Department of Education - Southern Province
Second Term Test - 2018 July

Grade 10 **Mathematics** **Answers**

Paper I - Part A

(01) Rs. $\frac{2}{3}\times 1200$ = Rs. 800 ❶ ❶

(02) $2x^2 - 5x - 7 = 2x^2 - 7x + 2x - 7$
$= x(2x-7)+(2x-7)$ ❶
$= (2x-7)(x+1)$ ❶

(03) $\sqrt{67} = 8.2$ ❷

(04) $ABC\Delta \equiv LMN\Delta$ ❶
(AAS) ❶

(05) $\frac{2x-3+2x}{5y} = \frac{4x-3}{5y}$ ❶ ❶

(06) LCM = $18x^2y^2$ ❷

(07) $P\hat{Q}R = 180^0 - 60^0 = 120^0$ ❶
$S\hat{R}Q = 60^0$ ❶
$P\hat{Q}R = x = 120^0$ ❶
$\therefore x = 180^0 - 60^0 = 120^0$ ❶

(08) $\log_5 625 = 4$ ❷

(09) 6 ❷

(10) $M_{AB} = \frac{6-2}{3-1} = \frac{4}{2} = 2$ ❶ ❶

(11) i. $x = 30^0 \therefore R\hat{Q}S = 60^0 - 30 = 30^0$ ❶
ii. QRS Δ ❶

(12) i. $x \cap y = \{1,4,6\}$ ❶
ii. $n(x \cup y)' = 3$ ❶

(13) Rs. $96000 \times \frac{6}{100} = 5760$ ❶ ❶

(14) $3x + 3y = -15$ ❶
$x + y = -5$ ❶

(15) $\left(2\times 14 + \frac{1}{4}\times\frac{22}{7}\times\frac{14}{12}\right)cm = (28+11)cm$ ❶
$= 39cm$ ❶

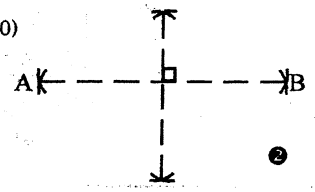
(16) Rs. $64000 \times \frac{8}{100}\times\frac{3}{12} = rs.1280$ ❶ ❶

(17) i. $2x = x + y => x = y$ ❶
ii. DE // AC ❶

(18) $x - 3 = 18$ ❶
$x = 21$ ❶

(19) $R\hat{P}Q = R\hat{Q}P = \frac{180^0 - 50^0}{2} = 65^0$ ❶
$\therefore P\hat{R}X = 65^0$ ❶

(20)



❷

(21) $(x-2)(x+2) = 0$
$a = 2, b = -2$ ❶ ❶

(22) $\frac{50}{360} \rightarrow 45$,
Total No of studets = $\frac{45\times 360}{50} = 324$ ❶
'No of students take part in mark ing the eye on the elephant competition = $324 \times \frac{120}{360}$
$= 108$ ❶

(23) $\lg\left(\frac{125\times 20}{25}\right) = \lg 100 = 2$ ❶ ❶

(24) i. $\left(4 \div \frac{30}{60}\right) kmh^{-1} = 8kmh^{-1}$ ❶
ii. 50 min ❶

(25) $\lg 68.5 = \lg(6.85 \times 10^1)$
$= \lg 6.85 + \lg 10$ ❶
$= 0.8357 + 1$
$= 1.8357$ ❶

Paper I - Part B

(01) i. $\frac{2}{5}\times 100\% = 40\%$ ❶ ❶

ii. $\frac{40}{100} + \frac{12}{100} = \frac{52}{100} = \frac{13}{25}$ ❶ ❶ / $\frac{2}{5} + \frac{12}{100} = \frac{13}{25}$ ❶ ❶

iii. $\frac{12}{25}$ ❶

iv. $\frac{12}{25} \rightarrow 96$ Total of students = $\frac{96\times 25}{12} = 200$ ❶ ❶

v. Total No.of students = 210 ❶
No.of students who study ICT = $\frac{2}{5}\times 200 + 10$
= 90 ❶
As a fuaction → $\frac{90}{210} = \frac{3}{7}$ ❶

