$ — B_1 For the equation.
$3n = n + 10$
$3n - n = n - n + 10$
$2n = 10$

$\frac{\cancel{2}^{1}n}{\cancel{2}_{1}} = \frac{\cancel{10}^{5}}{\cancel{2}_{1}}$

$1 \quad 1$
$n = 5$ — B_1 For value of n.

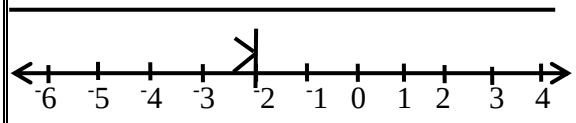
(b)

$P = S + S + S + S$ — B_1 For the equation.
$n + 8cm + n + 8cm + n + 13cm + 3n + 3$
$n + n + n + 3n + 8cm + 8cm + 13cm + 3n$
$6n + 32cm$ — B_1 For the collecting like terms.
$(6 \times 5) + 32cm$
$30 + 32cm$
$62cm$ — B_1 For the answer.

Make a review on area and perimeter of such related questions.

29. a)

P.7
$3 - 2y < 7$
$3 - 3 - 2y < 7 - 3$
$0 - 2y < 4$
$^{-}2 < 4$
$\frac{^{-}2y}{^{-}2} > \frac{4^{2}}{^{-}2_{1}}$ — M_1 For the method.
$\mathbf{Y > {}^{-}2}$ — A_1 For y > ⁻2.



Solution set for y = **{-1, 0, 1, --------}** — A_1 For solution set.

- Expose candidates to application of algebra.
- Let the candidates practice and be exposed to related questions.

Accept:

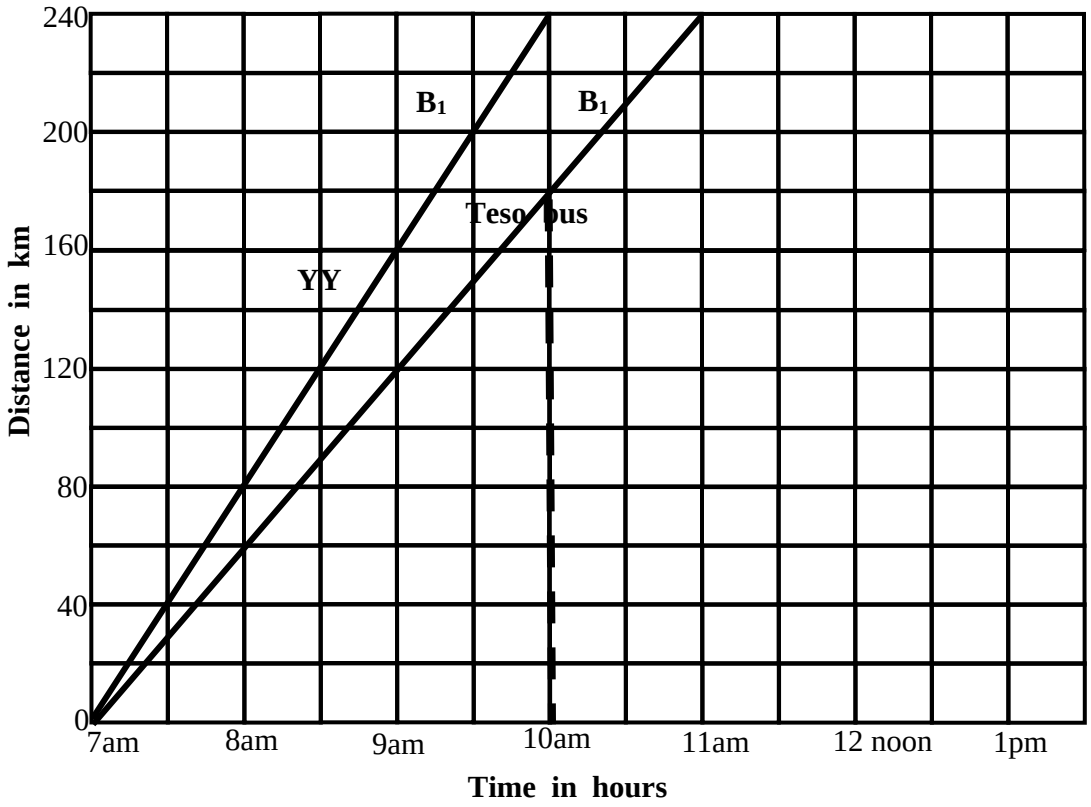
Mubiru	**Mutebi**
19 yrs	41 yrs
20 yrs	42 yrs
21 yrs	43 yrs
22 yrs	44 yrs

(b)

	Mubiru	**Mutebi**
Now	18	40
How many years	18 + x	40 + x
	2(18 + x)	40 + x

After 4 years.

		$2(18 + x) = 40 + x$ $(2 \times 18) + (2x) = 40 + x$ $36 + 2x = 40 + x$ $36 - 36 + 2x = 40 - 36 + x$ $2x = 4 + x$ $x = 4$ **In 4 years time.**	M_1 A_1	For the method. **For 4 years.**	
30. a)	P.7	$3 + 2k = 11$ $3 - 3 + 2k = 11 - 3$ $2k = 8$ $\frac{^1\cancel{2}k}{\cancel{2}_1} = \frac{\cancel{8}^4}{\cancel{2}_1}$ **K = 4**	B_1 B_1	For the equation. For the answer.	Expose candidates to a variety of related questions.
(b)		$27 - k + 2k + 3k + 3 + 2k$ $27 + 3 + 2k + 3k + 2k - k$ $30 + 7k - k$ $30 + 6k$ $30 + (6 \times 4)$ $30 + 24$ **54 candidates.**	B_1 B_1	For the equation. For the answer.	
31. a)	P.7	$C = \pi d$ $88cm = \frac{22d}{7}$ $7 \times 88cm = \frac{22}{\cancel{7}}d \times \frac{\cancel{7}}{1}$ $7 \times \frac{\cancel{88}^4cm}{\cancel{22}_1} = \frac{\cancel{22}}{\cancel{22}_1}d \times 7$ $28cm = d$ ∴ Radius $= \frac{d}{2}$ $= \frac{28cm}{2}$ **Radius = 14cm**	M_1 A_1	For the method. For the answer.	Make a review on finding volume for solid figures.
(b)		Volume of cylinder $= \pi r^2 h$ $\frac{22}{7} \times 14cm \times 14cm \times 30cm$ $\frac{22}{\cancel{7}_1} \times \frac{\cancel{14}^2cm}{1} \times 14cm \times 30cm$ $(44cm \times 14cm) \times 30cm$ $616cm^2 \times 30cm$ $\mathbf{18480cm^3}$ Capacity $= \frac{volume}{1000cm^3}$ $= \left(\frac{18480cm^3}{1000cm^3}\right) L$ **= 18.48 litres**	M_1 M_1 A_1	For the method. For the operation. For the answer.	

32. a) P.7  **YY bus** T = D/S = 3/1 × 240/80km/hr **= 3hours** YY = 3 hours + 7 = 10am Teso = 4 hours + 7 = 11 am **Teso bus** T = D/S = 4/1 × 240/60km/hr **= 4 hours**				Help candidates to understand such graphs and make enough practice. B_1 for 3hours. B_1 for 4 hours.
(b)		180km	B_2	For 180km.