Surname	StemUp Model Solution	Centre Number	Candidate Number
First name(s)			2

GCE A LEVEL

A290U20-1

O20-A290U20-1

FRIDAY, 9 OCTOBER 2020 – MORNING

PSYCHOLOGY – A level component 2
Psychology: Investigating Behaviour

2 hours 15 minutes

For Examiner's use only		
Question	**Maximum Mark**	**Mark Awarded**
1.	**6**	
2.	**2**	
3.	**6**	
4.	**6**	
5.	**12**	
6.	**4**	
7.	**4**	
8.	**18**	
9.	**12**	
10.	**19**	
11.	**11**	
Total	**100**	

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ADDITIONAL MATERIALS

You may require a calculator and a ruler.

INSTRUCTIONS TO CANDIDATES

Use black ink or black ball-point pen. Do not use pencil or gel pen. Do not use correction fluid.

Write your name, centre number and candidate number in the spaces at the top of this page.

Answer **all** the questions.

Write your answers in the spaces provided in this booklet. If you run out of space, use the additional page(s) at the back of the booklet, taking care to number the question(s) correctly.

INFORMATION FOR CANDIDATES

The number of marks is given in brackets at the end of each question or part-question.

You are reminded of the necessity for good English and orderly, clear presentation in your answers.

Assessment will take into account the quality of written communication used in your answers.

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SECTION A – Principles of Research

Answer **all** *questions.*

1. Describe the process of peer review. [6]

Peer review is the process by which research is checked by other experts before it is published. First, the researcher writes up their study as an article and submits it to an academic journal. The journal editor assesses whether it is suitable for that journal.

If the editor accepts it, the article is sent to two or three reviewers, who are experts (peers) in the same field. The reviewers are normally kept anonymous from the author, so they can be honest and are not biased by the author's reputation. They scrutinise the aims, methodology, analysis and conclusions and analysis, checking that the conclusions follow from the findings.

The reviewers send their comments to the editor, The editor may reject the article or return it to the author to make revisions. The revised article is re-submitted to the editor for publication.

2. Identify what the following symbols mean:

(i) $\leqslant$ [1]

Less than or equal to.

(ii) $>$ [1]

Greater than (more than).

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3. Define the following techniques that are used to assess the reliability in research:

(a) Test re-test reliability [2]

Test re-test reliability involves testing the same participants with the same test on two occasions over time (e.g. two weeks apart) and correlating their two sets of scores. If the scores are the same or very similar (a strong positive correlation, e.g. +0.8 or above), the test has external reliability.

(b) Inter-rater reliability [2]

Inter-rater reliability is where two or more psychologists (raters/observers) rate the same behaviour independently, using a standardised procedure and an agreed coding system, then correlate their data. If their ratings are consistent (strong positive correlation, e.g. +0.8), the measure is reliable.

(c) Split-half reliability [2]

Split-half reliability involves splitting a participant's test answers into two halves (e.g. odd and even questions) and seeing whether they got the same or similar scores on the two halves. If so, internal reliability is high; if not, it is low and individual questions would need to be redesigned.

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4. *(a)* Explain how psychologists use ethics committees to manage the risk posed by ethical issues. [3]

Ethics committees are found in universities and other places that do research, and are made up of researchers and lay people. The psychologist must submit a research proposal to the committee, which approves the design before the research is carried out. The committee uses ethical guidelines such as the BPS Code of Human Research Ethics to weigh up costs and benefits and judge whether the proposal is ethical. If it is not approved first time, the committee may ask the psychologist to make amendments, or refuse to let the research go ahead if there are too many ethical issues.

(b) Explain how psychologists use ethical guidelines to manage the risk posed by ethical issues. [3]

Ethical guidelines are published by professional organisations such as the BPS, and every member must follow them or risk being censured or struck off. The guidelines give a set of recommendations about how psychologists should and should not conduct research, emphasising respect for the autonomy, privacy and dignity of individuals and communities. Psychologists therefore design their research to meet the guidelines and manage risk, e.g. making sure participants give valid informed consent, are told of their right to withdraw, have their data kept confidential and are fully debriefed.