(02) i. $\frac{22}{7} \times 7 + \frac{22}{7}\times\frac{7}{2} = 22 + 11 = 33cm$ ❶ ❶ ❶

ii. $(33+7)cm = 40cm$ ❶ ❶

iii. $\left(\frac{22}{7}\times 7\times 7 - \frac{22}{7}\times\frac{7}{2}\times\frac{7}{2}\right)cm^2 = \left(154 - \frac{77}{2}\right)cm^2$ ❶ ❶
$= 115.5cm^2$

iv. $115.5 \times 40cm^2 = 4620cm^2$ ❶ ❶

(03) a) i. 15×10 - Mens days 150

ii. $\frac{150}{25}$ - days 6

iii. Total days - $5 + \frac{(150-50)}{20}$ - 10 days

b) i. Rs. $4500 \times \frac{12}{100} = 540$

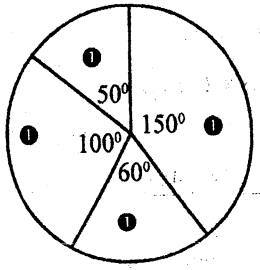
ii. Rs. $(4500 + 540) =$ Rs.5040

(04) i. $[129600-(18000+36000+54000)]=21600$

ii.

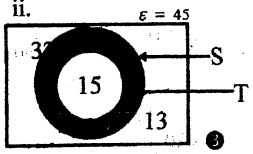
Day	No of people	The angle at the centre
1	18000	50^0
2	36000	100^0
3	54000	150^0
4	21600	60^0

iii.



(05) i. TCS

ii.



iii. Coloured portion

iv. 13

v. $\frac{30}{45} \times 100\% = 66.67$

II - A

(01) a) i. Rs. 48000×12 - Rs. 576000

ii. Rs. $(576000+450000)$= Rs.1026000

iii. Rs. $(1026000-500000)$= Rs.526000

- Income ta $526000 \times \frac{4}{100}$

- Rs. 21040

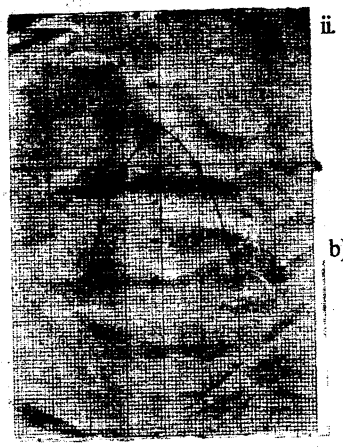
21040

b) i. $100000 \times \frac{8}{100} = 8000$

ii. $\frac{96000}{8000 \times 4} =$ 3 Years

(02) a) i.

x	1
$-x^2$	-1
1	1
$y=1-x^2$	0



ii. Correct axis
Marking at least points
Smooth curve

b) i. Maximum value - 1

ii. (0, 1)

iii. $x = 0$

iv. $-1 < x < 1$

(04) a) $\frac{2}{x-5} + \frac{1}{2(x-5)} = \frac{1}{4}$

$\frac{4+1}{2(x-5)} = \frac{1}{4}$

$\frac{5}{x-5} = \frac{1}{2}$

$x - 5 = 10$

$x = 15$

b) $\frac{3}{4}\pi(x-1)2 = 12\pi$

$(x-1)^2 = 16$

$x^2 - 2x - 15 = 0$

$(x-5)(x+3) = 0$

$x - 5 = 0$ Or $x + 3 = 0$

$x = 5$ Or $x = -3$ Y

∴ Redius the circle - 4cm

(03) a) $(2x)^2 - (x+y)^2 = (2x+x+y)(2x-x-y)$

$= (3x+y)(x-y)$

b) $3x = 2y$

$3x - 2y = 0$ —— ①

$4x + 3y = 680$ —— ②

① × 3 + ② × 2 $9x - 6y + 8x + 6y = 1360$

$17x = 1360$

$x = 80$

∴ Price of 1 log of beans - Rs. 80

Price of 1 log of carrot - Rs. $\frac{3 \times 80}{2}$

-Rs. 120

(05) 1. $\log_a a + \log_b b + \log_{10} 100 + 1 = 1 + 1 + 2 + 1$ ❶

❶ $= 5$

2. $\lg\left(\frac{3}{4} \times \frac{1600}{12}\right) - 2 = \lg 100 - 2 = 0$ ❶ ❶

