Write your name here

Surname	Other names

Pearson Edexcel
International Advanced Level

Centre Number | | | | | |

Candidate Number | | | | |

Psychology

International Advanced Subsidiary
Paper 2: Biological Psychology, Learning Theories and Development

Thursday 17 May 2018 – Afternoon
Time: 2 hours

Paper Reference
WPS02/01

You do not need any other materials.

Total Marks

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided – *there may be more space than you need.*

Information

- The total mark for this paper is 96.
- The marks for **each** question are shown in brackets – *use this as a guide as to how much time to spend on each question.*
- The list of formulae and statistical tables are printed at the start of this paper.
- Candidates may use a calculator.

Advice

- Read each question carefully before you start to answer it.
- Check your answers if you have time at the end.

Turn over ▶

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P 5 1 9 7 6 A 0 1 3 2

Pearson

FORMULAE AND STATISTICAL TABLES

Standard deviation (sample estimate)

$$\sqrt{\left(\frac{\sum(x-\bar{x})^2}{n-1}\right)}$$

Spearman's rank correlation coefficient

$$1-\frac{6\sum d^2}{n(n^2-1)}$$

Critical values for Spearman's rank

	Level of significance for a one-tailed test				
	0.05	**0.025**	**0.01**	**0.005**	**0.0025**
	Level of significance for a two-tailed test				
N	**0.10**	**0.05**	**0.025**	**0.01**	**0.005**
5	0.900	1.000	1.000	1.000	1.000
6	0.829	0.886	0.943	1.000	1.000
7	0.714	0.786	0.893	0.929	0.964
8	0.643	0.738	0.833	0.881	0.905
9	0.600	0.700	0.783	0.833	0.867
10	0.564	0.648	0.745	0.794	0.830
11	0.536	0.618	0.709	0.755	0.800
12	0.503	0.587	0.678	0.727	0.769
13	0.484	0.560	0.648	0.703	0.747
14	0.464	0.538	0.626	0.679	0.723
15	0.446	0.521	0.604	0.654	0.700
16	0.429	0.503	0.582	0.635	0.679
17	0.414	0.485	0.566	0.615	0.662
18	0.401	0.472	0.550	0.600	0.643
19	0.391	0.460	0.535	0.584	0.628
20	0.380	0.447	0.520	0.570	0.612
21	0.370	0.435	0.508	0.556	0.599
22	0.361	0.425	0.496	0.544	0.586
23	0.353	0.415	0.486	0.532	0.573
24	0.344	0.406	0.476	0.521	0.562
25	0.337	0.398	0.466	0.511	0.551
26	0.331	0.390	0.457	0.501	0.541
27	0.324	0.382	0.448	0.491	0.531
28	0.317	0.375	0.440	0.483	0.522
29	0.312	0.368	0.433	0.475	0.513
30	0.306	0.362	0.425	0.467	0.504

The calculated value must be equal to or exceed the critical value in this table for significance to be shown.

