



43/2

October/November 20XX

Time: 2 Hours

Mark answers by shading the oval heavily, like this: -

[illegible]

1. Write your full names and examination number in the spaces provided above.
2. Answer **ALL** questions.
3. All answers must be written in the spaces provided.
4. Show **ALL** the necessary working.
5. Calculators may be used in this paper.

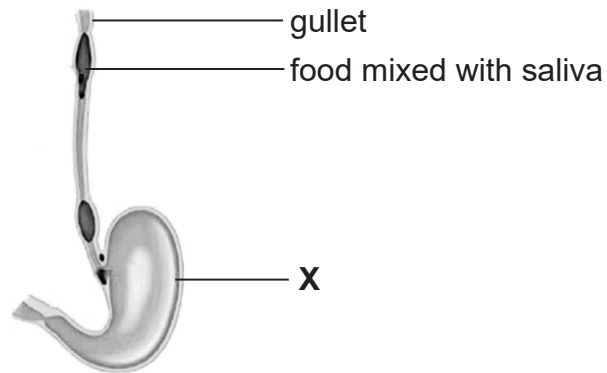
DO NOT TURN THE PAGE UNTIL YOU ARE TOLD TO DO SO



SECTION A

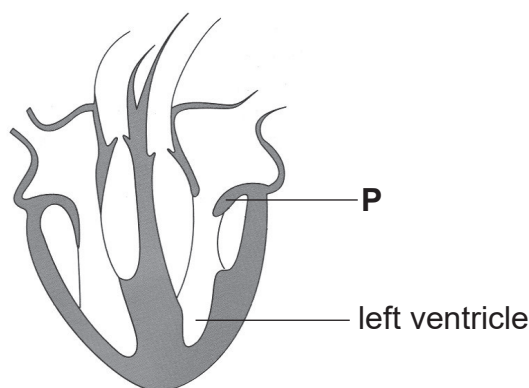
(70 Marks)

The diagram below shows part of the digestive system in which food is being pushed down the gullet into organ X. Use it to answer question 1.



1. (a) Name organ X.
..... (1)
- (b) Describe how the food is being pushed down the gullet.
..... (1)
- (c) Suggest **two** reasons why food has to be mixed with saliva.
.....
..... (2)

The diagram below shows a section through the human heart. Use it to answer question 2.



2. (a) On the diagram, draw an arrow to show the direction of the flow of the blood:
 - (i) into the heart from the lungs, (1)
 - (ii) out of the heart to the body. (1)

(b) (i) Name structure P.

$$\dots\dots\dots (1)$$

(ii) State how structure **P** shows that the left ventricle is relaxed.

$$\dots (1)$$

(c) State any **two** diseases of the human circulatory system.

.....

..... (2)

A student investigated food samples K, L, M and N for the presence of starch, glucose, fats and proteins. The results of the investigation are shown in the table below. Use it to answer question 3.

	Nutrients			
Food sample	Starch	Glucose	Fats	Proteins
K	Present	Absent	Present	Present
L	Absent	Present	Present	Absent
M	Absent	Absent	Absent	Present
N	Present	Present	Present	Absent

3. (a) Name the chemical substance used to test for the presence of glucose.

..... (1)

(b) State the food sample which has the least nutrients present.

..... (1)

(c) Suggest a food sample that will give most energy.

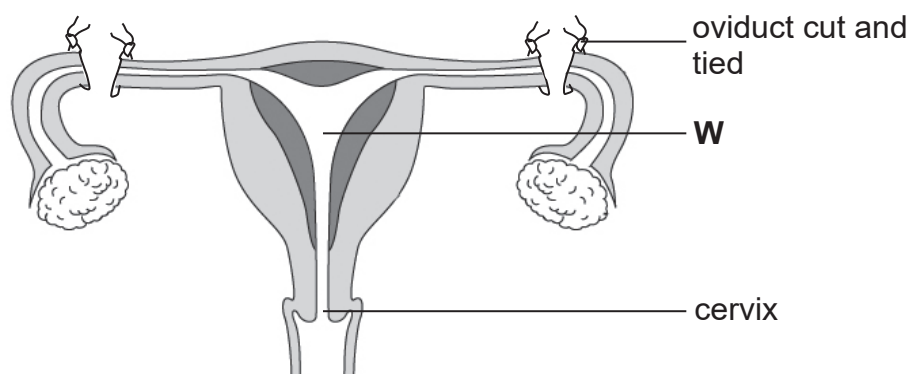
..... (1)

(d) Suggest how the results obtained in the table above will change when the enzyme amylase is added to food sample **K**.