3. $a = \dfrac{62.36 \times 4.56}{8.45}$

$\lg = \lg\left(\frac{62.36 \times 4.56}{8.45}\right)$

$= \lg 62.36 + \lg 4.56 - \lg 8.45$ ❶

0.6590

$= (1.7949 + 0) - 0.9269$ ❷

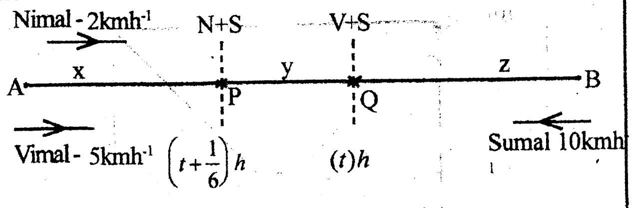
$= 2.4539 - 0.9269$ ❶

$\lg a = 1.5270$ ❶

$a = \text{antilog}\ (1.5270)$

$a = 33.65$ ❶

(06)



Vimal - 5kmh^{-1} $\left(t + \frac{1}{6}\right)h$ $(t)h$

P → Point where Nimal & Sumal meet

Q → Point where Vimal & Sumal meet

Lets take AP = x km, PQ = y km, QB = z km

Time at P = $\left(t + \frac{1}{6}\right)h$

Time at P = (t)h

Sumal ← $z = 10t$ ❶ Vimal → $x + y = 5t$ ❶ → $x + y + z = 15t$ ❶ —— ①

Sumal → $y + z = 10\left(t + \frac{1}{6}\right)$ ❶ Nimal → $x = 2\left(t + \frac{1}{6}\right)$ ❶ → $x + y + z = 12\left(t + \frac{1}{6}\right)$ ❶ —— ②

① - ②

$12\left(t + \frac{1}{6}\right) = 15t$ ❶

$4t + \frac{2}{3} = 5t$

$t = \frac{2}{3}h$ ❶

$x + y = \frac{10}{3}$

Time taken by sumal to reach A from B - $\left(\frac{2}{3} + \frac{1}{3}\right)h$ ❶ - $1h$ ❶

