Please check the examination details below before entering your candidate information

Candidate surname	Other names

Centre Number | Candidate Number

Pearson Edexcel Level 3 GCE

Monday 5 June 2023

Afternoon (Time: 2 hours)

Paper reference **9PS0/03**

Psychology

Advanced

PAPER 3: Psychological Skills

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.
- Try to answer every question.
- Check your answers if you have time at the end.

Turn over ▶

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N:1/1/1/1/1/1/1/1

P 7 1 9 2 1 R A 0 1 3 6

Pearson

FORMULAE AND STATISTICAL TABLES

Standard deviation (sample estimate)

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

Spearman's rank correlation coefficient

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

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.

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_b															
	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
N_a																
***p* ≤ 0.05 (one-tailed), *p* ≤ 0.10 (two-tailed)**																
5	4	5	6	8	9	11	12	13	15	16	18	19	20	22	23	25
6	5	7	8	10	12	14	16	17	19	21	23	25	26	28	30	32
7	6	8	11	13	15	17	19	21	24	26	28	30	33	35	37	39
8	8	10	13	15	18	20	23	26	28	31	33	36	39	41	44	47
9	9	12	15	18	21	24	27	30	33	36	39	42	45	48	51	54
10	11	14	17	20	24	27	31	34	37	41	44	48	51	55	58	62
11	12	16	19	23	27	31	34	38	42	46	50	54	57	61	65	69
12	13	17	21	26	30	34	38	42	47	51	55	60	64	68	72	77
13	15	19	24	28	33	37	42	47	51	56	61	65	70	75	80	84
14	16	21	26	31	36	41	46	51	56	61	66	71	77	82	87	92
15	18	23	28	33	39	44	50	55	61	66	72	77	83	88	94	100
16	19	25	30	36	42	48	54	60	65	71	77	83	89	95	101	107
17	20	26	33	39	45	51	57	64	70	77	83	89	96	102	109	115
18	22	28	35	41	48	55	61	68	75	82	88	95	102	109	116	123
19	23	30	37	44	51	58	65	72	80	87	94	101	109	116	123	130
20	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
$p \leq 0.01$ (one-tailed), $p \leq 0.02$ (two-tailed)																
5	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
6	2	3	4	6	7	8	9	11	12	13	15	16	18	19	20	22
7	3	4	6	7	9	11	12	14	16	17	19	21	23	24	26	28
8	4	6	7	9	11	13	15	17	20	22	24	26	28	30	32	34
9	5	7	9	11	14	16	18	21	23	26	28	31	33	36	38	40
10	6	8	11	13	16	19	22	24	27	30	33	36	38	41	44	47
11	7	9	12	15	18	22	25	28	31	34	37	41	44	47	50	53
12	8	11	14	17	21	24	28	31	35	38	42	46	49	53	56	60
13	9	12	16	20	23	27	31	35	39	43	47	51	55	59	63	67
14	10	13	17	22	26	30	34	38	43	47	51	56	60	65	69	73
15	11	15	19	24	28	33	37	42	47	51	56	61	66	70	75	80
16	12	16	21	26	31	36	41	46	51	56	61	66	71	76	82	87
17	13	18	23	28	33	38	44	49	55	60	66	71	77	82	88	93
18	14	19	24	30	36	41	47	53	59	65	70	76	82	88	94	100
19	15	20	26	32	38	44	50	56	63	69	75	82	88	94	101	107
20	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
$p \leq 0.025$ (one-tailed), $p \leq 0.05$ (two-tailed)																
5	2	3	5	6	7	8	9	11	12	13	14	15	17	18	19	20
6	3	5	6	8	10	11	13	14	16	17	19	21	22	24	25	27
7	5	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34
8	6	8	10	13	15	17	19	22	24	26	29	31	34	36	38	41
9	7	10	12	15	17	20	23	26	28	31	34	37	39	42	45	48
10	8	11	14	17	20	23	26	29	33	36	39	42	45	48	52	55
11	9	13	16	19	23	26	30	33	37	40	44	47	51	55	58	62
12	11	14	18	22	26	29	33	37	41	45	49	53	57	61	65	69
13	12	16	20	24	28	33	37	41	45	50	54	59	63	67	72	76
14	13	17	22	26	31	36	40	45	50	55	59	64	67	74	78	83
15	14	19	24	29	34	39	44	49	54	59	64	70	75	80	85	90
16	15	21	26	31	37	42	47	53	59	64	70	75	81	86	92	98
17	17	22	28	34	39	45	51	57	63	67	75	81	87	93	99	105
18	18	24	30	36	42	48	55	61	67	74	80	86	93	99	106	112
19	19	25	32	38	45	52	58	65	72	78	85	92	99	106	113	119
20	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
$p \leq 0.005$ (one-tailed), $p \leq 0.01$ (two-tailed)																
5	0	1	1	2	3	4	5	6	7	7	8	9	10	11	12	13
6	1	2	3	4	5	6	7	9	10	11	12	13	15	16	17	18
7	1	3	4	6	7	9	10	12	13	15	16	18	19	21	22	24
8	2	4	6	7	9	11	13	15	17	18	20	22	24	26	28	30
9	3	5	7	9	11	13	16	18	20	22	24	27	29	31	33	36
10	4	6	9	11	13	16	18	21	24	26	29	31	34	37	39	42
11	5	7	10	13	16	18	21	24	27	30	33	36	39	42	45	48
12	6	9	12	15	18	21	24	27	31	34	37	41	44	47	51	54
13	7	10	13	17	20	24	27	31	34	38	42	45	49	53	56	60
14	7	11	15	18	22	26	30	34	38	42	46	50	54	58	63	67
15	8	12	16	20	24	29	33	37	42	46	51	55	60	64	69	73
16	9	13	18	22	27	31	36	41	45	50	55	60	65	70	74	79
17	10	15	19	24	29	34	39	44	49	54	60	65	70	75	81	86
18	11	16	21	26	31	37	42	47	53	58	64	70	75	81	87	92
19	12	17	22	28	33	39	45	51	56	63	69	74	81	87	93	99
20	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