..... (2)



The diagram below shows a section of the female reproductive system with one of the parts labelled **W**. Use it to answer question 4.



4. (a) On the diagram, label with letter **X** the part which produces egg cells. (1)
- (b) Name the part labelled **W**.
..... (1)
- (c) Name the method of birth control shown in the diagram.
..... (1)
- (d) State **one** disadvantage of the method of birth control shown in the diagram.
..... (1)
- (e) State **one** example of sexually transmitted diseases.
..... (1)
-

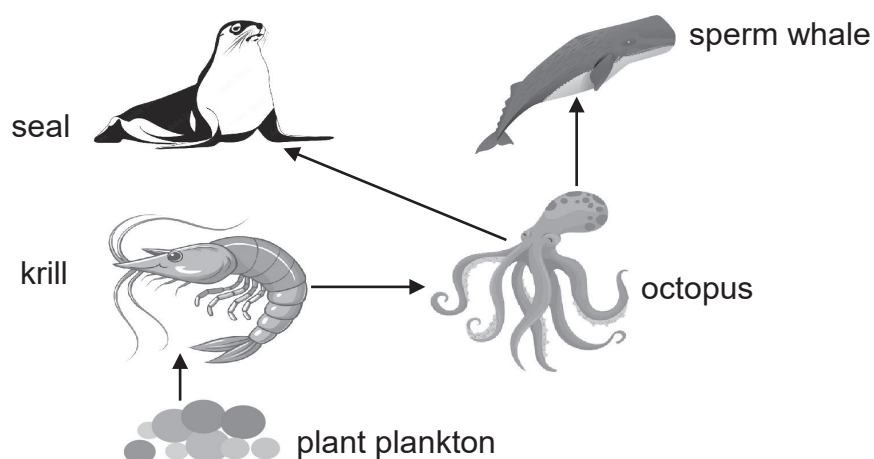
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65
66
67
68
69
70
71
72
73
74
75
76
77
78
79
80
81
82
83
84
85
86
87
88
89
90
91
92
93
94
95
96
97
98
99
100
101
102
103
104
105
106
107
108
109
110
111
112
113
114
115
116
117
118
119
120
121
122
123
124
125
126
127
128
129
130
131
132
133
134
135
136
137
138
139
140
141
142
143
144
145
146
147
148
149
150
151
152
153
154
155
156
157
158
159
160
161
162
163
164
165
166
167
168
169
170
171
172
173
174
175
176
177
178
179
180
181
182
183
184
185
186
187
188
189
190
191
192
193
194
195
196
197
198
199
200
201
202
203
204
205
206
207
208
209
210
211
212
213
214
215
216
217
218
219
220
221
222
223
224
225
226
227
228
229
230
231
232
233
234
235
236
237
238
239
240
241
242
243
244
245
246
247
248
249
250
251
252
253
254
255
256
257
258
259
260
261
262
263
264
265
266
267
268
269
270
271
272
273
274
275
276
277
278
279
280
281
282
283
284
285
286
287
288
289
290
291
292
293
294
295
296
297
298
299
300
301
302
303
304
305
306
307
308
309
310
311
312
313
314
315
316
317
318
319
320
321
322
323
324
325
326
327
328
329
330
331
332
333
334
335
336
337
338
339
340
341
342
343
344
345
346
347
348
349
350
351
352
353
354
355
356
357
358
359
360
361
362
363
364
365
366
367
368
369
370
371
372
373
374
375
376
377
378
379
380
381
382
383
384
385
386
387
388
389
390
391
392
393
394
395
396
397
398
399
400
401
402
403
404
405
406
407
408
409
410
411
412
413
414
415
416
417
418
419
420
421
422
423
424
425
426
427
428
429
430
431
432
433
434
435
436
437
438
439
440
441
442
443
444
445
446
447
448
449
450
451
452
453
454
455
456
457
458
459
460
461
462
463
464
465
466
467
468
469
470
471
472
473
474
475
476
477
478
479
480
481
482
483
484
485
486
487
488
489
490
491
492
493
494
495
496
497
498
499
500
501
502
503
504
505
506
507
508
509
510
511
512
513
514
515
516
517
518
519
520
521
522
523
524
525
526
527
528
529
530
531
532
533
534
535
536
537
538
539
540
541
542
543
544
545
546
547
548
549
550
551
552
553
554
555
556
557
558
559
560
561
562
563
564
565
566
567
568
569
570
571
572
573
574
575
576
577
578
579
580
581
582
583
584
585
586
587
588
589
590
591
592
593
594
595
596
597
598
599
600
601
602
603
604
605
606
607
608
609
610
611
612
613
614
615
616
617
618
619
620
621
622
623
624
625
626
627
628
629
630
631
632
633
634
635
636
637
638
639
640
641
642
643
644
645
646
647
648
649
650
651
652
653
654
655
656
657
658
659
660
661
662
663
664
665
666
667
668
669
670
671
672
673
674
675
676
677
678
679
680
681
682
683
684
685
686
687
688
689
690
691
692
693
694
695
696
697
698
699
700
701
702
703
704
705
706
707
708
709
710
711
712
713
714
715
716
717
718
719
720
721
722
723
724
725
726
727
728
729
730
731
732
733
734
735
736
737
738
739
740
741
742
743
744
745
746
747
748
749
750
751
752
753
754
755
756
757
758
759
760
761
762
763
764
765
766
767
768
769
770
771
772
773
774
775
776
777
778
779
780
781
782
783
784
785
786
787
788
789
790
791
792
793
794
795
796
797
798
799
800
801
802
803
804
805
806
807
808
809
810
811
812
813
814
815
816
817
818
819
820
821
822
823
824
825
826
827
828
829
830
831
832
833
834
835
836
837
838
839
840
84