II - B

(07) i. ❶

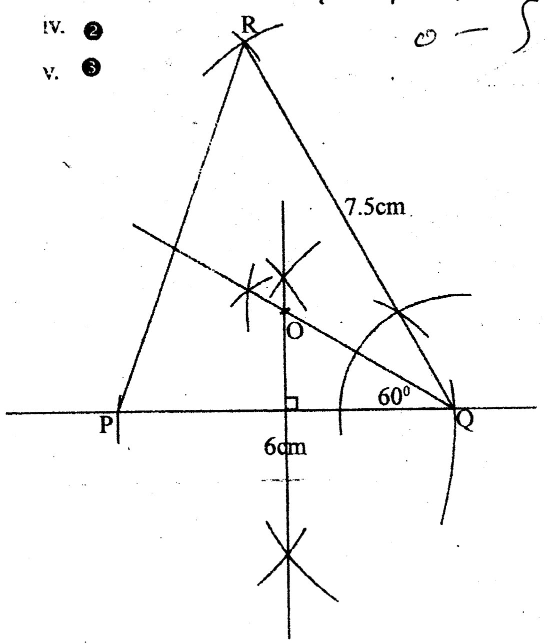
ii. ❸

iii. ❶

iv. ❷

v. ❸

PQ - 1 DPQR - 1
Q̂ 4 Bisec - 2
QR - 1 Pe. bi -] 3
O - }



(08) a) i. The surface area of one face $\dfrac{10584}{6} cm^2$ ❶ 1

$= 1764\ cm^2$ ❶ 1

The length of a side - $\sqrt{1764} cm$ ❶ 1

- 42 cm ❶ 1

ii. Lets take length of a side of cubic as 'x',

$4 \times 36x + 2 \times 36 \times 36 = 10584$ ❷ 2

$144x = 10584 - 2592$

$x = \dfrac{7992}{144}$

$x = 55.5cm$ ❶ 1

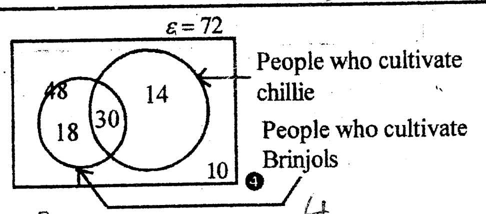
b) $AB^2 = AC^2 - BC^2$ ❶ 1

$AB^2 = x^2 - \dfrac{x^2}{9} = \dfrac{8x^2}{9}$ ❶ 1

$AB = \sqrt{\dfrac{8x^2}{9}} = \dfrac{2\sqrt{2}x}{3}$ ❶ 1

$\dfrac{\sqrt{8}\,x}{3}$

(09)



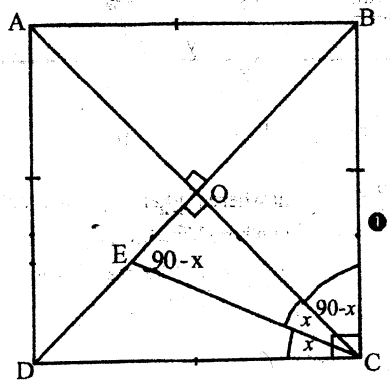
❹ 4

i. 44 ❷ 2

ii. 30 ❷ 2

iii. 10 ❷ 2

(10)



i. $O\hat{C}E = D\hat{C}E = x^0$ (data) ❶

$DB \perp AC$ (ABCD is a square) ❶

$\therefore C\hat{O}E = 90^0$ ❶

$\therefore B\hat{E}C = 90 - x$ ❶

and also, $B\hat{C}E = 90 - x$ ❶

$\therefore B\hat{E}C = B\hat{C}E$ ❶

ii. $\therefore BE = BC$ ❶

but, $BC = CD$ ❶

$\therefore BE = CD$ ❶

(11) i. $\frac{15000 \times 6}{100}$ = Rs. 900 ❶ ❶

ii. $\frac{\text{Rs. } 900}{4}$ = Rs. 225 ❶ ❶

iii. Rs. 5000×12 = Rs. 60000 ❶

iv. $\frac{60000 \times 12}{100}$ = Rs. 7200 ❶ ❶

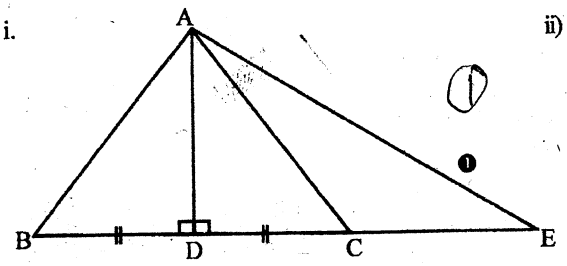
v. $\frac{7200 + 900}{60000} \times 100\%$ ❶

$\frac{8100}{60000} \times 100\%$

$13\frac{3}{6}\%$

$= 13\frac{1}{2}\%$ ❶

(12) i.



ii) In ABD and ADC

AD is common ❶

BD = DC (data)

$A\hat{D}B = A\hat{D}C = 90^0$

$\therefore ABD\Delta \equiv ADC\Delta$ (S.A.S) ❶

$\therefore AB = AC$ ❶

iii) In ADE Δ

$AE^2 = AD^2 + DE^2$ ——— ① ❶

In ABD Δ

$AB^2 = AD^2 + BD^2$ ——— ② ❶

① - ②, $AE^2 - AB^2 = DE^2 - BD^2$ ❶

$= (DE + BD)(DE - BD)$ ❶

$= BE.(DE - DC)$ ❶

$AE^2 - AB^2 = BE \cdot CE$ ❶