	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.

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

SECTION A

Research Methods

1 Eye contact study

Eye contact could be used as a non-verbal cue to help interpret an individual's behaviour. A longing gaze could be considered as liking someone, but too long a gaze could lead to discomfort. If the eye contact is too brief, there could also be feelings of discomfort due to suspicions about the individual's motives.

Researchers therefore wanted to investigate the length of time that people consider eye contact to be the most comfortable. They recruited 515 visitors to a Science Museum from 56 nations who had an age range of 11–79 years old, with 240 male and 275 female participants.

The researchers asked participants to watch a series of video clips of an actor making eye contact with them for various durations, ranging from 0.1 seconds to 10 seconds. Throughout the course of the study, the researchers used eight different actors, who were all white British, with half of them male and half female. Each participant only saw a single actor who was the same sex as themselves. After watching each video clip, the participant had to say if the duration of eye contact made them feel comfortable.

(Source: adapted from Binetti et al. (2016))

(a) Identify the dependent variable (DV) in the eye contact study.

(1)

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The data was collected by the researchers and the results are shown in **Table 1**.

	Duration of eye contact from the actor						
	0.1 seconds	**0.5 seconds**	**1 second**	**3 seconds**	**5 seconds**	**7 seconds**	**10 seconds**
Number of males that felt comfortable (N = 240)	0	50	100	220	180	65	0
Number of females that felt comfortable (N = 275)	0	60	120	258	220	77	0

Table 1

(b) Explain **one** conclusion you can make using the data in **Table 1**.

(2)

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Table 2 shows the percentage (%) of males and females that felt comfortable with an eye contact duration of 5 seconds.

	Eye contact duration of 5 seconds
% of males that felt comfortable	75%
% of females that felt comfortable	80%

Table 2

(c) Using the data in **Table 2**, draw a bar chart to represent the male and female data for eye contact with a duration of 5 seconds.

(3)

