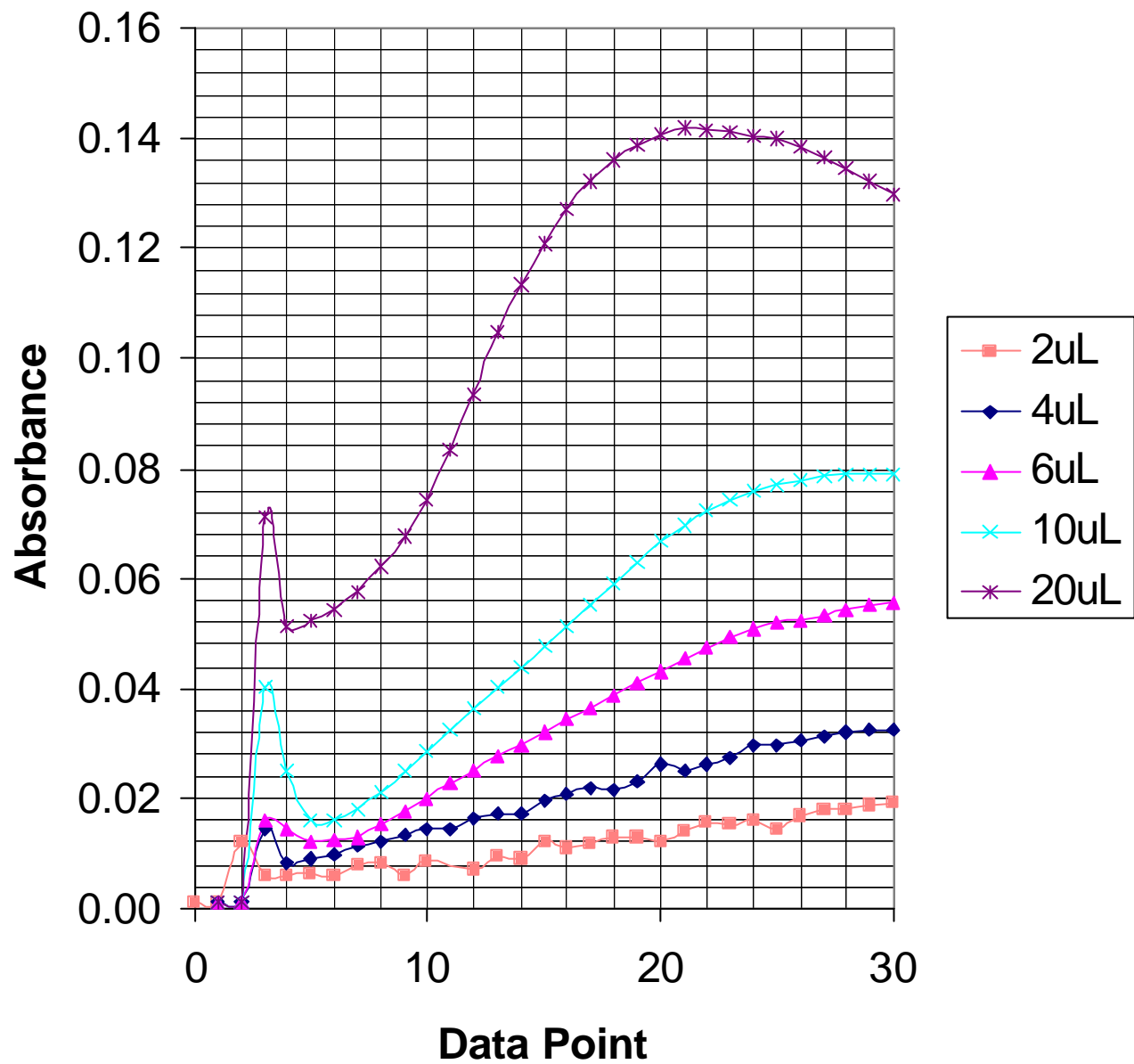


Question 6

DO NOT PUT ANY MARKS ON GRAPH, USE THE DATA PROVIDED.



The path length of the analyser cuvette is 7 mm.

The micromolar extinction coefficient for NADH is 6.3×10^{-3} .

The interval between each data point at which absorbance is measured is 15 seconds.

Sample volume is variable as indicated on the right of the graph, the final reaction volume is fixed at $240 \mu\text{L}$.

Question 6

Data Point	2uL	4uL	6uL	10uL	20uL
0	0.0011	0.0010	0.0012	0.0011	0.0013
1	0.0012	0.0011	0.0011	0.0010	0.0012
2	0.0122	0.0143	0.0162	0.0402	0.0712
3	0.0059	0.0084	0.0144	0.0250	0.0512
4	0.0060	0.0090	0.0120	0.0161	0.0523
5	0.0062	0.0099	0.0126	0.0160	0.0545
6	0.0060	0.0114	0.0129	0.0178	0.0576
7	0.0080	0.0120	0.0151	0.0213	0.0621
8	0.0081	0.0132	0.0176	0.0250	0.0675
9	0.0060	0.0143	0.0201	0.0287	0.0742
10	0.0088	0.0144	0.0226	0.0325	0.0834
12	0.0072	0.0163	0.0252	0.0363	0.0935
13	0.0092	0.0173	0.0276	0.0402	0.1048
14	0.0090	0.0171	0.0299	0.0440	0.1134
15	0.0120	0.0196	0.0321	0.0478	0.1209
16	0.0110	0.0207	0.0343	0.0514	0.1273
17	0.0118	0.0219	0.0365	0.0552	0.1323
18	0.0128	0.0216	0.0387	0.0591	0.1361
19	0.0129	0.0231	0.0409	0.0629	0.1389
20	0.0121	0.0261	0.0431	0.0667	0.1410
21	0.0140	0.0252	0.0454	0.0697	0.1419
22	0.0155	0.0264	0.0474	0.0723	0.1418
23	0.0151	0.0275	0.0493	0.0745	0.1412
24	0.0159	0.0298	0.0507	0.0760	0.1405
25	0.0145	0.0296	0.0521	0.0772	0.1399
26	0.0169	0.0305	0.0523	0.0780	0.1384
27	0.0181	0.0314	0.0533	0.0786	0.1366
28	0.0180	0.0322	0.0542	0.0790	0.1344
29	0.0186	0.0324	0.0550	0.0792	0.1321
30	0.0191	0.0324	0.0555	0.0791	0.1298

