

CONFIDENTIAL

DECEMBER 2025/SET A/PPM1010



FINAL EXAMINATION

**BACHELOR OF INFORMATION TECHNOLOGY (HONOURS) IN COMPUTER
APPLICATION DEVELOPMENT**
**BACHELOR OF INFORMATION TECHNOLOGY (HONOURS) IN CYBER
SECURITY**
BACHELOR IN INFORMATION TECHNOLOGY (HONOURS)(DATA ANALYTICS)
DIPLOMA IN COMPUTER SCIENCE

COURSE : PREPARATORY MATHEMATICS

COURSE CODE : PPM1010

DURATION : 2 HOURS 30 MINUTES

INSTRUCTIONS TO CANDIDATES:

1. This question paper consists of **FIVE (5)** questions.
2. Answer **ALL** the questions in the Answer Booklet provided.
3. Please check to make sure that this examination pack consists of:
 - i. The Question Paper
 - ii. An Answer Booklet
 - iii. Appendix 1, Appendix 2(i), Appendix 2(ii), Appendix 2(iii)
4. Do not bring any material into the examination hall. Electronic calculator is allowed.
5. Please write your answer using permanent ink.

MYKAD/ PASSPORT NO : _____

ID. NO. : _____

LECTURER : _____

SECTION : _____

DO NOT OPEN THIS QUESTION PAPER UNTIL YOU ARE TOLD TO DO SO

This question paper consists of 7 printed pages including the front page

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QUESTION 1

- a. Consider the compound argument.

"The patient will be discharged if and only if the medical report is approved and the treatment is completed."

- i. Write the primary propositions using variables p , q and r . (3 marks)
- ii. Write the following statements in terms of logical connectives. (2 marks)
- b. Construct a truth table to show the following statement is tautology, contingency or contradiction.

$$(\neg p \vee q) \vee (\neg r \wedge q) \quad (6 \text{ marks})$$

- c. Determine whether the argument given is VALID or INVALID by using the truth table.

$$H_1 : \neg p \vee r$$

$$H_2 : p$$

$$\therefore C : r$$

(7 marks)

(Total: 18 marks)

QUESTION 2

A quality control engineer recorded the processing time (in minutes) for a sample of 15 online transactions. The data obtained are:

18.2	16.5	19.1	17.8	18.6
20.0	16.9	19.4	18.1	17.6
18.9	19.0	17.2	18.7	16.8

- a. Find the mean, median and mode for the above data. (4 marks)
- b. Calculate the standard deviation of the transaction time. (4 marks)
- c. Calculate and comment on the shape of the distribution. (3 marks)

(Total: 11 marks)

QUESTION 3

A school administrator recorded the number of hours students spent studying per week. A random sample of 70 students was selected, and the frequency distribution is shown below.

Table 1

Study Hours per Week (hours)	Number of Students
6 - 7	5
8 - 9	11
10 - 11	19
12 - 13	17
14 - 15	10
16 - 17	8

- Calculate the mean number of study hours per week. Interpret the result. (3 marks)
- Find the standard deviation of the study hours. (3 marks)
- Compute the median study hours and explain its meaning. (4 marks)
- Another group of students has a mean study time of 11 hours and a standard deviation of 2 hours. Determine which group shows more consistency in study hours. (5 marks)

(Total: 15 marks)

QUESTION 4

- a. Graph as shown in Figure 1 consists of vertex A, B, C, D and E.

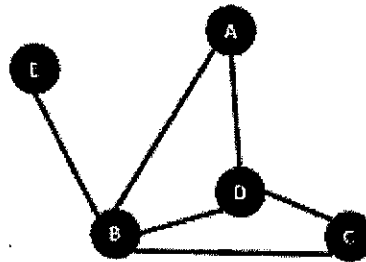


Figure 1

- i. Determine the number of edges, $n(E)$ in Figure 1. (2 marks)
- ii. Find the degree for each vertex. (3 marks)
- b. A transportation system is represented by a directed weighted graph, where the weights represent travel time in seconds. The vertices and directed weighted edges are given below.

$$V = \{A, B, C, D, E\}$$

$$E = \{(A, B, 12), (A, C, 8), (B, D, 10), (C, B, 4), (C, E, 15), (D, E, 6)\}$$

Draw the directed weighted graph.

(5 marks)

- c. Determine whether graphs from Figure 2 and Figure 3, respectively, are simple or non-simple graphs. Provide reasons to your answer.

i.

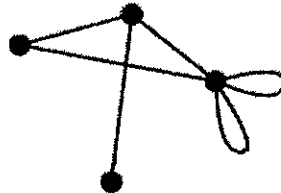


Figure 2

(2 marks)

ii.

