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UNIVERSITI TUN HUSSEIN ONN MALAYSIA

**FINAL EXAMINATION
SEMESTER II
SESSION 2013/2014**

COURSE NAME : RESEARCH AND STATISTICAL METHODS
COURSE CODE : DAS 20903
PROGRAMME : 2 DAU
EXAMINATION DATE : JUNE 2014
DURATION : 2 HOURS 30 MINUTES
INSTRUCTION : A) ANSWER ALL QUESTIONS
B) ANSWER ALL QUESTIONS
C) ANSWER **ONE (1)** QUESTION ONLY
D) ANSWER **ONE (1)** QUESTION ONLY

THIS QUESTION PAPER CONSISTS OF **NINETEEN (19)** PAGES

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SECTION A (40 marks) – Answer all questions.

For Q1 – Q40, please tick the answer.

- Q1** Research that describes the characteristics of an existing phenomenon is
A. historical
B. ethnographic
C. experimental
D. quasi-experimental
- Q2** Research that test for causal relationships without having full control is
A. historical
B. survey
C. experimental
D. quasi-experimental
- Q3** Research that relate events that have occurred in the past to current events is
A. historical
B. ethnographic
C. experimental
D. quasi-experimental
- Q4** Research that test for true cause and effect relationship is
A. historical
B. ethnographic
C. experimental
D. quasi-experimental
- Q5** Research that examine relationship between two variables is
A. experimental
B. ethnographic
C. survey
D. quasi-experimental
- Q6** Research involves making decisions that involves
I Research problem
II Population and sample
III Instrument
IV Data analysis techniques
- A. I, II
B. I, II, III
C. I, II, IV
D. I, II, III, IV

- Q7** The learning goals in a research are as given below except
- A. able to identify the research problem
 - B. able to design the research problem
 - C. able to refine the research problem
 - D. able to formulate the research problem
- Q8** A research problem is the demarcation of a problem area within a certain context involving factors/items as given below except
- A. WHO
 - B. WHOSE
 - C. WHAT
 - D. WHY
- Q9** To identify the research problem, a researcher should do as given below except
- A. Look at the titles
 - B. Look at the content
 - C. Look at the tables
 - D. Look at review articles
- Q10** Research can be aimed at
- I solving existing practical problems
 - II correcting unsuitable use of statistical techniques
 - III clarifying contradictory findings
 - IV correcting a faulty methodology
- A. I, II
 - B. I, II, III
 - C. I, II, IV
 - D. I, II, III, IV
- Q11** Good research questions should be as given below except
- A. important
 - B. clear
 - C. known
 - D. ethical
- Q12** The research questions should be able to influence the
- A. result of the research
 - B. content of the writing
 - C. the format of the writing
 - D. the respondents

Q13 – Q16 are based on the following statements:

- Research question : How can we use contextual method to learn Applied Science?
Problem : Students lack in problem solving skills because teaching and learning too dependent on lecture method.
Significance : Important because students need to apply what they learn to their industrial training

- Q13** The classes of problems are
I Those in which both data and method necessary for solution are known
II Those in which neither the method nor data are known
III Those in which neither the method nor data are important
IV Those in which both data and method necessary for solution are important
A. I, II
B. I, II, III
C. I, II, IV
D. I, II, III, IV
- Q14** Criteria for selecting a problem is
A. to follow others
B. nearest
C. known
D. researcher limitation
- Q15** To focus a subject for research is by
A. questioning
B. subtraction
C. free association
D. combined approach
- Q16** Subdividing is
A. to divide the general area into progressively small units until reaches a subject that is interested in researching
B. a practice of writing down words or phrases that occur to us as they come to mind
C. writing without worrying about order, spelling, usefulness, applicability, or any other judgement
D. subdividing it until one reaches a subject that is not interested in researching
- Q17** Quantitative research design
A. is a means to understand relationship between variables
B. is a means to better understand and change a complex social phenomenon
C. uses a population to test hypothesis concerning a sample
D. uses in-depth studies of a population to guide and support the construction of hypothesis