100

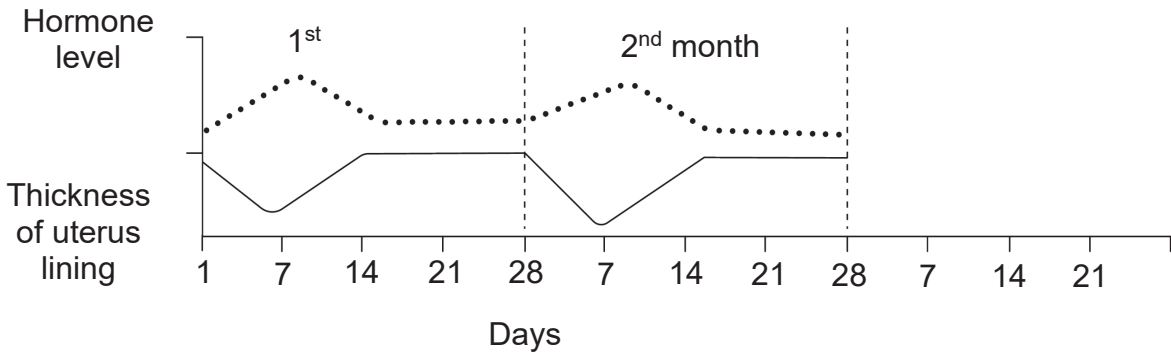
- 100

The diagram below shows a food web. Use it to answer question 6.



6. (a) Name the producer in the food web.
..... (1)
- (b) Name an organism which is a herbivore.
..... (1)
- (c) Explain how the krill will be affected when all the seals die.
.....
..... (2)
- (d) The plant plankton is exposed to a pollutant in the sea.
- (i) Name organisms in which the concentration of the pollutant will be highest.
..... (2)
- (ii) Explain your answer in (d)(i).
.....
..... (1)
-

The diagram below shows line graphs representing the relationship between the thickness of the uterus lining and the hormone level during two menstrual cycles. Use it to answer question 7.