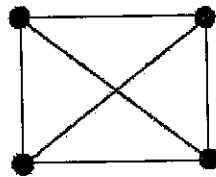


Figure 3

(2 marks)

- d. A delivery company needs to determine the shortest travel time from Depot A to Warehouse F. The weighted graph in Figure 4 shows the travelling time (in minutes) between locations.

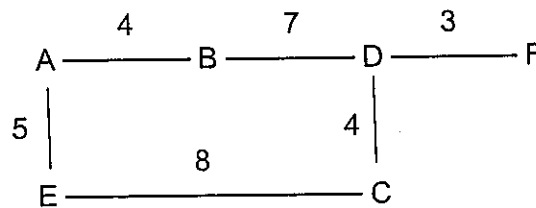


Figure 4

- List the possible paths connecting Depot A to Warehouse F. (2 marks)
- State the fastest path from Depot A to Warehouse F. (2 marks)
- Determine the shortest travelling time from Depot A to Warehouse F. (2 marks)

(Total: 20 marks)

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QUESTION 5

Hafiz works as a freelance software developer, while his wife Aina is a part-time online seller. They have three children aged 17, 14 and 5 years old. Two of them are currently enrolled in secondary school. They choose separate assessment, and all child-related expenses are claimed by Hafiz.

The details of their financials for the year of assessment 2024 are as follows:

Table 2		
Particulars	Hafiz (RM)	Aina (RM)
Annual Income	82,000	42,000
EPF Contributions	4,500	1,200
LIP Contributions	2,500	-
Parent medical treatment	1,800	-
Dental treatment	900	-
SSPN Savings	4,500	2,000
Lifestyle expenses	2,400	1,700
Childcare fees	-	2,800
Zakat	1,500	600

Calculate the tax payable of Hafiz and Aina under separate assessment for 2024.
(Total: 16 marks)

(TOTAL: 80 MARKS)

END OF QUESTION PAPER

APPENDIX 1

Logical Reasoning

p	q	$\sim p$	$p \wedge q$	$p \vee q$	$p \rightarrow q$	$p \leftrightarrow q$
T	T	F	T	T	T	T
T	F	F	F	T	F	F
F	T	T	F	T	T	F
F	F	T	F	F	T	T

Sample Measurements

i. Mean, $\bar{x} = \frac{\sum x}{n}$ or $\bar{x} = \frac{\sum fx}{n}$

ii. Median, $\tilde{x} = L_m + \left\{ \frac{\frac{n}{2} - \sum f_{m-1}}{f_m} \right\} . C$

iii. Mode, $\hat{x} = L_{mo} + \left\{ \frac{\Delta_1}{\Delta_1 + \Delta_2} \right\} . C$

iv. Standard Deviation, $s = \sqrt{\frac{1}{n-1} \left[\sum x^2 - \frac{(\sum x)^2}{n} \right]}$ OR $s = \sqrt{\frac{1}{n-1} \left[\sum fx^2 - \frac{(\sum fx)^2}{n} \right]}$

v. Coefficient of Variation, $CV = \frac{s}{\bar{x}} \times 100$

vi. Pearson's Measure of Skewness = $\frac{\text{Mean} - \text{Mode}}{\text{Standard deviation}}$ or $\frac{3(\text{Mean} - \text{Median})}{\text{Standard deviation}}$

APPENDIX 2 (i)

Tax Relief 2024

No	Individual Relief Types	Amount (RM)
1	Individual and dependent relatives	9,000
2	Expenses for parents: i. Medical treatment, dental treatment, special needs and carer expenses for parents (Medical condition certified by medical practitioner) ii. Complete medical examination (Restricted to RM1,000)	8,000 (Restricted)
3	Purchase of basic supporting equipment for disabled self, spouse, child or parent	6,000 (Restricted)
4	Disabled individual	6,000
5	Education fees (Self): i. Other than a degree at masters or doctorate level – Course of study in law, accounting, Islamic financing, technical, vocational, industrial, scientific or technology ii. Degree at masters or doctorate level – Any course of study iii. Course of study undertaken for the purpose of upskilling or self-enhancement (Restricted to RM2,000)	7,000 (Restricted)
6	Medical expenses on: i. Serious diseases for self, spouse or child ii. Fertility treatment for self or spouse iii. Vaccination for self, spouse and child (Restricted to RM1,000) iv. Dental examination and treatment (Restricted RM1,000)	10,000 (Restricted)
7	Expenses (Restricted to RM1,000) on: i. Complete medical examination for self, spouse or child ii. COVID-19 detection test including purchase of self-detection test kit for self, spouse or child iii. Mental health examination or consultation for self, spouse or child	
8	Expenses (Restricted to RM4,000) for child aged 18 and below: i. Assessment of intellectual disability diagnosis	