- Q18** Qualitative research design
- A. is a means to understand relationship between variables
 - B. is a means to better understand and change a complex social phenomenon
 - C. uses a population to test hypothesis concerning a sample
 - D. Uses in-depth studies of a population to guide and support the construction of hypothesis
- Q19** Hypothesis is as given below except
- A. A tentative statement of the expected relationship between two or more variables
 - B. Rejected if null hypothesis is accepted.
 - C. Serves to make the research objectives/ questions more explicit
 - D. Use with operationalised variables
- Q20** A research design refers to as given below except
- A. outline
 - B. hypothesis
 - C. plan
 - D. strategy
- Q21** Research Methodology consist of
- I Research instrument
 - II Data analysis method
 - III Research Design
 - IV Conclusion
- A. I, II
 - B. I, II, III
 - C. I, II, IV
 - D. I, II, III, IV
- Q22** Research Methodology should answer the following questions:
- I Who are the population and sample?
 - II What kind of instruments are used?
 - III How valid and reliable are they?
 - IV What are the procedures adopted in data gathering?
- A. I, II
 - B. I, II, III
 - C. I, II, IV
 - D. I, II, III, IV

- Q23** Research procedure should answer the following questions:
- I What are the materials(product-based) used?
 - II What are the procedures adopted in data gathering?
 - III What procedures are used for data collection?
 - IV What procedures(product-based project) are used to make the product?
- A. I, II
 - B. I, II, III
 - C. I, II, IV
 - D. I, II, III, IV
- Q24** Research instruments should answer the following questions:
- I What is the instrument used for data gathering?
 - II What is the application used for data modelling?
 - III What are the steps adopted in data gathering?
 - IV What materials are used to make the product?
- A. I, II
 - B. I, II, III
 - C. I, II, IV
 - D. I, II, III, IV
- Q25** In Descriptive Statistics,
- A. relational research has as its focus the identification of how changes in one characteristic or variable correspond (or do not correspond) to changes in another characteristic or variable.
 - B. data can take many forms, and when they take numerical form such as scores or frequencies, the usual course of action is to perform and appropriate type of statistical analysis.
 - C. statistics are computed from the sample data; on the basis of these statistics, generalizations to the parameters (population measures) are made.
 - D. statistics are measures of the population and parameters are measures of the sample.
- Q26** In Inferential Statistics,
- A. relational research has as its focus the identification of how changes in one characteristic or variable correspond (or do not correspond) to changes in another characteristic or variable.
 - B. data can take many forms, and when they take numerical form such as scores or frequencies, the usual course of action is to perform and appropriate type of statistical analysis.
 - C. statistics are computed from the sample data; on the basis of these statistics, generalizations to the parameters (population measures) are made.
 - D. statistics are measures of the population and parameters are measures of the sample.

- Q27** In Correlational Statistics,
- A. relational research has as its focus the identification of how changes in one characteristic or variable correspond (or do not correspond) to changes in another characteristic or variable.
 - B. data can take many forms, and when they take numerical form such as scores or frequencies, the usual course of action is to perform an appropriate type of statistical analysis.
 - C. statistics are computed from the sample data; on the basis of these statistics, generalizations to the parameters (population measures) are made.
 - D. statistics are measures of the population and parameters are measures of the sample.
- Q28** Solomon Four-Group design is as following except
- A. Subjects randomly assigned to experimental\control groups.
 - B. Preliminary measurement of dependent variable in one experimental\control pair.
 - C. Introduction of dependent variable in both experimental conditions.
 - D. Measurement of dependent variable (assess effects of pretest).
- Q29** Face validity is
- A. usually employs two measures of validity; the second checks against the accuracy of the first measure.
 - B. the type of validity relies basically upon the subjective judgment of the researcher.
 - C. the accuracy with which an instrument measures the factors or situations under study
 - D. any concept, such as honesty, that cannot be directly observed or isolated.
- Q30** Criterion validity is
- A. usually employs two measures of validity; the second checks against the accuracy of the first measure.
 - B. the type of validity relies basically upon the subjective judgment of the researcher.
 - C. the accuracy with which an instrument measures the factors or situations under study
 - D. any concept, such as honesty, that cannot be directly observed or isolated.
- Q31** Content validity is
- A. usually employs two measures of validity; the second checks against the accuracy of the first measure.
 - B. the type of validity relies basically upon the subjective judgment of the researcher.
 - C. the accuracy with which an instrument measures the factors or situations under study
 - D. any concept, such as honesty, that cannot be directly observed or isolated.

