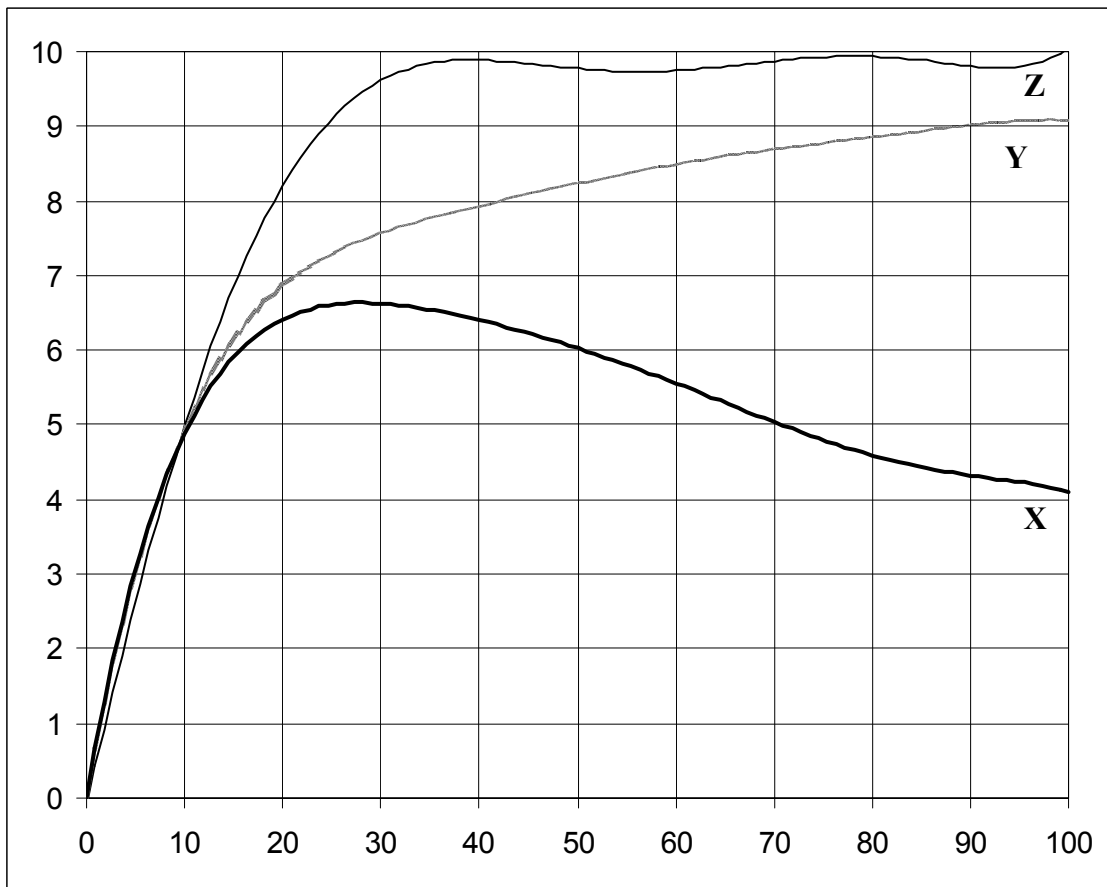


ANSWER SHEET, Part B

B 1.

1.



2. Z (1 point)

3. X (1 point)

B 2. 1. $\mu_A = 0.7 \text{ g g}^{-1} \text{ h}^{-1}$ [1 point] 2. $\mu_B = 1.4 \text{ g g}^{-1} \text{ h}^{-1}$ [1 point]

B 3. 100 mM [1 point]

B 4. 1. 1.16 or 1.18 or 1;19

2. 0.30 or 0.32 or 0.353

3. 2.2 or 2.21 or 2.24

B 5. 1. 7 → 4 → 3 → 1 → 5 2. 7 → 4 3. 7 → 4 → 3 → 6

[1p x 3 = 3 points]

B 6.

| 1. | Number | | Number |
|-----|---------|-----|------------------|
| A-1 | 1 | A-2 | 6 |
| B-1 | | B-2 | |
| C-1 | | C-2 | |
| D-1 | 12 | D-2 | |
| E-1 | 2 or 10 | E-2 | |
| F-1 | | F-2 | 8 |
| G-1 | | G-2 | |
| H-1 | 3 | H-2 | 7 |
| I-1 | | I-2 | 9 |
| J-1 | | J-2 | |
| K-1 | 4 | K-2 | 10 |
| L-1 | | L-2 | |
| M-1 | | M-2 | |
| N-1 | 5 | N-2 | |
| O-1 | | O-2 | |
| P-1 | 11 | P-2 | |
| R-1 | | R-2 | 13 or 14 or both |
| S-1 | | S-2 | 13 |
| T-1 | | T-2 | |
| U-1 | | U-2 | |

[2 points per column]

[1 point if there are 1-3 mistakes]

B7.