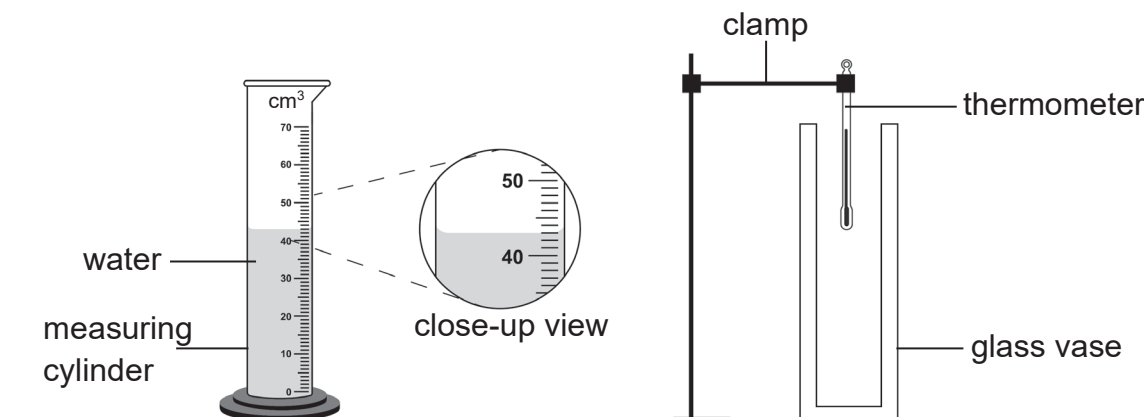


7. (a) Using the graph, state the day in which ovulation occurs during the first month.
 (1)
- (b) State the period in which fertilisation is **unlikely** to occur for each month.
 (1)
- (c) (i) Name the process taking place between day 1 and day 7 of the menstrual cycle.
 (1)
- (ii) Explain your answer in (c)(i).
 (1)



8. Some students wanted to determine the cross-sectional area of a transparent vase. The students were provided with a transparent vase, a ruler, and a measuring cylinder containing some water.

The diagram below shows the measuring cylinder containing the water.



- (a) (i) Record the volume, V , of the water in the measuring cylinder.

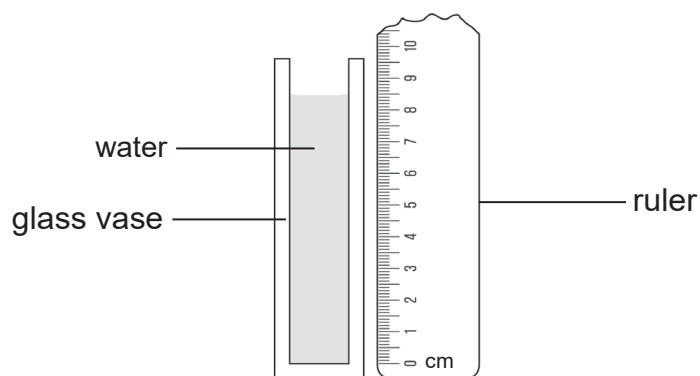
$$V = \dots\dots\dots \text{cm}^3 \quad (1)$$

- (i) State **one** way in which the students could ensure accurate measurement of volume with a measuring cylinder.

.....
 (1)

- (b) The students poured all the water from the measuring cylinder into the transparent vase.

They then measured the height, h , of the water in the transparent vase with a ruler as shown in the diagram below.



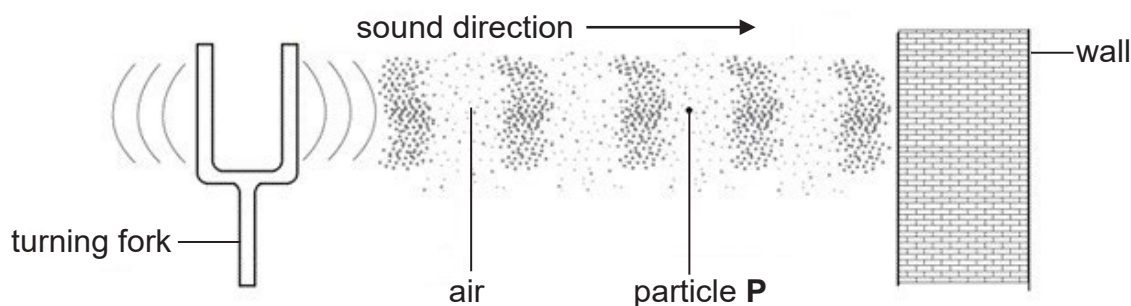
- (i) Record the height, h , of the water in the transparent vase.

$$\text{height, } h = \dots\dots\dots \text{cm} \quad (1)$$

- (ii) Hence, calculate the cross-sectional area, A , of the transparent vase.
Use formula; $A = V/h$

$$A = \dots\dots\dots \text{cm}^2 \quad (2)$$

The diagram below represents how sound is produced from a tuning fork and transmitted through air towards a wall. Use it to answer question 9.