- Q32** Construct validity is
- A. the type of validity relies basically upon the subjective judgment of the researcher.
 - B. usually employs two measures of validity; the second checks against the accuracy of the first measure.
 - C. the accuracy with which an instrument measures the factors or situations under study
 - D. any concept, such as honesty, that cannot be directly observed or isolated.
- Q33** Nominal scales is the
- A. possess an actual, or true, zero point
 - B. possesses all the characteristics of an ordinal scale in addition that the distances between the points on the scale are equal. strategy
 - C. one in which data may be ordered in some way-high to low
 - D. simplest, and also the lowest, form of measurement
- Q34** Ordinal scales is the
- A. possess an actual, or true, zero point
 - B. possesses all the characteristics of an ordinal scale in addition that the distances between the points on the scale are equal. strategy
 - C. one in which data may be ordered in some way-high to low
 - D. simplest, and also the lowest, form of measurement
- Q35** Ratio scales is the
- A. possess an actual, or true, zero point
 - B. possesses all the characteristics of an ordinal scale in addition that the distances between the points on the scale are equal. strategy
 - C. one in which data may be ordered in some way-high to low
 - D. simplest, and also the lowest, form of measurement
- Q36** Interval scales is the
- A. possess an actual, or true, zero point
 - B. possesses all the characteristics of an ordinal scale in addition that the distances between the points on the scale are equal. strategy
 - C. one in which data may be ordered in some way-high to low
 - D. simplest, and also the lowest, form of measurement
- Q37** Phenomenology is
- A. a long term investigation of a group / a culture, based on immersion and participation in that group.
 - B. a systematic inquiry into an event/a set of related events that aims to describe and explain the phenomenon of interest.
 - C. to learn about the meaning of an experience through dialogue with a person going through the experience.
 - D. a qualitative methodology which derives its name from the practice of generating theory from research which is "grounded" in data.

- Q38** Case study is
- A. a long term investigation of a group / a culture, based on immersion and participation in that group.
 - B. a systematic inquiry into an event/a set of related events that aims to describe and explain the phenomenon of interest.
 - C. to learn about the meaning of an experience through dialogue with a person going through the experience.
 - D. a qualitative methodology which derives its name from the practice of generating theory from research which is "grounded" in data.
- Q39** Ethnography is
- A. a long term investigation of a group / a culture, based on immersion and participation in that group.
 - B. a systematic inquiry into an event/a set of related events that aims to describe and explain the phenomenon of interest.
 - C. to learn about the meaning of an experience through dialogue with a person going through the experience.
 - D. a qualitative methodology which derives its name from the practice of generating theory from research which is "grounded" in data.
- Q40** Grounded theory is
- A. a long term investigation of a group / a culture, based on immersion and participation in that group.
 - B. a systematic inquiry into an event/a set of related events that aims to describe and explain the phenomenon of interest.
 - C. to learn about the meaning of an experience through dialogue with a person going through the experience.
 - D. a qualitative methodology which derives its name from the practice of generating theory from research which is "grounded" in data.

SECTION B (20 marks) – Answer all questions.

