

SULIT



KEMENTERIAN PENDIDIKAN TINGGI
JABATAN PENDIDIKAN POLITEKNIK DAN KOLEJ KOMUNITI

BAHAGIAN PEPERIKSAAN DAN PENILAIAN
JABATAN PENDIDIKAN POLITEKNIK DAN KOLEJ KOMUNITI
KEMENTERIAN PENDIDIKAN TINGGI

JABATAN TEKNOLOGI MAKLUMAT & KOMUNIKASI

PEPERIKSAAN AKHIR

SESI II : 2024/2025

DFC20303 : PROGRAMMING FUNDAMENTALS

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MASA : 8.30 PAGI - 10.30 PAGI (2 JAM)

Kertas ini mengandungi **DUA PULUH EMPAT (24)** halaman bercetak.

Bahagian A: Objektif (30 soalan)

Bahagian B: Struktur (2 soalan)

Dokumen sokongan yang disertakan : Tiada

JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIARAHKAN

(CLO yang tertera hanya sebagai rujukan)

SULIT

SECTION A : 45 MARKS
BAHAGIAN A : 45 MARKAH

INSTRUCTION:

This section consists of **THIRTY (30)** objective questions. Mark your answers in the OMR form provided.

ARAHAN :

*Bahagian ini mengandungi **TIGA PULUH (30)** soalan objektif. Tandakan jawapan anda di dalam borang OMR yang disediakan.*

- CLO1 1. Find the **CORRECT** code segment that represents comments in C++.

*Cari kod segmen yang **BETUL** bagi mewakili komen dalam C++.*

- A. # This is comments
- B. / This is comments
- C. // This is comments
- D. /* This is comments

- CLO1 2. Match the **CORRECT** error for the statement in Figure A2.

*Padankan ralat yang **BETUL** bagi pernyataan dalam Rajah A2.*

“Error in compiling process because semi colon has been missed out at the end of the statement”

“Ralat semasa mengkompil aturcara kerana semi colon tidak diletakkan dipenghujung pernyataan bahasa pengaturcaraan c++”

Figure A2 / Rajah A2

- A. Run Time Error.
Ralat Masa Larian.
- B. Syntax Error.
Ralat Sintaks.
- C. Logical Error.
Ralat Logikal.
- D. Statement Error.
Ralat Pernyataan.

- CLO1 3. Select the best explanation of the given statement in Figure A3.

Pilih keterangan terbaik mengenai kenyataan yang di beri dalam Rajah A3.

`#define Discount 0.15`

Figure A3 / Rajah A3

- A. The statement refers to the predecessor directive whose values are changeable during execution of the program.
Pernyataan itu merujuk kepada predecessor directive yang nilainya boleh berubah semasa pelaksanaan program.
- B. The statement declares a variable named Discount that stores 0.15 as its value.
Pernyataan mengisytiharkan pembolehubah bernama Diskaun yang menyimpan 0.15 sebagai nilainya.
- C. The statement declares a header file named Discount that stores 0.15 as its value.
Kenyataan mengisytiharkan fail header bernama Diskaun yang menyimpan 0.15 sebagai nilainya.
- D. The statement refers to the predecessor directive whose values do not change during execution of the program.
Pernyataan itu merujuk kepada 'predecessor directive' yang nilainya tidak berubah semasa pelaksanaan program.

- CLO1 4. Select the program elements that describe the given statement in Figure A4.

Pilih elemen program mengenai kenyataan dalam Rajah A4.

- Refers to memory location, which can hold values
Merujuk kepada lokasi memori, yang boleh menyimpan nilai
- Only store one value at one time.
Hanya simpan satu nilai pada satu masa
- Before it is used, it must be declared with its data type
Sebelum ia digunakan, ia mesti diisytiharkan dengan jenis datanya
- The content may change during the program execution.
Kandungan mungkin berubah semasa pelaksanaan program

Figure A4 / Rajah A4

- A. Constant / Pemalar
- B. Variable / Pembolehubah
- C. Identifier / Pengecam
- D. Comment / Komen

- CLO1 5. Match the **CORRECT** variable declaration.

