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Surname

Other names

**Pearson Edexcel**  
**Level 3 GCE**

Centre Number

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Candidate Number

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# Psychology

**Advanced**

**Paper 3: Psychological Skills**

Thursday 14 June 2018 – Morning

**Time: 2 hours**

Paper Reference

**9PS0/03**

**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 80.
- 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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## 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**

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

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

**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.



**Mann-Whitney U test formulae**

$$U_a = n_a n_b + \frac{n_a(n_a+1)}{2} - \sum R_a$$

$$U_b = n_a n_b + \frac{n_b(n_b+1)}{2} - \sum R_b$$

(U is the smaller of  $U_a$  and  $U_b$ )

**Critical values for the Mann-Whitney U test**

$N_a$	$N_b$															
	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
<b><math>p \leq 0.05</math> (one-tailed), <math>p \leq 0.10</math> (two-tailed)</b>																
<b>5</b>	4	5	6	8	9	11	12	13	15	16	18	19	20	22	23	25
<b>6</b>	5	7	8	10	12	14	16	17	19	21	23	25	26	28	30	32
<b>7</b>	6	8	11	13	15	17	19	21	24	26	28	30	33	35	37	39
<b>8</b>	8	10	13	15	18	20	23	26	28	31	33	36	39	41	44	47
<b>9</b>	9	12	15	18	21	24	27	30	33	36	39	42	45	48	51	54
<b>10</b>	11	14	17	20	24	27	31	34	37	41	44	48	51	55	58	62
<b>11</b>	12	16	19	23	27	31	34	38	42	46	50	54	57	61	65	69
<b>12</b>	13	17	21	26	30	34	38	42	47	51	55	60	64	68	72	77
<b>13</b>	15	19	24	28	33	37	42	47	51	56	61	65	70	75	80	84
<b>14</b>	16	21	26	31	36	41	46	51	56	61	66	71	77	82	87	92
<b>15</b>	18	23	28	33	39	44	50	55	61	66	72	77	83	88	94	100
<b>16</b>	19	25	30	36	42	48	54	60	65	71	77	83	89	95	101	107
<b>17</b>	20	26	33	39	45	51	57	64	70	77	83	89	96	102	109	115
<b>18</b>	22	28	35	41	48	55	61	68	75	82	88	95	102	109	116	123
<b>19</b>	23	30	37	44	51	58	65	72	80	87	94	101	109	116	123	130
<b>20</b>	25	32	39	47	54	62	69	77	84	92	100	107	115	123	130	138



$N_a$	$N_b$															
	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
<b><math>p \leq 0.01</math> (one-tailed), <math>p \leq 0.02</math> (two-tailed)</b>																
<b>5</b>	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
<b>6</b>	2	3	4	6	7	8	9	11	12	13	15	16	18	19	20	22
<b>7</b>	3	4	6	7	9	11	12	14	16	17	19	21	23	24	26	28
<b>8</b>	4	6	7	9	11	13	15	17	20	22	24	26	28	30	32	34
<b>9</b>	5	7	9	11	14	16	18	21	23	26	28	31	33	36	38	40
<b>10</b>	6	8	11	13	16	19	22	24	27	30	33	36	38	41	44	47
<b>11</b>	7	9	12	15	18	22	25	28	31	34	37	41	44	47	50	53
<b>12</b>	8	11	14	17	21	24	28	31	35	38	42	46	49	53	56	60
<b>13</b>	9	12	16	20	23	27	31	35	39	43	47	51	55	59	63	67
<b>14</b>	10	13	17	22	26	30	34	38	43	47	51	56	60	65	69	73
<b>15</b>	11	15	19	24	28	33	37	42	47	51	56	61	66	70	75	80
<b>16</b>	12	16	21	26	31	36	41	46	51	56	61	66	71	76	82	87
<b>17</b>	13	18	23	28	33	38	44	49	55	60	66	71	77	82	88	93
<b>18</b>	14	19	24	30	36	41	47	53	59	65	70	76	82	88	94	100
<b>19</b>	15	20	26	32	38	44	50	56	63	69	75	82	88	94	101	107
<b>20</b>	16	22	28	34	40	47	53	60	67	73	80	87	93	100	107	114