Q41 (a) By comparing Example A and Example B, does the researcher begin by identifying a specific problem area?

Example A

Cigarette smoking is the single largest cause of premature and avoidable death and disability in the United States (U.S Surgeon General, 1989). Although rates of adult smoking have been declining since the publication of the 1964 Surgeon General’s Report, epidemiological data suggest that these successes have not uniformly been distributed among the population.

Example B

State and local governments expend considerable resources for research on public health issues. The findings of this research are used to formulate public policies that regulate health-related activities within the broader society. In addition to helping establish regulations, public health agencies attempt to educate the public so that individuals have appropriate information when making individual lifestyle decisions that may affect their health.

Answer : _____

(6 marks)

- (b) Compare Example C and Example D. Does the researcher establish the importance of the problem area?

Example C

What is the social significance of books such as *Manchild in the Promised Land* (Brown, 1965), *House Made of Dawn* (Momaday, 1968), *One Flew Over the Cuckoo 's Nest* (Kesey, 1962), *The Color Purple* (Walker, 1982)...and *Longtime Companion* (Wlodkowski & Rene, 1990)? We believe that each of these works, and many similar ones, seek to improve attitudes toward a stigmatized group — a racial or cultural minority, people with some social stigma, disability, or disease. The strategy used is to induce the audience to feel empathy for one or a few members of the stigmatized group.

Example D

Homework, defined as tasks assigned to students by school teachers that are meant to be performed during nonschool hours (Cooper, 1989, p. 7), is a pervasive teaching strategy. The National Assessment of Educational Progress found that two-thirds of students in 4th, 8th, and 11th grades reported doing homework and the percentage was increasing over time (Anderson et al., 1986). Among 8th graders, the average amount of time spent on homework is about 1 hour each day (Walberg, 1991).

Answer : _____

(6 marks)

- (c) Based on Example E, is the introduction an essay that logically moves from topic to topic?

Example E

Based on these findings, state and federal governments have tried to reduce street violent crimes through aggressive law enforcement against drug sellers and users (Popkin, Olson, Lurigio, Gwiasda, and Carter, 1995). In high-crime areas such as public housing projects, aggressive policing and tenant empowerment programs have been temporarily effective in reducing drug selling and drug-related violent and property crimes and in fostering a sense of safety and community improvement among residents (National Institute of Justice 1995b, 1996; Popkin et al. 1995; Sherman, Shaw, and Rogan, 1995).

Answer : _____

(4 marks)

- (d) Based on Example F, has the researcher provided conceptual definitions of key terms?

Example F

Emotional intelligence has been defined as “the ability to monitor one’s own and others’ emotions, to discriminate among them, and to use the information to guide one’s thinking and actions” (Salovey & Mayer, 1990, p. 189). A number of researchers thus view the capacity to process affective information as a “mental ability” or “aptitude” in the conventional sense.

Answer : _____

(4 marks)

SECTION C (20 marks) – Answer one question only.

Q42 (a) For the variable below, state whether primary or secondary data.

	Data	Answer
(i)	She got the data from an article in the UTHM library.	
(ii)	From the history book, the data show that more than 70% of children did not go to school.	
(iii)	From the Annual General Meeting's report, the number of staff loan money to buy cars is increasing.	

(3 marks)

(b) For the variable below, state whether the quantitative or qualitative data.

	Data	Answer
(i)	The number of vitamin sold every month, in 2014.	
(ii)	Temperature of the babies in the hospital.	
(iii)	Malays, Chinese, Indian and others.	
(iv)	Persian cat, Asian cat, Cyprus cat and others.	
(v)	Height of the lecturers	
(vi)	The number of sibling of each student in DAS 20903.	
(vii)	Terengganu, Perak, Penang, Selangor.	

(7 marks)

(c) For the variable below, state whether the quantitative data is discrete or continuous.