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5. Evaluate the issues of validity and ethics raised by Milgram's (1963) research *'Behavioural study of Obedience'*. [12]

Milgram's study raises serious issues of validity. One criticism is that it lacks ecological validity: giving electric shocks to a stranger in a learning task in a Yale laboratory is not typical of obedience in everyday life, such as obeying a teacher or a boss. However, Milgram argued it is more typical of 'extreme obedience' situations such as the Holocaust and genocide, which is exactly what he wanted to explain, so in that context the task was relevant.

There are also issues with population validity. The sample was 40 males aged 20 to 50 from New Haven, so the results may not be applicable to females or to other cultures. On the other hand, the sample had a variety of ages, occupations (e.g. postal clerks, teachers, salesmen) and educational backgrounds, so it may be quite representative of American males in the local area. The findings have also been replicated, e.g. Burger (2009) found similar rates of obedience in men and women up to 150 V, which supports the validity of the findings.

Internal validity has been questioned, as Orne and Holland argued that participants may have seen through the deception and realised the shocks were not real. However, the observed signs of extreme tension suggest participants believed the situation was real. Milgram's own family experiences of the Holocaust may also have led to researcher bias in how he interpreted the behaviours he saw.

The study also raises major ethical issues. There was deception: participants were told the research was about memory and learning, they did not know the 'learner' was a confederate, that no real shocks were given, or that the learner's responses were pre-recorded. This means they could not give fully informed consent. There was a high risk of stress, anxiety and humiliation: participants were observed to 'sweat, tremble, stutter, bite their lips, groan, and dig their finger nails into their

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6. Evaluate the use of primary sources in psychological research. [4]

A strength of primary sources is that the data are collected first-hand by the researcher, so they can control exactly how the data are collected. The data will also specifically relate to the aims of the research, which is not always the case with secondary data collected for another purpose.

However, primary research takes a lot of time, effort and money to prepare, administer and analyse. The data collected may lack validity due to social desirability or demand characteristics, and a single primary study may contain methodological problems that corrupt its findings, or may take a single point of view in support of a particular theory, so it should be compared with other sources.

7. Explain **one** strength and **one** weakness of the use of brain scans in psychological research. [2+2]

Strength: brain scans such as fMRI allow an objective, scientific assessment of brain structure and function in live brains, rather than waiting for a post-mortem. For example, researchers can see which areas become active while a participant completes a task, without relying on self-report, which increases the validity of the findings.

Weakness: scans are extremely costly, so they are not easily available for research and samples tend to be small, which reduces generalisability. Also, participants must lie still inside a noisy machine, which can be uncomfortable (not good for those with claustrophobia) and limits the range of activities that can be investigated, lowering ecological validity.

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SECTION B – Personal Investigations

You should answer **all** *the questions in this section with reference to the investigations carried out in your study of psychology.*

INVESTIGATION ONE: An experiment on noise and performance.

8. *(a)* Explain how you operationalised 'performance' in your experiment. [2]

Performance was operationalised as the number of words on a 20-word list that each participant could correctly recall. Participants had 60 seconds to revise the list, then 2 minutes to write down as many as they could remember in any order, so each score was out of 20.

(b) Identify and justify the choice of experimental design used in your experiment on noise and performance. [1+3]

Independent groups design.

I used independent groups because if the Year 12 students had taken part in both the crying infant (noise) and silent conditions, they might have experienced a practice effect from revising and recalling a 20-term word list twice, or boredom/fatigue from doing it twice. As each student only took part in one condition, I did not have to worry about these order effects affecting their recall, and they were less likely to guess the aim of the experiment. This would have been a problem with a repeated measures design, and I would also have needed two equally difficult word lists.