	ii. Early intervention programme / intellectual disability rehabilitation treatment	
9	Lifestyle – Expenses for the use / benefit of self, spouse or child in respect of: i. Purchase or subscription of books / journals / magazines / newspapers / other similar publications (Not banned reading materials) ii. Purchase of personal computer, smartphone or tablet (Not for business use) iii. Payment of monthly bill for internet subscription (Under own name) iv. Skill improvement / personal development course fee	2,500 (Restricted)
10	Lifestyle – Additional relief for the use / benefit of self, spouse or child in respect of: i. Purchase of sports equipment for any sports activity as defined under the Sports Development Act 1997 ii. Payment of rental or entrance fee to any sports facility iii. Payment of registration fee for any sports competition where the organizer is approved and licensed by the Commissioner of Sports under the Sports Development Act 1997 iv. Gymnasium membership fee / sports training	1,000 (Restricted)
11	Purchase of breastfeeding equipment for own use for a child aged 2 years and below (Deduction allowed once in every TWO (2) years of assessment)	1,000 (Restricted)
12	Child care fees to a registered child care centre / kindergarten for a child aged 6 years and below	3,000 (Restricted)
13	Net deposit in Skim Simpanan Pendidikan Nasional, SSPN (Net deposit is the total deposit in 2023 MINUS total withdrawal in 2023)	8,000 (Restricted)
14	Husband / wife / payment of alimony to former wife	4,000 (Restricted)
15	Disabled husband / wife	5,000
16	Children: Each unmarried child and under the age of 18 years old	2,000
	Each unmarried child of 18 years and above who is receiving full-time education ("A-Level", certificate, matriculation or preparatory courses).	2,000
	Each unmarried child of 18 years and above that: i. receiving further education in Malaysia in respect of an award of diploma or higher (excluding matriculation/ preparatory courses).	8,000

	ii. receiving further education outside Malaysia in respect of an award of degree or its equivalent (including Master or Doctorate). the instruction and educational establishment shall be approved by the relevant government authority.	
	Disabled child	6,000
	Additional exemption of RM8,000 disable child age 18 years old and above, not married and pursuing diplomas or above qualification in Malaysia @ bachelor degree or above outside Malaysia in program and in Higher Education Institute that is accredited by related Government authorities	8,000
17	Life insurance and EPF Civil servants' pension schemes, non-civil servants' pension schemes and self-employed category: i. Mandatory contributions to approved schemes or voluntary contributions to EPF (excluding private retirement schemes) or contributions under any written law (Restricted to RM4,000) ii. Life insurance premium payments or family takaful contributions or additional voluntary contributions to EPF (Restricted to RM3,000)	7,000 (Restricted)
18	Deferred Annuity and Private Retirement Scheme (PRS)	3,000 (Restricted)
19	Education and medical insurance	3,000 (Restricted)
20	Contribution to the Social Security Organization (SOCSSO)	350 (Restricted)
21	Expenses on charging facilities for Electric Vehicle (Not for business use)	2,500 (Restricted)

APPENDIX 2(ii)

Tax rate schedule for personal income for 2024

Chargeable Income	Calculations (RM)	Rate %	Tax (RM)
0 - 5,000	On the First 5,000	0	0
5,001 - 20,000	On the First 5,000 Next 15,000	1	0 150
20,001 - 35,000	On the First 20,000 Next 15,000	3	150 450
35,001 - 50,000	On the First 35,000 Next 15,000	6	600 900
50,001 - 70,000	On the First 50,000 Next 20,000	11	1,500 2,200
70,001 - 100,000	On the First 70,000 Next 30,000	19	3,700 5,700
100,001 - 400,000	On the First 100,000 Next 300,000	25	9,400 75,000
400,001 - 600,000	On the First 400,000 Next 200,000	26	84,400 52,000
600,001 - 2,000,000	On the First 600,000 Next 1,400,000	28	136,400 392,000
Exceeding 2,000,000	On the First 2,000,000 Next ringgit	30	528,400

APPENDIX 2(iii)

Income Tax Rebates for Resident Individual with Chargeable Income Less Than RM35,000

No	Tax Rebates	Year Of Assessment 2001 - 2008 (RM)	Year Of Assessment 2009 Onwards (RM)
a	Separate Assessment	-	-
	Wife	350	400
	Husband	350	400
b	Joint Assessment	-	-
	Wife	350	400
	Husband	350	400
	Total	700	800
	Assessment Where Husband Or Wife Does Not Has Any Total Income	-	-
	Wife	350	400
	Husband	350	400
	Total	700	800