The air particles are magnified for illustrative purposes.

The sound travelling through air eventually reaches the wall.

Part of the sound gets reflected by the wall but part of it goes through the wall.

- 9. (a)** Describe the motion of the tuning fork which leads to the production of sound.

..... (1)

- (b) Draw **two** arrows on the diagram to show the direction of movement of the particle of air labelled **P** as the sound passes through the air. (1)

- (c) (i)** State how the speed of sound within the wall compares with the speed of sound through air.

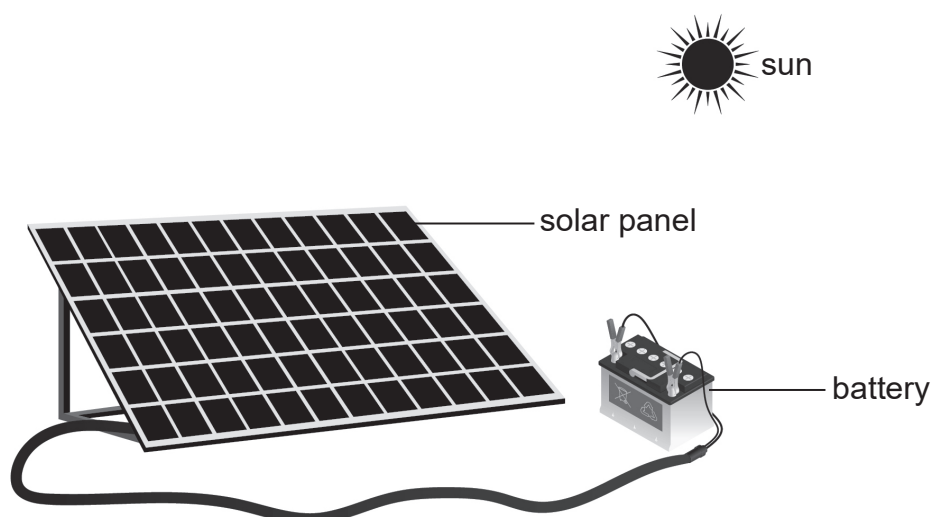
..... (1)

- (ii) Explain your answer in (c)(i) above.

..... (1)



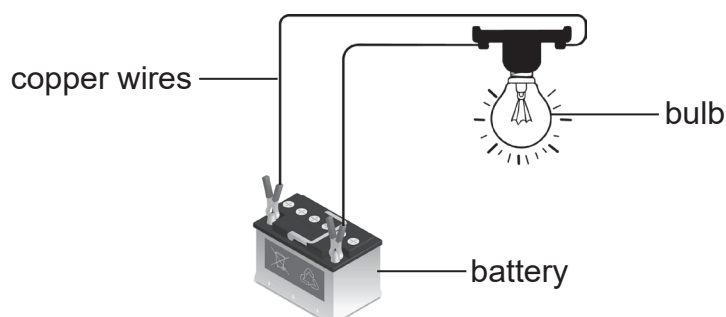
The diagram below shows a solar panel being used to harness solar energy to charge a battery. Use it to answer question 10.



10. (a) Explain why the solar panel is black in colour.

.....
 (1)

After the battery is fully charged, it is connected using copper wires to power a bulb as shown in the diagram below.



- (b) Complete the table below by writing the form of energy for each described case.

One box has been filled for you.