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(c) Explain **two** ethical issues that occurred in your experiment and explain how you dealt with each issue. [4+4]

One ethical issue was risk of stress or anxiety. Listening to a recording of a crying infant at 70 dB through headphones while revising could cause the Year 12 students discomfort or stress, and doing badly on the recall test might make them feel embarrassed.

I dealt with this by using a member of staff (their teacher) as an intermediary, who checked the procedure and could tell me if any student seemed distressed. I kept the volume at a safe level, the recording lasted only 60 seconds, students were reminded they could withdraw at any time, and they were debriefed and told the test was not a measure of their intelligence.

A second ethical issue was confidentiality. Each student's word recall score was personal data, and they would not want their classmates or teachers to know if they had a low score.

I dealt with this by assuring anonymity: each student was given a participant number (e.g. P1 to P20) instead of their name, and only these numbers were recorded on my results table. The data were stored securely and the students were told they could ask for their data to be withdrawn.

(d) Identify and fully justify the inferential statistical test that you used when analysing the data collected in your experiment. [1+3]

Mann-Whitney U test.

I used a Mann-Whitney U test because I was looking for a difference in performance on the 20-word test between the crying infant and silence conditions.

The number of words correctly recalled is at least ordinal level data. I used an independent groups design, as different students took part in each condition, so the data are independent (unrelated).

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INVESTIGATION TWO: A content analysis on gender and advertising.

9. *(a)* Explain how you used a content analysis in your research on gender and advertising. [6]

I decided to focus on TV adverts for products used in the home, e.g. cleaning products. I collected a sample of 17 television adverts advertising home products, recorded during daytime TV over one week.

I then created an observational grid (coding system) using roles frequently seen in adverts as my behavioural categories: the 'product expert' (who explains how the product works) and the 'product consumer' (who uses the product). For each advert I recorded the gender of each individual acting in, or doing the voice-over for, these roles, using male, female and other as the gender categories, and tallied each occurrence in the grid.

Finally, I added up the tallies to give frequencies for each gender in each role. To check reliability, a friend coded the same adverts and we compared our tallies.

(b) (i) Identify and explain the choice of graphical representation that you used to display the data collected from your content analysis. [1+2]

Bar chart.

I chose a bar chart because my data were nominal and in separate categories: the gender of the person (male, female, other) shown as the 'product expert' or 'product consumer'. The bars show the frequency of each gender in each role, and are separated to show the categories are discrete, so the difference between male and female experts was easy to see.

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(ii) Identify and explain the choice of descriptive statistics that you used to describe the data collected from your content analysis. [1+2]

The mode.

I chose the modal value because it is the only measure of central tendency that can be used with nominal level data such as the gender (male, female, other) of the 'product expert' and 'product consumer'. It showed which gender appeared most often in each role in the 17 home product adverts.

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10. An Occupational Psychologist investigated if working patterns could affect wellbeing. Research was undertaken in an office with 120 workers; each worker completed an eight-hour shift, each day from Monday to Friday.

In the first month of the research, the psychologist asked a sample of 20 workers to maintain strict working hours of 09:00 to 17:00, every day for one month. The wellbeing of the workers was assessed using a wellbeing scale (0-50, where the higher the score the better the wellbeing).

In the second month, the same sample of 20 workers were given more flexible working hours where they could choose the time that they would start their eight-hour shift. The workers' wellbeing was assessed again using the same wellbeing scale.

The Occupational Psychologist calculated the mean, median and modal wellbeing scores for each month.

	Mean	Median	Mode
Wellbeing score following month of strict working hours	25.4	24	24
Wellbeing score following month of flexible working hours	27	29	36

(a) (i) Identify the experimental design used by the Occupational Psychologist in this research. [1]

Repeated measures design.

(ii) Explain **one** advantage of using this experimental design in this research. [2]

The same 20 office workers took part in both the strict and flexible working hours conditions, so there is less chance that participant variables (e.g. personality or life events) explain any difference in wellbeing scores between the two months.