	Data	Answer
(i)	The age of animals.	
(ii)	The number of days in June.	
(iii)	The volume of boxes.	
(iv)	The household income of the staff in UTHM.	
(v)	The number of female students.	

(10 marks)

Q43 (a) For the variable below, state whether primary or secondary data.

	Data	Answer
(i)	She got the data from a journal in the internet.	
(ii)	From the survey, the data show that more than 85% of workers do not like to work on Sunday.	
(iii)	From the teacher's report, the school realise that the students' discipline is getting better after the campaign	

(3 marks)

(b) For the variable below, state whether the quantitative or qualitative data.

	Data	Answer
(i)	The number of handphones sold every month, in 2014.	
(ii)	Pressure of the knife.	
(iii)	Melanau, Iban, Penan and others.	
(iv)	Madihah, Hew and Thaca.	
(v)	Weight of the wives.	
(vi)	The number of children of each lecturer in UTHM.	
(vii)	Parit, Sungai Siput, Dinding	

(7 marks)

(c) For the variable below, state whether the qualitative is level ordinal or rank ordinal.

	Data	Answer
(i)	Comments from the respondent. (agree, almost agree, disagree)	
(ii)	Grade of the apples (A, B, C)	
(iii)	Types of Building. (Business, Shopping Mall, Schools)	
(iv)	Quality of the cakes. (Good, Satisfactory, Bad)	
(v)	Position in the hostel (Head, Secretary and Treasurer of the dormitory)	

(10 marks)

SECTION D (20 marks) – Answer one question only.

Q44 Refer to the data in **Table Q44**:

Table Q44

x	5	4.1	2	8.3	2.5	3	4	8.7	6	8
y	131	129	112	153	117	116	121	157	145	151

(a) Find

(i) $\Sigma x_i =$

(ii) $\Sigma y_i =$

(iii) $\Sigma x_i^2 =$

(iv) $\Sigma x_i y_i =$

(v) $\Sigma y_i^2 =$

(5 marks)

(b) Find

(i) $S_{xy} =$

(ii) $S_{xx} =$

(iii) $S_{yy} =$

(c) Calculate the sample correlation coefficient and interpret the result. (3 marks)

(d) By using the least square method, estimate the regression line. (3 marks)

(e) Estimate x if $y = 144$. (6 marks)

(3 marks)

Q45 Refer to the data in **Table Q45**:

Table Q45

x	5	9	10	14	4	7	12	22	1	17
y	3.1	9.8	6.5	7.3	3.7	4.4	6.1	9.1	2.1	8.4

(a) Find

(i) $\Sigma x_i =$

(ii) $\Sigma y_i =$

(iii) $\Sigma x_i^2 =$

(iv) $\Sigma x_i y_i =$

(v) $\Sigma y_i^2 =$

(5 marks)

(b) Find

(i) $S_{xy} =$

(ii) $S_{xx} =$

(iii) $S_{yy} =$

(3 marks)

(c) Calculate the sample correlation coefficient and interpret the result.

(3 marks)

(d) By using the least square method, estimate the regression line.

(6 marks)

(e) Estimate x if $y = 9.4$.

(3 marks)

- END OF QUESTION -

FINAL EXAMINATION

SEMESTER/SESSION: SEM II/2013/2014

PROGRAMME : 2 DAU

COURSE NAME : RESEARCH & STATISTICAL METHODS

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FORMULA

$$S_{xy} = \sum x_i y_i - \frac{\sum x_i \sum y_i}{n},$$

$$S_{xx} = \sum x_i^2 - \frac{(\sum x_i)^2}{n},$$

$$S_{yy} = \sum y_i^2 - \frac{(\sum y_i)^2}{n},$$

$$r = \frac{S_{xy}}{\sqrt{S_{xx} S_{yy}}},$$

$$\hat{\beta}_1 = \frac{S_{xy}}{S_{xx}},$$

$$\hat{\beta}_0 = \bar{y} - \hat{\beta}_1 \bar{x},$$