

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**

Tuesday 16 January 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 ►

P54511A

©2018 Pearson Education Ltd.

1/1/1/1



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

N	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				
	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.

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA



**Chi-squared distribution formula**

$$X^2 = \sum \frac{(O-E)^2}{E}$$

$$df = (r - 1)(c - 1)$$

**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

<i>n</i>	Level of significance for a one-tailed test		
	0.05	0.025	0.01
	Level of significance for a two-tailed test		
	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.

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA



**SECTION A**

**BIOLOGICAL PSYCHOLOGY**

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

**1** Describe the role of the neuron in human behaviour.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

**(Total for Question 1 = 3 marks)**

**2** Samadhi lives in Norway and she finds her sleep-wake cycle changes according to the season. During the winter months Samadhi goes to bed earlier and wakes up later compared to during the summer months.

(a) Describe the role of internal pacemakers on Samadhi's sleep-wake cycle.

**(3)**

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....



DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

(b) Explain **one** strength and **one** weakness of the role of internal pacemakers on the sleep-wake cycle.

(4)

Strength

.....

.....

.....

.....

.....

.....

Weakness

.....

.....

.....

.....

.....

.....

**(Total for Question 2 = 7 marks)**

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA



3 Ulrick conducted an experiment to see whether aggression increased during puberty. He gathered a sample of 10-year-olds from a local school and a sample of 15-year-olds from a school in the neighbouring town.

Ulrick recorded the number of aggressive acts carried out by 10-year-olds and the number of aggressive acts carried out by 15-year-olds using a tally chart.

(a) Identify the experimental design used by Ulrick.

(1)

.....

.....

(b) Define what is meant by the term 'nominal data' in relation to the data gathered by Ulrick.

(2)

.....

.....

.....

.....

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA



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

Age in years	Average number of aggressive acts
10	3
15	4

**Table 1**

- (c) Calculate the average number of aggressive acts carried out by 10-year-olds as a percentage of the total number of aggressive acts.

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

(1)

**Space for calculations**

Percentage .....

- (d) Explain **one** conclusion about aggression that could be made from the data in **Table 1**.

(2)

.....

.....

.....

.....

.....

**(Total for Question 3 = 6 marks)**



DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA





5 During your course you will have learned about Brendgen et al.'s (2005) contemporary study.

(a) Describe the sample used by Brendgen et al. (2005) in their study.

(2)

.....

.....

.....

.....

.....

.....

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA



(b) Explain **one** strength and **one** weakness of Brendgen et al's (2005) study.

(4)

Strength

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

Weakness

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

**(Total for Question 5 = 6 marks)**





DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

Handwriting practice area with 20 horizontal dotted lines.

**(Total for Question 6 = 8 marks)**

**TOTAL FOR SECTION A = 34 MARKS**





Andrija decides to use operant conditioning to encourage his son, Alexi, to make his bed.

- (b) Explain **one** weakness of Andrija using operant conditioning to encourage Alexi to make his bed.

(2)

.....

.....

.....

.....

.....

.....

**(Total for Question 7 = 6 marks)**

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA



- 8 Karolina has carried out an investigation to see if watching television programmes where people help each other, increased the helping behaviour of young children. She recorded the number of helping behaviours each child displayed before and after they had watched the television programmes.

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

Participant	Condition A Number of helping behaviours displayed before watching the television programmes	Condition B Number of helping behaviours displayed after watching the television programmes
one	3	5
two	9	4
three	0	2
four	2	6
five	4	6
six	2	3
seven	5	8
eight	1	3

**Table 2**

- (a) Calculate the mean score for Condition B using the results from **Table 2**.

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

(1)

**Space for calculations**

Mean .....





Karolina calculated the ranges for her results.

The ranges for Karolina's results are shown in **Table 3**.

Range for number of helping behaviours displayed before watching the television programmes	Range for number of helping behaviours displayed after watching the television programmes
9	6

**Table 3**

(b) Interpret the data shown in **Table 3**.

(2)

.....

.....

.....

.....

.....





9 Watson and Rayner (1920) used classical conditioning in their study on Little Albert.

(a) Identify the unconditioned stimulus (UCS) in Watson and Rayner's (1920) study.

(1)

.....

.....

.....

(b) Explain **two** ethical weaknesses of Watson and Rayner's (1920) study.

(4)

1 .....

.....

.....

.....

.....

.....

.....

.....

.....

.....

2 .....

.....

.....

.....

.....

.....

.....

.....

.....

.....

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA



(c) Explain **one** improvement that could be made to the sample used in Watson and Rayner's (1920) study.

(2)

.....

.....

.....

.....

.....

.....

**(Total for Question 9 = 7 marks)**

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA



**10** Brigita is five years old. She has observed her mother applying make-up, and her father telling her mother how nice she looks.

Brigita finds her mother's make-up and puts it onto her own face.

(a) State **two** reasons why Brigita imitates her mother.

(2)

1 .....

.....

2 .....

.....

(b) Explain **one** strength and **one** weakness of social learning theory.

(4)

Strength

.....

.....

.....

.....

.....

.....

.....

Weakness

.....

.....

.....

.....

.....

.....

.....

(Total for Question 10 = 6 marks)





DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

Handwriting practice area with 20 horizontal dotted lines.

**(Total for Question 11 = 8 marks)**

**TOTAL FOR SECTION B = 34 MARKS**







DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

Large writing area with horizontal dotted lines.



Lined writing area for question 12.

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

**(Total for Question 12 = 12 marks)**





Handwriting practice area with 20 sets of horizontal dotted lines.

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA



DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

Large writing area with horizontal dotted lines.



DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

**(Total for Question 13 = 16 marks)**

**TOTAL FOR SECTION C = 28 MARKS**

**TOTAL FOR PAPER = 96 MARKS**



DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

**BLANK PAGE**



P 5 4 5 1 1 A 0 3 1 3 2

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

**BLANK PAGE**