Case	Form of Energy
Energy given out by the bulb	Light
Energy transmitted within the copper wires	
Energy stored in the battery	

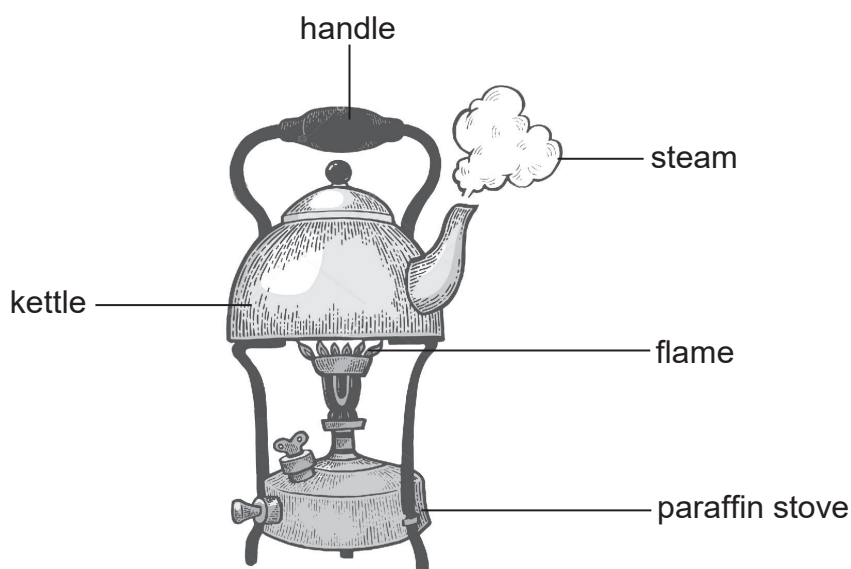
(2)

- (c)** Explain how harnessing solar energy for power generation helps in reducing global warming.

.....

..... (2)

The diagram below shows a paraffin stove being used to boil water in a kettle. Use it to answer question 11.



- 11. (a)** Name the method of heat transfer through which heat is transmitted through the body of the kettle.

..... (1)

- (b)** Describe how heat is transferred through the water inside the kettle.

.....

.....

..... (2)

- (c) (i) Suggest a suitable material for making the handle of the kettle.

..... (1)

- (ii) Explain your answer in (c)(i) above.

..... (1)



- (d) Explain how the positioning of the handle of the kettle poses a danger to its users.

.....

..... (1)

- (e) Draw, on the diagram, a safer positioning of the handle of the kettle. (1)

-
12. (a) Define matter.

.....

..... (1)

- (b) Carbon dioxide can exist as a solid, a liquid or a gas.

- (i) Name the state of matter in which carbon dioxide can be easily compressed.

..... (1)

- (ii) Explain your answer in (b)(i).

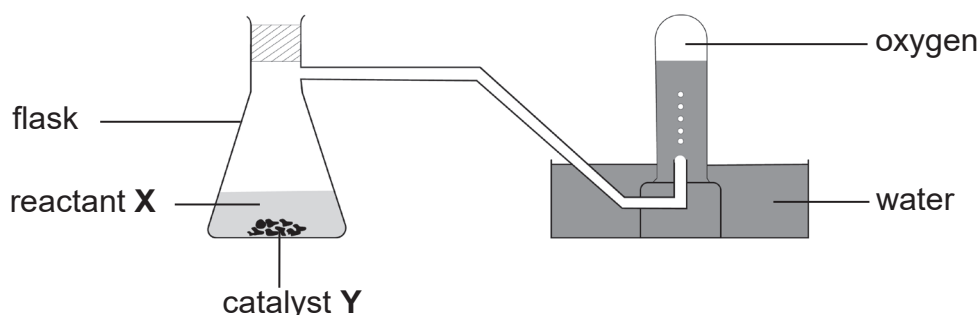
..... (1)

- (c) State any **two** uses of carbon dioxide.

.....

..... (2)

The diagram below shows a set-up that is used to prepare oxygen in a laboratory. Use it to answer question 13.



13. (a) State the names of the following substances.

Reactant X

Catalyst Y

(2)

(b) Describe the test for oxygen.

Test

.....

Result

.....

(2)

(c) Explain why it is possible to collect oxygen using the method shown in the diagram.

.....

..... (1)

(d) State any **two** properties of oxygen.

.....