1.

| A. | B. | C. |
|------|------|-----|
| 75 % | 25 % | 0 % |

[1 point]

2.

| dsDNA | A % | C % | G % | T % | U % |
|-------|-----|-----|-----|-----|-----|
| A | 20 | 30 | 30 | 20 | 0 |
| B | 30 | 20 | 20 | 30 | 0 |

3.

| | |
|---|---|
| A | 5 |
| B | 4 |

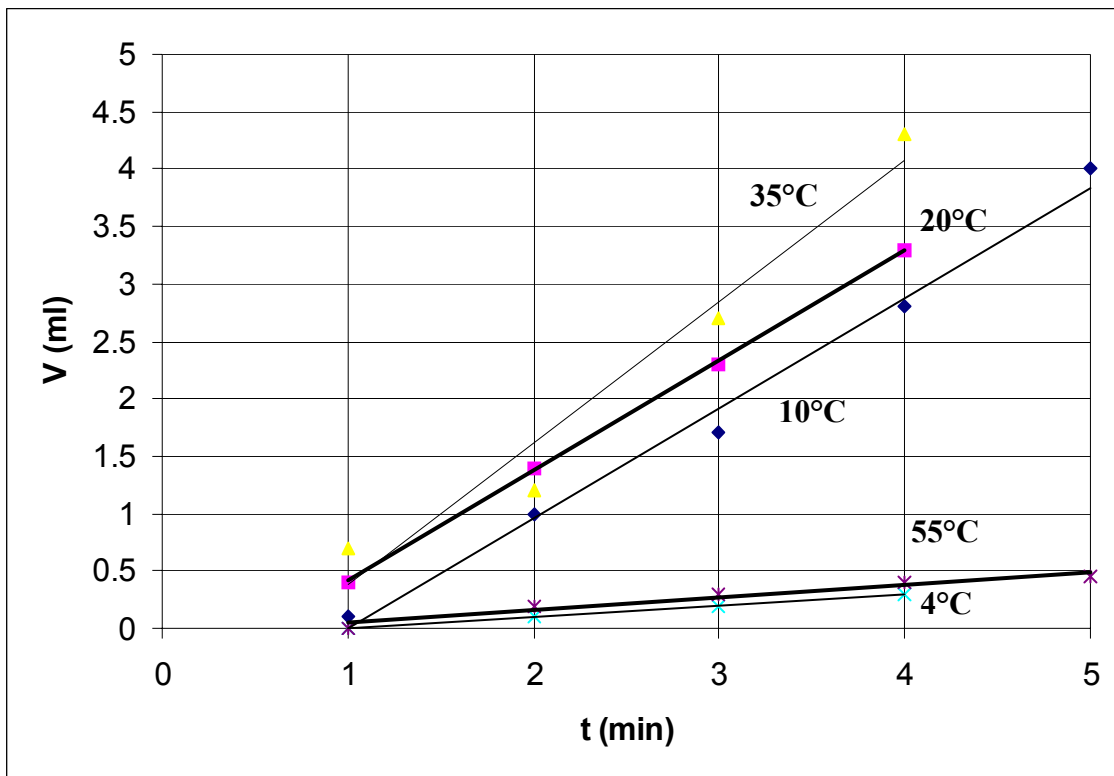
B 8: skipped

2. 17

3. skipped

B 9.

1.



[1 point for X axis]

[1 point for Y axis]

2. 1 ml/min [1 point]

3. 0.017 – 0.018 mmoles CO₂/g · min [1 point]

4. 0.007 – 0.018 mmoles ethanol/ g · min [1 point]

B 10.

| | Number |
|----|--------|
| A. | 1 |
| B. | |
| C. | 4 |
| D. | |
| E. | 2 |
| F. | 3 |
| G. | |

B 11.

| | Number |
|----|--------|
| A. | 3 |
| B. | |
| C. | 4 |
| D. | 1 |
| E. | |
| F. | 2 |

B 12.

| | Number |
|----|--------|
| A. | 3 |
| B. | |
| C. | 1 |
| D. | |
| E. | 4 |
| F. | |
| G. | 2 |

B 13.

1.

| | |
|----|---|
| A. | |
| B. | 4 |

2.

| | |
|----|--|
| A. | |
| B. | |
| C. | |
| D. | |
| E. | |

B 14.

1.

| | |
|---|---|
| A | 3 |
| B | 2 |
| C | 4 |
| D | 1 |

2.

| | |
|---------|-----|
| A and B | 5,6 |
| C | 2 |
| D | 4 |

B 15.