*Padankan pengistiharan pemboleh ubah yang **BETUL**.*

- I. String Abu123;
- II. String abuBakar;
- III. String 123bakar;
- IV. String Abu_Bakar;

- A. I, II and IV
- B. II, III and IV
- C. I, III and IV
- D. I, II and III

- CLO1 6. Match the command that prompts the system to display the label "Enter quantity".

Padankan arahan yang meminta sistem untuk memaparkan label "Enter quantity".

- A. cin >> "Enter quantity";
- B. cin << "Enter quantity";
- C. cout << "Enter quantity";
- D. cout >> "Enter quantity";

- CLO1 7. Based on code in Figure A7, determine the output value.

Berdasarkan aturcara dalam Rajah A7, tentukan nilai hasil.

```
#include <iostream>
using namespace std;
int main()
{
    int a, b, c, x;
    a = 50, b = 12, c = 2;
    x = a + b * a % c;
    cout<<x;
    return 0;
}
```

Figure A7 / Rajah A7

- A. 200
- B. 250
- C. 50
- D. 62

- CLO1 8. Identify the **CORRECT** syntax of for statement.

*Kenalpasti sintaks yang **BENAR** bagi pernyataan for.*

- A. for (int x=1, x <5, x++) { cout<< "Hello World!!"; }
- B. for (int x=1; x++; x <5) { cout<< "Hello World!!"; }
- C. for (int x=1: x <5: x++) { cout<< "Hello World!!"; }
- D. for (int x=1; x <5; x++) { cout<< "Hello World!!"; }

CLO1

9. Identify the suitable statement that describes selection structure.

Kenalpasti kenyataan yang sesuai mengenai struktur pilihan.

- A. It allows instructions to be executed in non-sequential ways.
Ia membenarkan arahan dijalankan tanpa giliran.
- B. It allows coding to be executed unexpectedly.
Ia membenarkan kod dijalankan tanpa jangkaan awal.
- C. It allows the programmer to code properly.
Ia membenarkan pengaturcaraan dilakukan secara teratur.
- D. It allows the system to select which instruction to be executed first.
Ia membenarkan sistem untuk memilih arahan yang akan dilaksanakan pertama sekali.

CLO1

10. Select the number of repetitions that will occur for the looping control in Figure A10.

Pilih bilangan pengulangan yang akan berlaku dalam Rajah A10.

```
int a = 2 ;  
while (a < 20) {  
    cout<< a << endl;  
    a+=3;  
}
```

Figure A10 / Rajah A10

- A. 7
- B. 6
- C. 8
- D. 9

CLO1

11. Based on segment code in Figure A11, verify the **CORRECT** output after executing the code.

*Berdasarkan segmen kod dalam Rajah A11, sahkan ouput yang **BETUL** selepas pelaksanaan kod.*

```
int main( )
{
    int x=10, y=3, max;
    if (x > y)
        max = x + 5;
    else
        max = y-1;

    cout<<max;
}
```

Figure A11 / Rajah A11

- A. 8
- B. 15
- C. 1
- D. 7

CLO1

12. Choose from the following 'for' loop statement that will count from 0 to 5.

Pilih antara gelung 'for' berikut yang akan mengira daripada 0 ke 5.

- A. for (int c=0; c<6; c++)
- B. for (int c=0; c<5; c++)
- C. for (int c=0; c=5; c++)
- D. for (int c=0; c<=6; c++)

CLO1

13. Determine the output for the program in Figure A13.

Tentukan hasil untuk aturcara di Rajah A13.

```
#include <iostream>
using namespace std;
int main()
{
    int x= 3, y=4;
    switch(x)
    {
        case 6: y=0; break;
        case 7: y=1; break;
        default: y += 1;
    }
    cout<< y;
    return 0;
}
```

Figure A13 / *Rajah A13*

- A. 1
- B. 3
- C. 2
- D. 5

CLO1 14. Choose the value of “sum” after the code in Figure A14 executed.