$N_a$	$N_b$															
	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
<b><math>p \leq 0.025</math> (one-tailed), <math>p \leq 0.05</math> (two-tailed)</b>																
<b>5</b>	2	3	5	6	7	8	9	11	12	13	14	15	17	18	19	20
<b>6</b>	3	5	6	8	10	11	13	14	16	17	19	21	22	24	25	27
<b>7</b>	5	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34
<b>8</b>	6	8	10	13	15	17	19	22	24	26	29	31	34	36	38	41
<b>9</b>	7	10	12	15	17	20	23	26	28	31	34	37	39	42	45	48
<b>10</b>	8	11	14	17	20	23	26	29	33	36	39	42	45	48	52	55
<b>11</b>	9	13	16	19	23	26	30	33	37	40	44	47	51	55	58	62
<b>12</b>	11	14	18	22	26	29	33	37	41	45	49	53	57	61	65	69
<b>13</b>	12	16	20	24	28	33	37	41	45	50	54	59	63	67	72	76
<b>14</b>	13	17	22	26	31	36	40	45	50	55	59	64	67	74	78	83
<b>15</b>	14	19	24	29	34	39	44	49	54	59	64	70	75	80	85	90
<b>16</b>	15	21	26	31	37	42	47	53	59	64	70	75	81	86	92	98
<b>17</b>	17	22	28	34	39	45	51	57	63	67	75	81	87	93	99	105
<b>18</b>	18	24	30	36	42	48	55	61	67	74	80	86	93	99	106	112
<b>19</b>	19	25	32	38	45	52	58	65	72	78	85	92	99	106	113	119
<b>20</b>	20	27	34	41	48	55	62	69	76	83	90	98	105	112	119	127



$N_a$	$N_b$															
	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
<b><math>p \leq 0.005</math> (one-tailed), <math>p \leq 0.01</math> (two-tailed)</b>																
<b>5</b>	0	1	1	2	3	4	5	6	7	7	8	9	10	11	12	13
<b>6</b>	1	2	3	4	5	6	7	9	10	11	12	13	15	16	17	18
<b>7</b>	1	3	4	6	7	9	10	12	13	15	16	18	19	21	22	24
<b>8</b>	2	4	6	7	9	11	13	15	17	18	20	22	24	26	28	30
<b>9</b>	3	5	7	9	11	13	16	18	20	22	24	27	29	31	33	36
<b>10</b>	4	6	9	11	13	16	18	21	24	26	29	31	34	37	39	42
<b>11</b>	5	7	10	13	16	18	21	24	27	30	33	36	39	42	45	48
<b>12</b>	6	9	12	15	18	21	24	27	31	34	37	41	44	47	51	54
<b>13</b>	7	10	13	17	20	24	27	31	34	38	42	45	49	53	56	60
<b>14</b>	7	11	15	18	22	26	30	34	38	42	46	50	54	58	63	67
<b>15</b>	8	12	16	20	24	29	33	37	42	46	51	55	60	64	69	73
<b>16</b>	9	13	18	22	27	31	36	41	45	50	55	60	65	70	74	79
<b>17</b>	10	15	19	24	29	34	39	44	49	54	60	65	70	75	81	86
<b>18</b>	11	16	21	26	31	37	42	47	53	58	64	70	75	81	87	92
<b>19</b>	12	17	22	28	33	39	45	51	56	63	69	74	81	87	93	99
<b>20</b>	13	18	24	30	36	42	48	54	60	67	73	79	86	92	99	105

The calculated value must be equal to or less than 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.



Answer ALL questions.

SECTION A: RESEARCH METHODS

1 Lecture notes and learning

Researchers wanted to see whether providing learning aids during a lecture would help students. Students attended an audio lecture on how car brakes function. Before the lecture, students were given either a skeletal outline (with headings and subheadings) or no learning aid at all (they were given notepaper). After the lecture, students were given a short-answer test that assessed their understanding of how car brakes function.

(Source: adapted from Bui et al. (2015))

- (a) Identify the experimental/research design used in the lecture notes and learning study.

(1)

- (b) Explain how **one** participant variable could affect the findings of the lecture notes and learning study.

(2)

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(c) Explain **one** way the researchers in the lecture notes and learning study could make the study as generalisable as possible to the target population of students.

(3)

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The researchers in the lecture notes and learning study decided to carry out a Mann-Whitney U test on the data.

(d) Complete **Table 1** and calculate Mann-Whitney U for the data in **Table 1**.

