Choose 4 out of the following 5 questions to answer. You may respond in Chinese or English. (100 points total, 25 points each question)

1. Psychological Frameworks and Approaches (25 points total)

a) For a period of time, researchers such as B. F. Skinner used behaviorist experimental approaches to observe, study, and explain the external actions of organisms. Define behaviorism and describe its underlying viewpoint. (7 points)

b) Discuss whether you agree or disagree with the behaviorist approach for studying and understanding the external actions of organisms. If you agree, outline why you think the approach is suitable. If you disagree, you may also name and describe alternative approaches that might be better. Give clear reasons for your case and provide concrete examples where appropriate. (18 points)

2. Emotion (25 points total)

a) Define emotion and describe what is involved psychologically and physiologically in terms of our reactions to emotional stimuli. (7 points)

b) Can behaviorism, as described in question 1, account for our reactions to emotional stimuli such as facial expressions? Provide detailed reasons with examples for your view. (18 points)

3. Learning and Memory (25 points total)

a) Ivan Pavlov was known for his work on classical conditioning that involved exposing animals to stimuli and observing responses. State what is classical conditioning using the appropriate terms for the involved stimuli and responses. (5 points)

b) Give an example that illustrates how classical conditioning might occur in an animal or in a human being. (5 points)

c) Human memory can be categorized into different types based on the content and processes involved. For example, semantic memory may be distinguished from episodic memory. List and describe in detail, with examples, these and other different kinds of memory that can be observed in human mental processes. (15 points)

4. Experimental Methodology (25 points)

A researcher wanted to see if memory performance could be improved by listening to music. To measure memory performance, the researcher used word-list memory recall test, which involves presenting participants with a list of words to memorize, then asking them to recall as many words as they can afterwards. Propose a study based on this memory test to address the research question. In your proposal, describe a clear hypothesis, your experimental procedures with the independent and dependent variables, your proposed analysis of the data, expected results, and limitations. (25 points)

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5. Basic Statistical Analysis (25 points)

A human resource manager wanted to see if productivity of employees improved in the second year of their employment. The manager counted the number of work cases completed by each of 9 randomly sampled employees in their first year, and the same 9 employees again in their second year in the company. The data are shown below:

Table 1. Employee productivity data in Years 1 and 2.

Employee ID	No. of Cases in Year 1	No. of Cases in Year 2	D
1	3919	3901	
2	3904	3914	
3	652	786	
4	6917	6873	
5	267	351	
6	8190	8357	
7	3598	3651	
8	9519	9703	
9	801	810	

The following table shows some t-tests and their formulae that may be useful for analyzing the data above.

Table 2. t-tests and formulae.

Type	t-value	df	SE
One-Sample	$t = \frac{\bar{x} - \mu}{SE}$	$n - 1$	$SE = \frac{s}{\sqrt{n}}$
Paired-Sample	$t = \frac{\bar{d} - \mu_d}{SE}$	$n - 1$	$SE = \frac{s_d}{\sqrt{n}}$
Two-Sample (equal variance)	$t = \frac{(\bar{x}_1 - \bar{x}_2) - (\mu_1 - \mu_2)}{SE}$	$n_1 + n_2 - 2$	$SE = s_p \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}$

a) Refer to Table 2. State which kind of t-test would be appropriate to test the hypothesis based on the dataset in Table 1 that the same employees completed more cases in the second year than the first year (2 points).

b) Fill in column D of Table 1 with the appropriate values you need to compute this t-test (6 points).

c) Using your values in column D in Table 1, compute the mean ($\bar{d}$), assume the standard deviation (s) is 83.2 and compute the standard error (SE), compute the degrees of freedom (df). (9 points)

d) State the value (μ) of the null hypothesis. (2 point)

e) Perform the t-test and, using a critical t-value of 1.89, state your conclusion. Be sure to show your working. (6 points)

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