Pilih nilai “sum” setelah aturcara dalam Rajah A14 dilaksanakan.

```
#include <iostream>
using namespace std;
int main()
{
    int sum = 0 , y = 0;
    do
    {
        for(int x = 1; x < 5; x++)
            sum = sum + x;
        y = y + 1;
    } while (y < 3);
    cout << sum << endl;
    return 0;
}
```

Figure A14 / Rajah A14

- A. 5
- B. 8
- C. 15
- D. 30

CLO1 15. Select the **INCORRECT** statement regarding the declaration in Figure A15.

*Pilih kenyataan yang **SALAH** mengenai pengisytiharan dalam Rajah A15.*

```
char bike[6];
```

Figure A15 / Rajah A15

- A. The array data type is character.
Jenis data untuk tatasusunan adalah character.
- B. It shows the declaration of an array.
Ia menunjukkan pengisytiharan tatasusunan.
- C. The minimum element of the array is 6.
Elemen minimum tatasusunan tersebut adalah 6.
- D. The array name of Figure A9 is bike.
Nama tatasusunan di dalam Rajah A9 adalah bike.

CLO1

16. Select from the following shows the **CORRECT** declaration for car in array of 4 rows and 3 columns with datatype int.

*Pilih daripada berikut yang menunjukkan pengisytiharan yang **BETUL** untuk array car dengan 4 barisan dan 3 lajur*

- A. `int car [4] [3] = {{0,11,12},{8,9,10},{4,5,6},{3,7,2}};`
- B. `int car [3] [4] = {{0,11,12},{8,9,10},{4,5,6},{3,7,2}};`
- C. `int car [3] [4] = {{0;11;12},{8;9;10},{4;5;6},{3;7;2}};`
- D. `int car [4] [3] = {{0,11,12},{8,9,10},{4,5,6},{3,7,2}};`

Question 17 to 18 are based on Figure A17-A18

Soalan 17 hingga 18 adalah berdasarkan Rajah A17-A18

```
struct car
{
    int car_code;
    string brand;
} BMW, Ford;
```

Figure A17-A18 / *Rajah A17-A18*

CLO1

17. Choose the structure variable for structure declaration in Figure A17-A18.

Pilih pemboleh ubah struktur bagi pengisytiharan struktur dalam Rajah A17-A18.

- A. car
- B. car_code;
- C. BMW, Ford
- D. car_code, brand;

CLO1

18. Choose the **CORRECT** statement to input the values shown in Figure A17-A18.

*Pilih kenyataan yang **BENAR** untuk memasukkan nilai seperti dalam Rajah A17-A18.*

- A. `cin >> Ford. brand;`
- B. `cin >> Ford, brand;`
- C. `cin << Ford. brand;`
- D. `cin << Ford, brand;`

CLO1 19. Based on the array declaration in Figure A19, choose the value of mark[2].

Berdasarkan pengisytiharan tatasusunan dalam Rajah A19, pilih nilai mark[2].

```
float mark[] = { 3.4, 4.5, 2.6, 5.5 }
```

Figure A19 / Rajah A19

- A. 3.4
- B. 4.5
- C. 2.6
- D. 5.5

CLO1 20. Based on code in Figure A20, select the output.

Berdasarkan aturcara dalam Rajah A20, pilih keluaran.

```
#include <iostream >
using namespace std;
int main()
{
    int a[ ] = {3, 6, 9, 12};
    int *p = (a + 1);
    cout << *a + 12;
    return 0;
}
```

Figure A20/ Rajah A20

- A. 12
- B. 13
- C. 14
- D. 15

CLO1

21. Choose the output based on the code segment in Figure A21.

Pilih keluaran berdasarkan keratan aturcara pada Rajah A21.

```
#include <iostream>
using namespace std;
int main() {
    int array[] = {0, 2, 4, 6, 7, 5, 3};
    int n, result = 0;
    for (n = 0; n < 8; n++)
    {
        result += array[n];
    }
    cout << result;
    return 0;
}
```