Title

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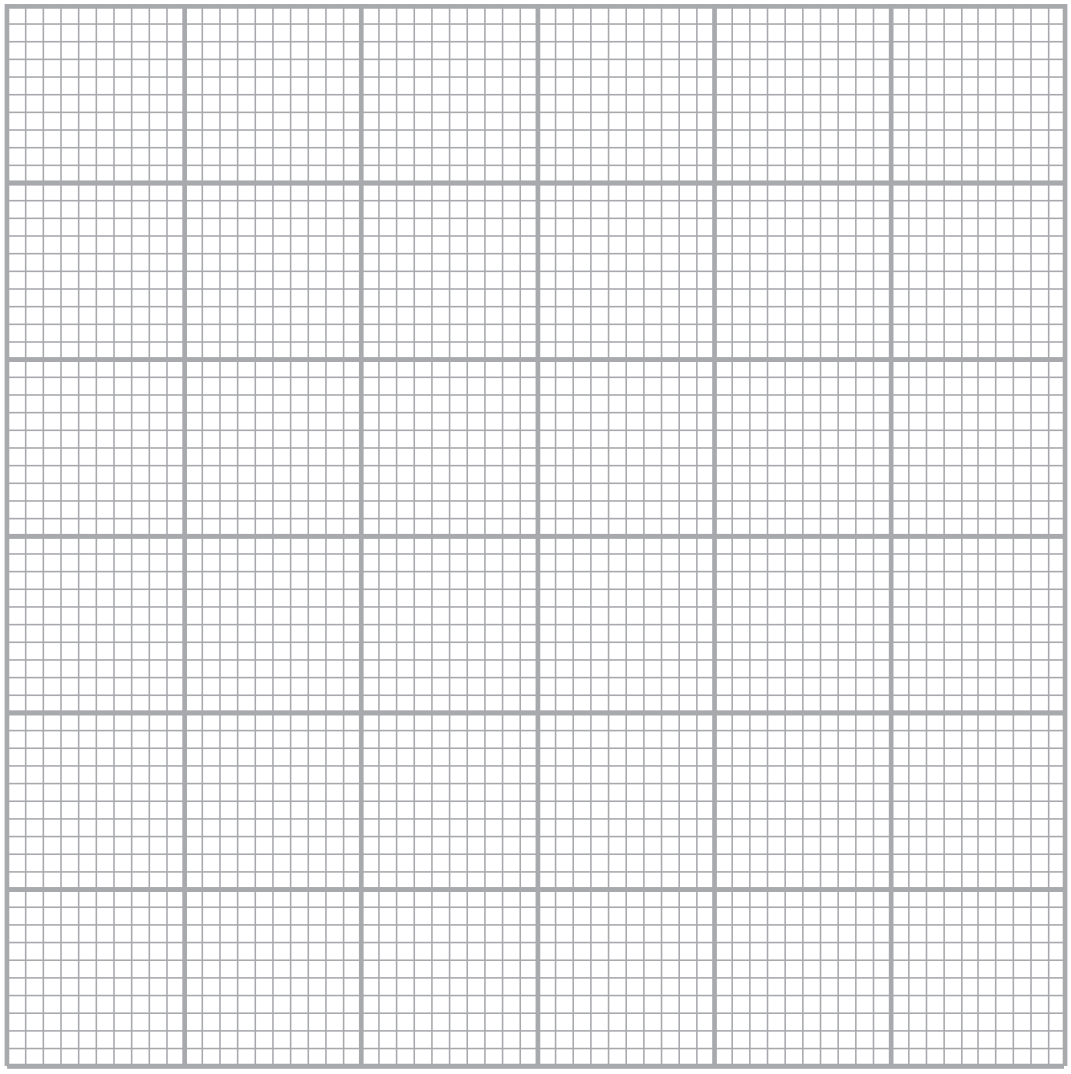

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(d) Explain **one** improvement that could have been made to the eye contact study.

(2)

(Total for Question 1 = 8 marks)

2 Helping behaviour study

Researchers wanted to see whether being in close proximity to luxury goods would influence helping behaviour.

80 participants (40 males and 40 females) were either seen to be exiting a luxury shop in a prestigious area of Paris (20 males and 20 females) or were passers-by on an ordinary street in Paris with no shops (20 males and 20 females).

A female confederate was instructed to use crutches and carry a bottle of water in one hand and a packet of sweets in the other hand. When a participant was approximately five metres away, the confederate was required to 'accidentally' drop her bottle of water and packet of sweets and try to pick them up.

The participants, who were estimated to be aged between 20–70 years old, were judged to have helped the confederate when they offered to pick up the items or picked them up without asking. The confederate recorded the participant's sex, estimated age, whether they helped or not, and the location (outside the luxury store or on the ordinary street with no shops).

(Source: adapted from Lamy et al. (2016))

(a) The researchers in the helping behaviour study used opportunity sampling to recruit the participants for their study.

Explain **one** strength and **one** weakness of using opportunity sampling for the helping behaviour study.