1.

| | |
|---------|---------------------|
| A, B, C | 3,6,12 |
| D | 2,8,11,13,14, 15 |
| E | 1,5,4,7,9,10,1 6 |

2.

| | |
|----|--|
| A. | |
| B. | |
| C. | |
| D. | |
| E. | |
| F. | |

B 16.

$X = \underline{7900}$ ml

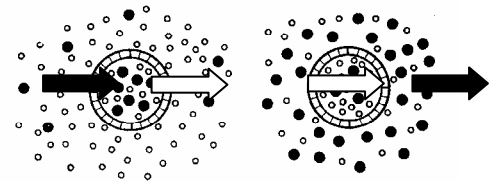
$Y = \underline{9000}$ ml

$Z = \underline{1500}$ ml

B 17.

| | |
|----|---|
| A. | 3 |
| B. | 4 |
| C. | 6 |
| D. | 2 |
| E. | 1 |
| F. | 5 |

B 18.



[0.5p x 2 = 1 point]

B 19.

A. ←

B. →

[0.5p x 2 = 1 point]

B 20.

| | | | | | |
|----|----|----|----|----|----|
| | 1. | 2. | 3. | 4. | 5. |
| A. | | | | | |
| B. | | | | | |
| C. | | | | | |
| D. | | | | | |
| E. | | | | | |
| F. | | | | | |
| G. | | | | | |
| H. | | | | | |

[5 points]
[1p per each column]

B 21: skipped

B 22.

1,4,6,8
[1 point]

B 23: skipped

B 24: skipped

B 25.

| | |
|----|---------|
| A. | skipped |
| B. | |
| C. | |
| D. | |
| E. | |
| F. | |

[1p x 2 = 2 points]
[-1p per incorrect answer]

B. 26.

1. 18.5 units
or 18.2 or 0.182 or 0.185 units

2. A. $\frac{b+c}{bc}$
B. $\frac{b+c}{bc^+}$

[1p x 3 = 3 points]

B 27.

1.

| | | | | | | | | | | | | |
|----|---|---|---|---|---|---|---|------|---|----|----|----|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Wt | M | C | P | R | V | E | D | L | S | L | T | S |
| A | M | S | P | R | V | E | D | L | S | L | T | S |
| B | M | C | P | R | V | E | D | L | S | L | T | S |
| C | M | C | P | R | I | E | D | L | S | L | T | S |
| D | M | C | P | R | V | E | D | Stop | | | | |

[S,R,I, Stop = 1 point]

2. DACB [2 points]

B 28.

1. $p = \underline{0.648}$

2. $p = \underline{0.646}$

[1p x 2 = 2 points]

B 29.

1. $a_1a_1 = \underline{0}$

$a_1a_2 = \underline{0.3}$

$a_2a_2 = \underline{0.6}$

2. a_2a_2

[1p x 2 = 2 points]

[1p for part 1 and 1p for part 2]

B 30.

1. 0 %

2. 50 %

3. 0 %

| | |
|-------|-------|
| 1. | 2. |
| A | D |
| | |

[1p x 5 = 5 points]

B 31.

| | |
|----|---|
| A. | |
| B. | 3 |
| C. | 1 |
| D. | |
| E. | 2 |

[1p x 3 = 3 points]

[-1p per incorrect answer]

B 32.

1. $3 = \frac{J^B \text{ alk}}{J^C \text{ alk}}$

$4 = \frac{J^A \text{ alk}}{J^C \text{ alk}}$

2. 11 %

[0.5p x 2 = 1 point] +

[1p x 1 = 1 point] = 2 points

B 33.

1983 = 6

1984 = 4

1985 = 10

[1p x 3 = 3 points]

B 34.1. Z, W or Z, W, S2. A. Z; B (skipped)

[1p x 2 = 2 points]

B 35.

| | 1. | 2. |
|----|-----|-----|
| A. | 100 | 100 |
| B. | 16 | 100 |

[1p x 4 = 4 points]

B 36.

| | |
|---|---|
| 1 | C |
| 2 | D |
| 3 | B |
| 4 | A |
| 5 | F |
| 6 | G |
| 7 | E |

[1p X 7 = 7 points]

B 37.

| | |
|---|---|
| 1 | A |
| 2 | |
| 3 | B |
| 4 | D |
| 5 | C |

[0.5p x 4 = 2.0 points]

B 38.

| | |
|---|---|
| A | 2 |
| B | 1 |
| C | 1 |
| D | 2 |

[0.5p x 4 = 2.0 points]

B39 & B40 cancelled**B 41.**

| A. | B. |
|----|----|
| 2 | 7 |

[1p x 2 = 2 points]

B 42.

| | |
|----|--|
| A. | |
| B. | |
| C. | |
| D. | |
| E. | |
| F. | |
| G. | |
| H. | |

[0.5p x 4 = 2.0 points]

[- 0.5p per incorrect answer]