Chi-squared distribution formula

$$X^2 = \sum \frac{(O-E)^2}{E} \qquad df = (r-1)(c-1)$$

Critical values for chi-squared distribution

	Level of significance for a one-tailed test					
	0.10	**0.05**	**0.025**	**0.01**	**0.005**	**0.0005**
	Level of significance for a two-tailed test					
df	**0.20**	**0.10**	**0.05**	**0.025**	**0.01**	**0.001**
1	1.64	2.71	3.84	5.02	6.64	10.83
2	3.22	4.61	5.99	7.38	9.21	13.82
3	4.64	6.25	7.82	9.35	11.35	16.27
4	5.99	7.78	9.49	11.14	13.28	18.47
5	7.29	9.24	11.07	12.83	15.09	20.52
6	8.56	10.65	12.59	14.45	16.81	22.46
7	9.80	12.02	14.07	16.01	18.48	24.32
8	11.03	13.36	15.51	17.54	20.09	26.12
9	12.24	14.68	16.92	19.02	21.67	27.88
10	13.44	15.99	18.31	20.48	23.21	29.59
11	14.63	17.28	19.68	21.92	24.73	31.26
12	15.81	18.55	21.03	23.34	26.22	32.91
13	16.99	19.81	22.36	24.74	27.69	34.53
14	18.15	21.06	23.69	26.12	29.14	36.12
15	19.31	22.31	25.00	27.49	30.58	37.70
16	20.47	23.54	26.30	28.85	32.00	39.25
17	21.62	24.77	27.59	30.19	33.41	40.79
18	22.76	25.99	28.87	31.53	34.81	42.31
19	23.90	27.20	30.14	32.85	36.19	43.82
20	25.04	28.41	31.41	34.17	37.57	45.32
21	26.17	29.62	32.67	35.48	38.93	46.80
22	27.30	30.81	33.92	36.78	40.29	48.27
23	28.43	32.01	35.17	38.08	41.64	49.73
24	29.55	33.20	36.42	39.36	42.98	51.18
25	30.68	34.38	37.65	40.65	44.31	52.62
26	31.80	35.56	38.89	41.92	45.64	54.05
27	32.91	36.74	40.11	43.20	46.96	55.48
28	34.03	37.92	41.34	44.46	48.28	56.89
29	35.14	39.09	42.56	45.72	49.59	58.30
30	36.25	40.26	43.77	46.98	50.89	59.70
40	47.27	51.81	55.76	59.34	63.69	73.40
50	58.16	63.17	67.51	71.42	76.15	86.66
60	68.97	74.40	79.08	83.30	88.38	99.61
70	79.72	85.53	90.53	95.02	100.43	112.32

The calculated value must be equal to or exceed the critical value in this table for significance to be shown.

Wilcoxon Signed Ranks test process

- Calculate the difference between two scores by taking one from the other
- Rank the differences giving the smallest difference Rank 1

  Note: do not rank any differences of 0 and when adding the number of scores, do not count those with a difference of 0, and ignore the signs when calculating the difference
- Add up the ranks for positive differences
- Add up the ranks for negative differences
- T is the figure that is the smallest when the ranks are totalled (may be positive or negative)
- N is the number of scores left, ignore those with 0 difference

Critical values for the Wilcoxon Signed Ranks test

	Level of significance for a one-tailed test		
	0.05	0.025	0.01
	Level of significance for a two-tailed test		
n	0.1	0.05	0.02
N=5	0	-	-
6	2	0	-
7	3	2	0
8	5	3	1
9	8	5	3
10	11	8	5
11	13	10	7
12	17	13	9

The calculated value must be equal to or less than the critical value in this table for significance to be shown.

SECTION A

BIOLOGICAL PSYCHOLOGY

Answer ALL questions in this section. Write your answers in the spaces provided.

1 Synaptic transmission occurs throughout the body, including in the brain.

Describe what is meant by 'synaptic transmission'.

(Total for Question 1 = 3 marks)

2 Oti carried out an experiment to determine the effects of drinking coffee on behaviour.

- In Condition A participants were given a puzzle to complete.
- In Condition B the same participants were given a cup of coffee to drink and then asked to complete the same puzzle again.

Oti timed how many seconds it took the participants to complete the puzzle in Condition A and Condition B.

(a) State a fully operationalised directional (one-tailed) hypothesis for the experiment Oti carried out.

(3)

Oti's results are shown in **Table 1**.

Condition A Mean number of seconds taken to complete the puzzle before drinking coffee	Condition B Mean number of seconds taken to complete the puzzle after drinking coffee
360	600

Table 1

(b) Interpret the results of this experiment, using the data from **Table 1**.

(3)

Oti carried out a statistical test to determine whether her results were significant or not.

(c) State which statistical test Oti would have used for her data.

(1)

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(d) Explain **one** improvement Oti could have made to her experiment.

(2)

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(Total for Question 2 = 9 marks)

3 Anastacia had an accident where she slipped on a wet floor, banged her head and was unconscious for a short time. Since then she has become more aggressive, getting angry quickly and often shouting at her friends if she thinks they are wrong. Anastacia recently hit another person who accidently pushed her in a crowded room.

(a) Describe brain functioning as an explanation for Anastacia's aggression.

(4)

(b) Explain **one** strength and **one** weakness of brain functioning as an explanation for Anastacia's aggression.

(4)

Strength

Weakness

(Total for Question 3 = 8 marks)

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QUESTION 4 BEGINS ON THE NEXT PAGE.

4 Gorka carried out a study that looked at the effect of age on the number of minutes children slept per night during a week. He compared a group of 1- to 5-year olds, a group of 6- to 10-year olds and a group of 11- to 15-year olds.

Gorka's results are shown in **Table 2**.