(4)

Strength

Weakness

Table 3 shows the data collected by the confederates regarding the age of the participants for the helping behaviour study.

Estimated age of the participants	Did help the confederate	Did not help the confederate
20–35 years	51%	49%
36–50 years	62%	38%
56–70 years	68%	32%

Table 3

(b) Explain **one** conclusion you can make using the data in **Table 3**.

(2)

Table 4 shows the data collected regarding the participants' location.

	Did help the confederate	Did not help the confederate
Luxury shop (N = 40)	14	26
Ordinary street with no shops (N = 40)	31	9

Table 4

(c) Explain **one** conclusion you can make using the data in **Table 4**.

(2)

Table 5 shows the data collected regarding the participants' gender.

	Did help the confederate	Did not help the confederate
Male (N = 40)	20	20
Female (N = 40)	25	15

Table 5

(d) The researchers in the helping behaviour study decided to carry out a chi-squared test on their data from **Table 5**. They found an observed/calculated value of 1.27 for a one-tailed (directional) test at the 5% level of significance when df=1.

Explain what this shows in terms of the helping behaviour of the participants in the study.

(2)

(e) State **two** reasons why the researchers in the helping behaviour study used a chi-squared test to analyse their data in **Table 5**.

(2)

1

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(f) The researchers collected quantitative data when recording whether the participant would help the confederate or not for the helping behaviour study.

Explain **one** weakness of using quantitative data for the helping behaviour study.

(2)

(g) The researchers used a field experiment for the helping behaviour study.

Explain **one** weakness of using a field experiment for the helping behaviour study.

(2)

(Total for Question 2 = 16 marks)

TOTAL FOR SECTION A = 24 MARKS

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SECTION B

Review of Studies

3 Anti-littering study

Researchers wanted to understand how norms would be enforced or maintained in real-world contexts. They wanted to see how people would respond to someone violating a social norm in different city locations.

The researchers chose to use littering and selected two city locations to run their study. The cities chosen were New York City in the USA and Bern in Switzerland. The study was conducted at a busy tram/subway stop in each city at the same time of day.

There were two independent variables in the study to investigate littering:

- Place – they compared New York City (a very large city in the USA) to Bern (a small city in Switzerland)
- Disorder – they compared an empty bin with no surrounding litter (clean) with a full bin with lots of surrounding litter (littered).

In all conditions, a confederate walked towards the bin and threw an empty plastic bottle that missed the bin and fell on the floor. The confederate did not pick up the bottle and continued walking.

The researchers observed the reaction of people close by and recorded whether they:

- gave direct sanction (for example, verbally confronting the confederate)
- picked up the litter themselves (norm maintenance)
- had no reaction.

(Source: adapted from Berger and Hevenstone (2016))

The results of the participants' reaction to the confederate in the anti-littering study are shown in **Table 6**.

	Place		Disorder	
	New York City, USA	**Bern, Switzerland**	**Clean**	**Littered**
Participant gave a direct sanction to the confederate	2%	12%	8%	2%
Participant picked up the litter themselves (norm maintenance)	9%	27%	16%	1%
Participant had no reaction to the confederate	88%	61%	76%	97%

Table 6

(a) Explain **one** practical application of the anti-littering study using the data from **Table 6**.

(2)

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(b) Using research evidence, explain how far learning theories could account for the findings of the anti-littering study.

(6)

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(Total for Question 3 = 8 marks)

4 Evaluate Rosenhan (1973) and Sherif et al. (1954/1961) in terms of their practical issues in design and implementation.

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(Total for Question 4 = 16 marks)

TOTAL FOR SECTION B = 24 MARKS

SECTION C

Issues and Debates

5 Ada was reading a book about a woman who became a police officer and solved an important crime. She enjoyed reading the book so much that she read it all in a single day. Ada's mum has always really enjoyed reading books and Ada had always had excellent reports from school about her reading development.

Ada's friend Daniel does not enjoy reading and never has. He told Ada that he preferred to play video games, particularly games about sport. Daniel's dad enjoys reading and playing video games. When he was younger, Daniel had been asked to read more by his school and was always given extra support for his reading development.

Evaluate the extent to which human behaviour, such as the ability to read, can be explained by biological psychology.

You must make reference to the context in your answer.

(12)

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(Total for Question 5 = 12 marks)

6 Assess the ethical issues in psychological research using humans and animals.

(20)

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(Total for Question 6 = 20 marks)

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

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