(4)

Experimental Group		Control Group	
Score on test with skeletal outline	Rank	Score on test with notepaper	Rank
85	16.5	67	10.5
46	5	45	3
55	7	33	1
89	19	79	14.5
55	7	45	3
90	18	71	12
78	13	45	3
55	7	67	10.5
92	20	65	9
85	16.5	79	14.5
<b>Total</b>		<b>Total</b>	

**Table 1**

**SPACE FOR CALCULATIONS**

$U_a$  .....

$U_b$  .....

$U$  .....



- (e) The researchers of the lecture notes and learning study need to decide whether to accept or reject their null hypothesis. They have been warned not to make a Type I error when doing this.

Explain to the researchers what a Type I error would be in the lecture notes and learning study.

(2)

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- (f) The researchers in the lecture notes and learning study are interested in publishing their work in the British Journal of Educational Psychology.

The British Journal of Educational Psychology publishes psychological research that makes a significant contribution to the understanding and practice of education.

Author Guidelines for the British Journal of Educational Psychology:

- We publish psychological research that makes a significant contribution to the understanding and practice of education.
- We aim to publish research which has a broad international appeal to researchers and practitioners in education.
- We welcome experimental studies, observations of classroom behaviours, interviews, and surveys.
- Important criteria in the selection process are quality of argument and educational significance.
- We tend to publish more quantitative than qualitative studies.

(Source: statement adapted from the Author Guidelines for the *British Journal of Educational Psychology*, published by the British Psychological Society (2015))

Explain what the peer review process would involve for the researchers in the lecture notes and learning study, including a consideration of the likelihood of their findings being published.

(4)

(Total for Question 1 = 16 marks)



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**QUESTION 2 BEGINS ON THE NEXT PAGE.**