Age range in years	Mean number of minutes slept per night
1- to 5-year olds	660
6- to 10-year olds	600
11- to 15-year olds	540

Table 2

(a) Calculate the ratio of minutes slept for 1- to 5-year olds compared to minutes slept for 6- to 10-year olds.

You **must** express this ratio in its lowest form.

(1)

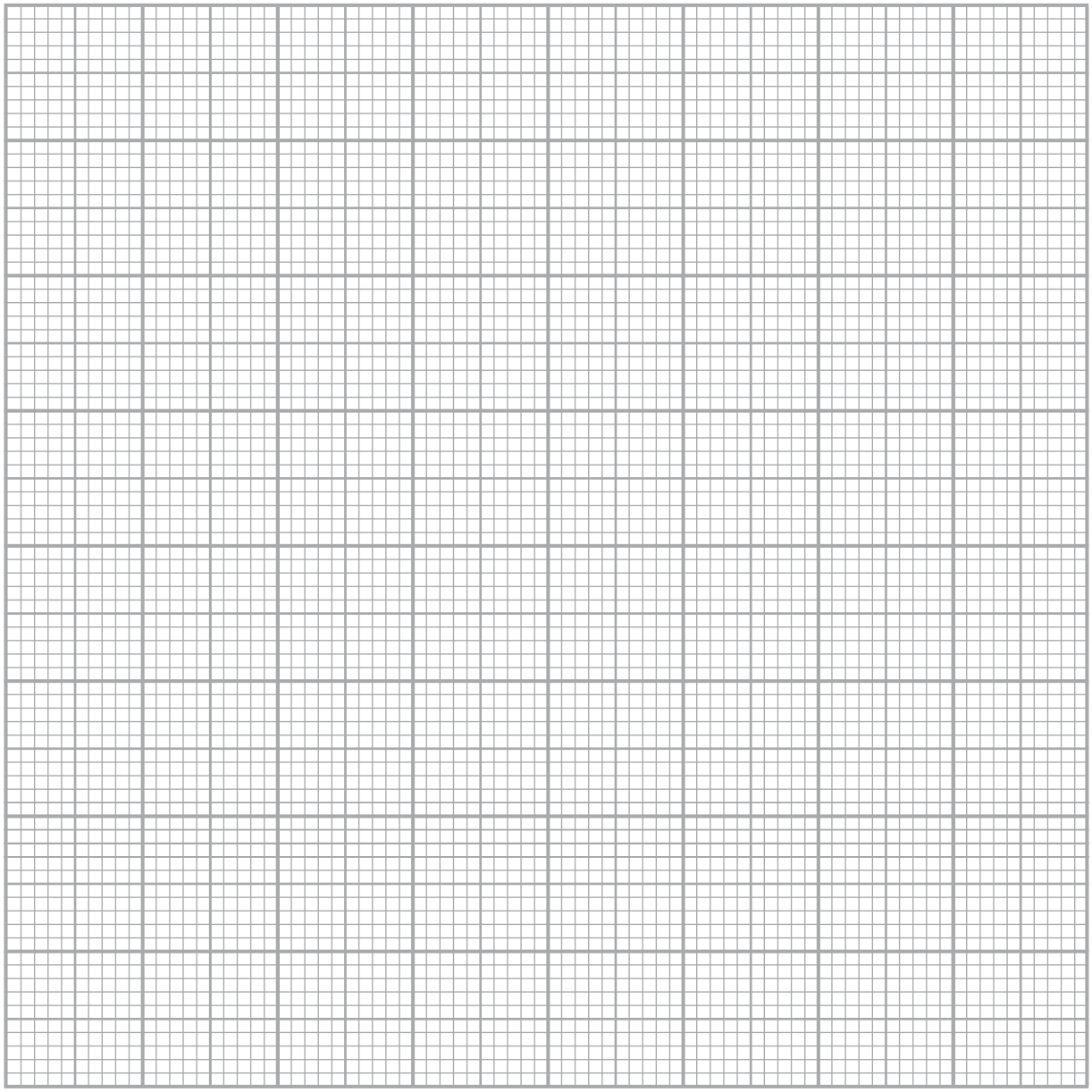
Space for calculations

Ratio .....

(b) Draw a suitable graph to represent the data shown in **Table 2**.

(3)

Title



(c) Explain **one** weakness of the mean as a measure of central tendency.