Figure A21 / Rajah A21

- A. 21
- B. 25
- C. 26
- D. 27

CLO1

22. Based on the array declaration in Figure A22, find the output.

Berdasarkan pengisytiharan tatasusunan dalam Rajah A22, cari keluaran.

```
#include <iostream>
using namespace std;
int main()
{
    char str[6] = {'A','B','C','D','E','F'};
    cout << str[3];
    return 0;
}
```

Figure A22 / Rajah A22

- A. ABCDEF
- B. D
- C. C
- D. abcdef

CLO1

23. Select the **CORRECT** explanation based on the code in Figure A23.

Pilih keterangan yang **BETUL** berdasarkan aturcara dalam Rajah A23.

```
#include <iostream>
using namespace std;

int main() {
    int x[3];
    cout << " x[0] is" << x [0];
    return 0;
}
```

Figure A23 / Rajah A23

- A. The program will produce a compilation error because the array size is not specified during declaration.
Program ini mempunyai kesalahan kompil kerana tatasusunan tidak dinyatakan semasa pengisytiharannya.
- B. The program will cause a runtime error because the array elements are not initialized.
Program ini mempunyai kesalahan runtime kerana elemen dalam tatasusunan tidak di beri nilai awal.
- C. The program will cause a runtime error because the array element x[0] is not defined.
Program ini mempunyai ralat 'runtime' kerana elemen tatasusunan x[0] tidak dinyatakan.
- D. The program has no errors but will display an arbitrary (garbage) value for x[0].
Program ini tidak mempunyai sebarang ralat tetapi ia akan memaparkan nilai rawak bagi x[0].

CLO1 24. Select **CORRECT** description of Figure A24.

*Pilih deskripsi yang **BENAR** mengenai Rajah A24.*

- It must be declared before they can used in a program.
Ia mesti di isytiharkan sebelum ia digunakan dalam program
- It placed just before the main program and sometimes at beginning of the main program.
Ia diletakkan sebelum program main dan kadang – kadang di awal program main
- It specifies the name of function , the order and type of parameters and the return value.
Ia merupakan nama fungsi, susunan kedudukan dan jenis parameter dan pemulangan nilai

Figure A24 / Rajah A24

- A. Function Prototype / *Fungsi Prototaip*
- B. Function definition / *Fungsi Definisi*
- C. Call Function / *Panggilan Fungsi*
- D. Function Body / *Badan Fungsi*

CLO1 25. Choose the **CORRECT** return statement based on Figure A25.

*Pilih pernyataan 'return' yang **BETUL** berdasarkan Rajah A25.*

Return statement that used to give a signal to the compiler that no value will be returned to the calling function.

Pernyataan 'return' yang digunakan untuk memberitahu kepada compiler bahawa tiada nilai yang dipulangkan ke dalam fungsi memanggil.

Figure A25/ Rajah A25

- A. return 3;
- B. return;
- C. return (y>0);
- D. return (void);

CLO1

26. Choose the **CORRECT** syntax that defines a function prototype for `calcAverage`, which returns an integer and receives a float and an integer.

*Pilih sintaks yang **BETUL** bagi prototaip fungsi `calcAverage` yang mengembalikan nilai `int` dan menerima parameter `float` dan `int`.*

- A. `calcAverage (int, float, int);`
- B. `int calcAverage (float, int);`
- C. `void calcSum (float , int);`
- D. `float calcAverage (int , float);`

CLO1

27. Choose the purpose of the return statement in a function.

Pilih kenyataan yang benar mengenai return dalam function.

- A. It ends the program execution.
Ia menamatkan pelaksanaan program.
- B. It prints a message to the console.
Ia mencetak mesej ke konsol.
- C. It initializes a variable in the function.
Ia memulakan pembolehubah dalam fungsi.
- D. It stops the function and sends a value back to the caller.
Ia menghentikan fungsi dan menghantar nilai kembali kepada pemanggil.