..... (2)



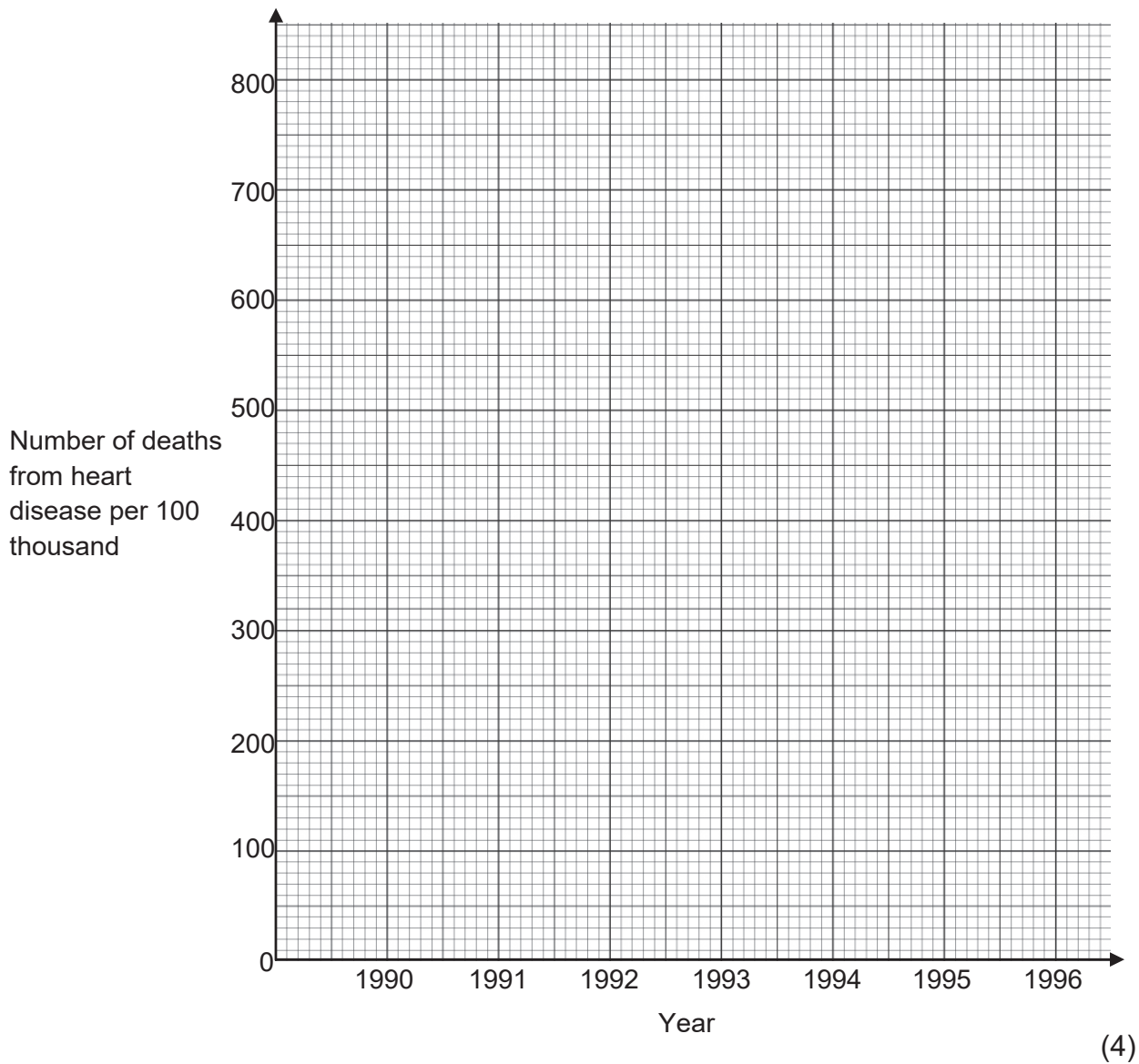
SECTION B

(10 Marks)

The table below shows death in a certain country from heart disease between the year 1990 and 1996. Use it to answer question 14.

Time / Year	1990	1991	1992	1993	1994	1995	1996
Number of deaths from heart disease per 100 thousand	100	300	660	700	800	720	510

14. (a) Plot a graph of number of deaths from heart disease against years.



- (b) (i) Describe the shape of the graph between the years 1994 and 1996.

.....

..... (1)

(ii) Suggest **two** possible reasons to your answer in (b)(i).

.....

..... (2)

(c) (i) Using the graph, determine the two years which follow each other, where the difference in the number of deaths was the **highest**.

.....

..... (1)

(ii) Calculate the difference in the number of deaths between these two years mentioned in **(c)(i)**.

Number of deaths difference = (2)