(iii) Explain **one** disadvantage of using this experimental design in this research. [2]

Demand characteristics: the office workers may realise what the research is about after experiencing both strict and flexible hours, and so give a higher wellbeing rating in the second (flexible) month.

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(b) State **one** conclusion that can be drawn from the median scores in this research. [2]

The median wellbeing score of the office workers for the month with strict working hours (24) was lower than the median wellbeing score for the month with flexible working hours (29), so wellbeing was higher with flexible hours.

(c) Explain how content validity could have been used to assess the validity of this research. [2]

The Occupational Psychologist could ask an expert in the field of wellbeing in the workplace to check whether the wellbeing scale (0 to 50) and the research design appropriately measured whether working hours affect workers' wellbeing. If the expert agreed, the research would have content validity.

(d) The Occupational Psychologist analysed their data using a Wilcoxon test. Fully justify why this inferential test was appropriate for this research. [3]

A Wilcoxon test was appropriate because the Occupational Psychologist was looking for a difference in wellbeing between the strict and flexible working hours conditions. The wellbeing scores (0 to 50) are at least ordinal level data, as a rating scale is subjective. All 20 office workers completed both the strict and flexible working hours conditions (repeated measures), so the data are related.

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(e) The Occupational Psychologist found that after analysing the data with a Wilcoxon test, the observed (calculated) value was 43.

(i) Identify if the Occupational Psychologist should accept or reject their null hypothesis using the information from the critical value table below: [1]

Level of significance	0.05
	52

Reject the null hypothesis.

(ii) Justify the answer you gave in *(e)* (i). [2]

The null hypothesis is rejected because, for a Wilcoxon test, the observed value must be equal to or less than the critical value to be significant. The observed value (43) was less than the critical value (52) at p = 0.05, the usual level of significance used by psychologists.

(f) Explain **one** strength and **one** weakness of conducting research in the field. [2+2]

Strength: research in the field takes place in a more natural environment, such as the office in this research, so participants are likely to show more natural behaviour. This means the research has higher ecological validity and the findings are more likely to generalise to everyday life.

Weakness: it is more difficult for the researcher to control confounding or extraneous variables in the field than in a laboratory. For example, the workers' wellbeing could be affected by workload, the weather or events at home rather than the IV, which reduces internal validity and makes the study harder to replicate.

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11. A waiter had noticed that there had been an increase in the number of customers buying vegetarian options at the restaurant where he worked. He was asked by the owner of the restaurant to briefly interview customers who chose a vegetarian dish about their choice.

The owner wanted the waiter to ask: “Are you a vegetarian?”

However, the waiter thought it would be better to ask: “Why have you chosen this vegetarian option?”

(a) Which of the above questions is more likely to produce qualitative data? [1]

The waiter's question: "Why have you chosen this vegetarian option?"