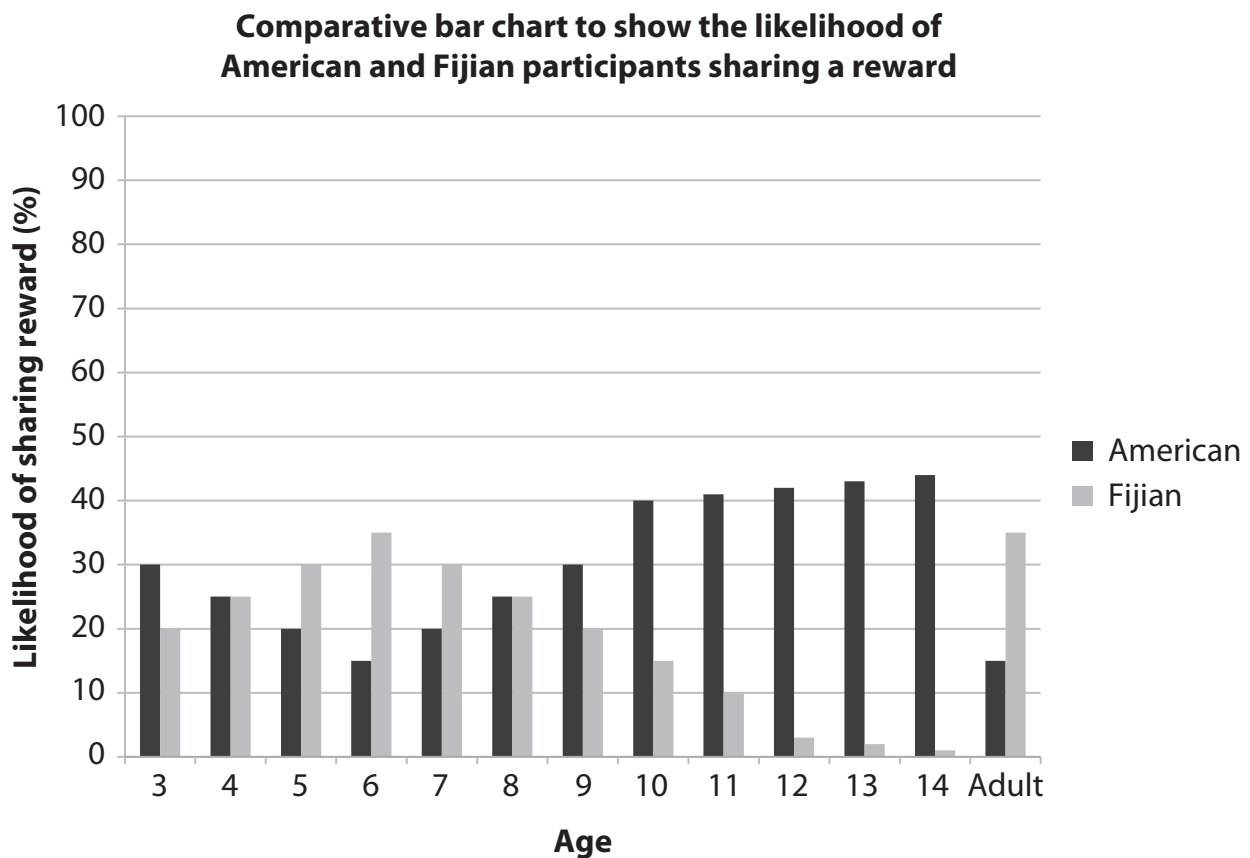
## 2 Prosocial behaviour and culture

Researchers wanted to investigate whether prosocial behaviour was similar cross-culturally and whether this trait increases as people become adults. They recruited 326 children and 120 adults of different gender and age from six countries. The six countries represented a wide range of human variation in terms of culture and geography.

To assess the level of prosocial behaviour participants had to choose between sharing a reward at a cost to them (prosocial) or keep it all at no cost to them (antisocial).

(Source: adapted from House et al. (2012))

The results of the American and Fijian participants are shown in **Figure 1**.



**Figure 1**



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- (a) Analyse the data provided in **Figure 1** to explain **two** conclusions that the researchers in the prosocial behaviour and culture study might draw from these results.

(4)

Conclusion 1

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Conclusion 2

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P 5 2 2 0 6 A 0 1 5 3 2

(b) The prosocial behaviour and culture study used a laboratory experiment.

Explain **two** weaknesses of using a laboratory experiment in the prosocial behaviour and culture study.

(4)

Weakness 1

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Weakness 2

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(Total for Question 2 = 8 marks)

**TOTAL FOR SECTION A = 24 MARKS**



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**SECTION B BEGINS ON NEXT PAGE.**



## SECTION B: REVIEW OF STUDIES

### 3 'Instigators' and an unethical act

A study examined the psychology of 'instigators'. 'Instigators' are people who surround an unethical act and influence the wrongdoer without directly committing the act themselves.

Student confederates were recruited to instruct participants to commit an unethical act. The unethical act was to vandalise a book in the university library by writing the word 'pickle' in pen on a specified page.

There were three conditions in the study:

- two student confederates instructed an unknown student to carry out the unethical act
- one student confederate instructed a close student friend to carry out the unethical act
- one student confederate instructed an unknown student to carry out the unethical act.

(Source: adapted from Bohns et al. (2013))

- (a) Explain **one** ethical issue that could be violated in the 'instigators' and an unethical act study.

(2)

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The findings of the study are shown in **Table 2** below.

	Two student confederates instructed an unknown student to carry out the unethical act	One student confederate instructed a close student friend to carry out the unethical act	One student confederate instructed an unknown student to carry out the unethical act
% of student participants that vandalised the university library book	87	80	62

**Table 2**

(b) Explain how far social impact theory can support the findings of the ‘instigators’ and an unethical act study.

(6)



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(Total for Question 3 = 8 marks)



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- 4 Evaluate the classic studies by Watson and Rayner (1920) and Raine et al. (1997) in how they could be used as a means of social control.

(16)

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(Total for Question 4 = 16 marks)

**TOTAL FOR SECTION B = 24 MARKS**



**SECTION C: ISSUES AND DEBATES**

- 5 When commuting to college Sam notices that whichever form of public transport he uses strangers rarely communicate with each other. He notices that people tend to sit alone where possible and avoid eye contact with other commuters whilst listening to music or reading a newspaper.

One morning there is an incident on the bus when he is going to college. Following the event, Sam notices everyone is communicating and making eye contact. Later, when Sam discussed this change in behaviour with his friend, she argued that communication is a learned behaviour and that people are not born to communicate.

Evaluate the extent to which human behaviour such as communication can be explained by learning theories.

You must make reference to the context in your answer.

(12)

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(Total for Question 5 = 12 marks)



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6 Animals are sometimes used to conduct psychological research.

Assess the practical and ethical implications of using animals in psychological research.

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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 30 horizontal dotted lines.



P 5 2 2 0 6 A 0 2 9 3 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

Handwriting practice area with 24 horizontal dotted lines.



P 5 2 2 0 6 A 0 3 1 3 2

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

(Total for Question 6 = 20 marks)

**TOTAL FOR SECTION C = 32 MARKS**  
**TOTAL FOR PAPER = 80 MARKS**