(2)

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(Total for Question 4 = 6 marks)

5 Evaluate research into the role of hormones in aggression.

(8)

(Total for Question 5 = 8 marks)

TOTAL FOR SECTION A = 34 MARKS

SECTION B

LEARNING THEORIES AND DEVELOPMENT.

Answer ALL questions in this section. Write your answers in the spaces provided.

6 Ore observed his father painting a picture of a local scene. When the painting was finished Ore's mother praised his father and said how good the painting was. Ore decides to try and paint the same local scene.

(a) Explain, using social learning theory, why Ore's father is a role model for Ore.

(2)

(b) Describe, using social learning theory, what may have motivated Ore to try and paint the same local scene as his father.

(2)

Ore also likes to be outside playing cricket with his friends. His mother gives Ore his favourite food when he comes back home after playing cricket.

(c) Describe, using positive reinforcement, **one** reason why Ore likes to be outside playing cricket with his friends.

(2)

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(Total for Question 6 = 6 marks)

7 Aljaz carried out a study to investigate whether the use of an electric shock would teach pigeons not to peck at a circle. He placed one pigeon at a time in a box that contained a circle on one of the walls. When they pecked at a circle, the pigeons either received an electric shock or did not receive an electric shock.

- In Condition A, pigeons did not get an electric shock if they pecked at the circle.
- In Condition B, pigeons did get an electric shock if they pecked at the circle.

On the following day, the pigeons were placed in the box again. Aljaz recorded how many pigeons pecked at the circle and how many pigeons did not peck at the circle. The results are shown in **Table 3**.

	Number of pigeons that did not peck at a circle	**Number of pigeons that pecked at a circle**
Condition A **Did not get electric shock**	13	20
Condition B **Did get electric shock**	22	5

Table 3

(a) Calculate *df* using **Table 3**.

The formula can be found in the formulae and statistical tables at the front of the exam paper.

(1)

Space for calculations

df = ...

(b) Calculate the chi-squared for the data gathered by Aljaz by completing **Table 4**.

You should give your answer to **two** decimal places.

The formula can be found in the formulae and statistical tables at the front of the exam paper.

		Observed	**Expected**	**O-E**	**$(O-E)^2$**	**$(O-E)^2/E$**
Condition A **Did not get electric shock**	Did not peck at circle	13	19.25			
	Pecked at circle	20	13.75			
Condition B **Did get electric shock**	Did not peck at circle	22	15.75			
	Pecked at circle	5	11.25			
					Chi-squared =	

Table 4

(4)

Space for calculations

(c) Describe **two** ethical issues, using the Scientific Procedures Act (1986), regarding the use of animals in laboratory experiments.

(4)

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2 .....

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(d) Explain **one** weakness with generalising results from an animal study to humans.

(2)

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(Total for Question 7 = 11 marks)

8 Psychoanalysis uses many different techniques.

(a) Describe free association as it is used in psychoanalysis.

(4)

(b) Describe transference as it is used in psychoanalysis.

(2)

Tameka is a psychoanalyst. She has an adult client that she has been seeing for over a year. Recently Tameka has found that her client acts in a childlike manner, and Tameka is responding to this by getting frustrated with her client.

She feels her client should be able to make decisions for herself and gets angry with the client when she does not. Tameka has found that she sometimes talks to her client in an angry tone of voice, and does not listen to her client as closely as she should.

(c) Describe counter-transference in relation to Tameka and her client.

(3)

(Total for Question 8 = 9 marks)

9 Assess the effectiveness of systematic desensitisation as a treatment/therapy.

(8)

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

(Total for Question 9 = 8 marks)

TOTAL FOR SECTION B = 34 MARKS

SECTION C

Answer ALL questions in this section. Write your answers in the spaces provided.

10 To what extent does light therapy work effectively for people diagnosed with seasonal affective disorder?

(12)

(Total for Question 10 = 12 marks)

11 In your studies you will have learned about the following classic studies in detail.

- Raine et al. (1997) Brain abnormalities in murderers indicated by positron emission tomography.
- Watson and Rayner (1920) Little Albert: conditioned emotional responses.

Evaluate both of these classic studies in terms of reliability and validity.

(16)

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(Total for Question 11 = 16 marks)

TOTAL FOR SECTION C = 28 MARKS
TOTAL FOR PAPER = 96 MARKS