CLO1

28. Choose the **CORRECT** function prototype for function definition in Figure A28.

*Pilih fungsi prototaip yang **BETUL** bagi definisi fungsi dalam Rajah A28.*

```
void sum (int x , int y)
{
    cout<<x*y;
}
```

Figure A28 / Rajah A28

- A. int sum (int,int);
- B. void sum (int,int);
- C. int sum (void,void);
- D. void sum (void,void);

CLO1

29. Select the output of Figure A29.

Pilih output untuk Rajah A29.

```
#include <iostream>
using namespace std;
void modify(int &a, int b)
{
    a = a + b;
    b = b + 2;
}
int main()
{
    int x = 5, y = 3;
    modify(x, y);
    cout << "x: " << x << " y: " << y;
    return 0;
}
```

Figure A29 / Rajah A29

- A. x: 5 y: 3
- B. x: 8 y: 5
- C. x: 8 y: 3
- D. x: 5 y: 5

CLO1

30. Determine the **CORRECT** answer for **D** based on Figure A30.*Tentukan jawapan yang **BETUL** untuk **D** berdasarkan Rajah A30.*

```
void calculate ( ____ ) → D  
{  
    float z = x + 20;  
    cout << "Result:" << z << y;  
}  
  
int main()  
{  
    calculate (90.5, 'R');  
}
```

Figure A30 / Rajah A30

- A. int x, int y
- B. x, y
- C. float, char
- D. float x, char y

SECTION B: 55 MARKS**BAHAGIAN B: 55 MARKAH****INSTRUCTION:**

This section consists of **TWO (2)** structured questions. Answer **ALL** questions.

ARAHAN:

*Bahagian ini mengandungi **DUA (2)** soalan berstruktur. Jawab **SEMUA** soalan.*

QUESTION 1**SOALAN 1**

- CLO1 (a) (i) Identify **TWO (2)** rules for naming an identifier in C++.

*Kenal pasti **DUA (2)** peraturan dalam menamakan pengecam dalam C++.*

[2 marks]

[2 markah]

- CLO1 (ii) Give the answer to fill the blank in Figure B1(a)(ii).

Berikan jawapan bagi i, ii dan iii di dalam Rajah B1(a)(ii).

```
#___i___ <iostream>
using namespace std;
int __ii__;
{
    int a=5;
    int b=2;
    int ___iii___;
    sum= a+b;
    cout << "The sum is: "<< sum << "\n";
    ___iv___;
}
```

Figure B1(a)(ii) / Rajah B1(a)(ii)

[4 marks]

[4 markah]

CLO1 (b) (i) Identify **TWO (2)** types of operators used in programming.
Kenal pasti DUA (2) jenis operator yang digunakan dalam pengaturcaraan.
[2 marks]
[2 markah]

CLO1 (ii) Differentiate between input and output statements.
Bezakan antara pernyataan input dan output.
[2 marks]
[2 markah]

CLO1 (iii) Prepare a program to display the output as in Figure B1(b)(iii).
Tulis aturcara untuk memaparkan output seperti Rajah B1(b)(iii).

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--

Figure B1(b)(iii) / Rajah B1(b)(iii)

[4 marks]
[4 markah]

CLO1 (c) (i) Name **TWO (2)** types of repetition control structure in C++.
Namakan DUA (2) jenis struktur kawalan pengulangan dalam C++.
[2 marks]
[2 markah]

CLO1 (ii) Identify the syntax for if else statement in the selection structure.
Kenalpasti sintaks bagi pernyataan if else bagi struktur pilihan.
[2 marks]
[2 markah]

CLO1

(iii) Based on the program given in Figure B1(c)(iii), fill in the blank with the suitable answer to get the output as below:

Berdasarkan kepada program yang diberi dalam Rajah B1(c)(iii), isikan tempat kosong dengan jawapan yang sesuai untuk mendapatkan keluaran seperti di bawah:

```
#include <iostream>
using namespace std;
int main ()
{
    int i,n;
    for ( __i__ ; __ii__ ; __iii__ ) {
        cout << i << " , ";
    }
    cout << "FIRE!!!\n";
    for ( __iv__ ; __v__ ; __vi__ ) {
        cout << n << " , ";
    }
    cout << "RUN!!!\n";
    return 0;
}
```

Figure B1(c)(iii) / Rajah B1(c)(iii)

Output:

```
10, 9, 8, 7, 6, 5, 4, 3, 2, 1, FIRE!!!
2, 4, 6, 8, 10, RUN!!!
```

[6 marks]

[6 markah]

CLO1

(iv) Rewrite the following program code using *switch case* statement based on Figure B1(c)(iv).