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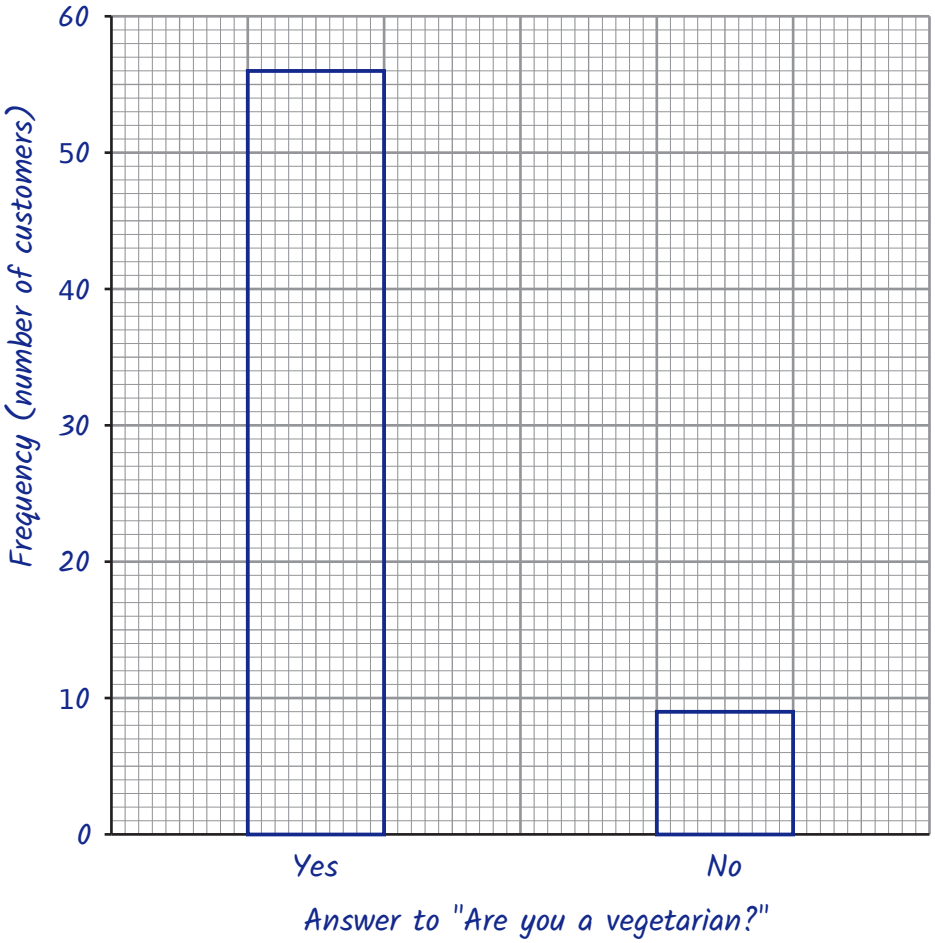
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Having discussed the two questions, the owner insisted that the waiter asked the question "Are you a vegetarian?" to every customer who ordered a vegetarian meal. After collecting data from customers for the week, the waiter produced a frequency table.

(b) Using the information from the frequency table, construct a bar chart to represent the data. [4]

Yes	56
No	9



Bar chart to show the frequency of customers who ordered a vegetarian meal answering "Are you a vegetarian?" (yes or no)

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(c) Evaluate the strengths and weaknesses of using semi-structured interviews. [6]

A strength of semi-structured interviews is that more detailed information can be obtained from each respondent than in a structured interview, because the interviewer can tailor follow-up questions to the respondent's answers. This gives deeper insight into their thoughts and feelings, giving rich qualitative data. They can also explore sensitive topics that vary between participants.

However, semi-structured interviews require interviewers with more skill than structured interviews, because they must develop new questions on the spot. The need for well-trained interviewers makes them more expensive. Questions developed on the spot may also lack objectivity, as the interviewer has little time to reflect on what to say, so they may ask leading questions (interviewer bias). As each interview differs, they are hard to replicate and compare, reducing reliability.

END OF PAPER

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Question number	Additional page, if required. Write the question number(s) in the left-hand margin.
5.	flesh', and three had full-blown uncontrollable seizures. The right to withdraw was undermined by the verbal prods such as 'You have no other choice, you must go on'. There was also a risk to participants' values and beliefs, as they may have left with a negative view of their own capabilities, which could have a long-term impact on their self-image. In Milgram's defence, participants were fully debriefed and reunited with the unharmed learner, 84% said they were glad to have taken part, and a follow-up a year later by a psychiatrist found no evidence of long-term harm. The deception was also necessary, as real obedience could not be studied if participants knew the aim. In conclusion, although the study has some validity problems, especially its gender bias and artificial task, it has been replicated and tells us a lot about obedience to authority. However, the ethical costs were high, and under today's BPS guidelines it would not be approved by an ethics committee in its original form.

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