Question 9

- a) Patient A – 23 year old man admitted to accident and emergency with abdominal pain.

pH	Protein	Glucose	Ketones	Bilirubin	Blood	Urobilinogen
5	-	-	-	-	-	+++

- b) Patient B – 57 year old woman with loin pain and urinary frequency seen in medical out-patient clinic.

pH	Protein	Glucose	Ketones	Bilirubin	Blood	Urobilinogen
8	+	-	-	-	+++	-

- c) Patient C – 16 year old woman with headaches and blurring of vision seen by general practitioner.

pH	Protein	Glucose	Ketones	Bilirubin	Blood	Urobilinogen
4-5	+++	-	+	-	+++	-

Question 10

You are provided with two samples and attached request forms. Examine the samples and answer the questions on the question sheet. When suggesting tests in answer to the question, indicate the sort of results you would expect from the possible specimen types.

For health and safety reasons - please do not remove the samples from the sample bag.

Sample A comes from a patient who had a trans-sphenoidal hypophysectomy 2 weeks previously and is complaining of a nasal discharge.

Sample B comes from a patient 3 days after a total hysterectomy and ovariectomy.

[Sample A was a clear fluid in an appropriately labelled container, the question was whether fluid was cerebrospinal fluid. Sample B was a slightly turbid fluid in an appropriately labelled container, and the question was whether this fluid obtained from wound leakage was wound exudate or urine.]

Question 11

- a) A sample from a general practitioner on a 69 year old man with cardiac failure.

Sodium	134	mmol/L
Potassium	>10.0	mmol/L
Urea	12.7	mmol/L
Creatinine	154	μmol/L

- b) A sample from a general practitioner from a patient whom he had asked to increase the dose of thyroxine from 100 μg to 150 μg a day two months ago. The previous result is available to you.

First result

TSH	>100	mIU/L
Thyroxine	14.7	pmol/L

Current result

TSH	>100	mIU/L
Thyroxine	21.7	pmol/L

- c) A sample from a patient on a surgical ward with details "Post-op, on IVI" and normal urea and electrolytes pre-operatively.

Sodium	121	mmol/L
Potassium	1.8	mmol/L
Urea	2.3	mmol/L
Creatinine	98	μmol/L

Question 12

You are provided below with the results from a batch of samples from a growth hormone assay. The assay has been performed using a new batch of calibrators. Where samples have been accepted as a series from the same patient, they are numbered sequentially in time order. The tube number is the number in the whole batch. Samples for patients C,E, and H are aliquots sent from other laboratories and there is unlikely to be sufficient to repeat. According to the clinical information patients A,C and F have had growth hormone glucose tolerance tests and patients B and G day curves to determine the mean concentration post treatment. The samples from patient H were taken during an insulin tolerance test. The accepted limits for the controls are as follows:

	Lower	Mean	Upper
	Limit		Limit
Super Low Control	1.8	2.3	2.8
Low Control	7.1	7.9	8.7
Medium Control	20.9	23.2	25.5
High Control	63.2	70.2	77.2

Tube	Patient or Control	Sample	Growth	Tube	Patient or Control	Sample	Growth
No.		Number	Hormone	No.		Number	Hormone
1	Low Control		7.8	23	Patient F	2	7.8
2	Medium Control		24.2	24	Low Control		7.7
3	High Control		77.8	25	Low Control		7.7
4	Super Low Control		2.2	26	Medium Control		24.8
5	Patient A	1	35.7	27	High Control		84.6
6	Patient A	2	17.2	28	Patient F	3	3.4
7	Patient A	3	4.5	29	Patient F	4	<1.0
8	Patient A	4	7.9	30	Patient F	5	<1.0
9	Patient A	5	27.8	31	Patient G	1	4.0
10	Patient B	1	10.2	32	Patient G	2	3.2
11	Patient B	2	4.5	33	Patient G	3	2.6
12	Patient B	3	6.7	34	Patient G	4	5.2
13	Patient B	4	3.4	35	Patient H	1	<1.0
14	Patient C	1	15.2	36	Patient H	2	<1.0
15	Patient C	2	8.7	37	Patient H	3	35.7
16	Patient C	3	1.3	38	Patient H	4	61.3
17	Patient C	4	<1.0	39	Patient H	5	38.8
18	Patient C	5	<1.0	40	Patient H	6	19.8
19	Patient D	1	2.5	41	Low Control		7.9
20	Patient D	2	10.2	42	Med Control		25.0
21	Patient E		56.1	43	High Control		87.5
22	Patient F	1	28.3	44	Super Low Control		2.5