Tulis semula program berikut menggunakan kenyataan switch case berdasarkan Rajah B1(c)(iv).

```
if(operator == '+')
{
    cout<<"Add"<<endl;
}

else if(operator == '-')
{
    cout<<"Subtract"<<endl;
}

else
{
    cout<<"Wrong operator!"<<endl;
}
```

Figure B1(c)(iv) / *Rajah B1(c)(iv)*

[4 marks]

[4 markah]

QUESTION 2

SOALAN 2

CLO1

(a) (i) Identify **THREE (3)** components of an array.*Kenalpasti **TIGA (3)** komponen dalam tatasusunan.*

[3 marks]

[3 markah]

CLO1

(ii) Differentiate between array and structure.

Berikan perbezaan antara tatasusunan dan struktur.

[4 marks]

[4 markah]

CLO1

(iii) Produce the outputs for Figure B2(a)(iii) shown below. Assume that the address of variable is 0x6ffe14.

Hasilkan keluaran bagi Rajah B2(a)(iii) di bawah. Andaikan alamat bagi pembolehubah adalah 0x6ffe14.

```
int var = 20; // actual variable declaration.
int *ip;      // pointer variable

ip = &var;    // store address of var in pointer variable

cout << "Value of var variable: ";
cout << var << endl;

// print the address stored in ip pointer variable
cout << "Address stored in ip variable: ";
cout << ip << endl;

// access the value at the address available in pointer
cout << "Value of *ip variable: ";
cout << *ip << endl;
return 0;
```

Figure B2(a)(iii) / Rajah B2(a)(iii)

[4 marks]

[4 markah]

CLO1

- (iv) Produce a structure named employee which can stored information based on Figure B2(a)(iv) for 10 employees.

Hasilkan struktur yang bernama employee yang boleh menyimpan maklumat berdasarkan Rajah B2(a)(iv) di bawah bagi 10 orang pekerja.

<u>EMPLOYEE REGISTRATION</u>
Name:
Staff Number:
Salary:

Figure B2(a)(iv) / *Rajah B2(a)(iv)*

[4 marks]

[4 markah]

CLO1

- (b) (i) Name parts of the functions in programming.

Namakan bahagian-bahagian fungsi dalam pengaturcaraan.

[3 marks]

[3 markah]

- (ii) Clarify the difference between pass by value and pass by reference.

Jelaskan perbezaan di antara penghantaran secara nilai dan penghantaran secara rujukan.

[2 marks]

[2 markah]

CLO1

- (iii) Show the lines for Function Prototype, Function Definition and Function Call based on the program code in Figure B2(b)(iii).

Tunjukkan baris bagi Prototaip Fungsi, Pengisytiharan Fungsi dan Panggilan Fungsi berdasarkan kod program dalam Rajah B2(b)(iii).

Line 1	#include<iostream>
Line 2	using namespace std;
Line 3	void Print();
Line 4	
Line 5	int main()
Line 6	{
Line 7	Print();
Line 8	}
Line 9	void Print()
Line 10	{
Line 11	cout<<"You're great"<<endl;
Line 12	}

Figure B2(b)(iii)/ *Rajah B2(b)(iii)*

[4 marks]

[4 markah]

CLO1

- (iv) Write a function named circle that returns a float value and takes one float parameter, which represents the radius of a circle. Inside the function, calculate and return the area of the circle using the given formula shown in Figure B2(b)(iv).

Tulis sebuah fungsi bernama circle yang mengembalikan nilai float dan mengambil satu parameter float, yang mewakili jejari bulatan. Di dalam fungsi, kira dan kembalikan luas bulatan menggunakan formula yang diberikan dalam Rajah B2(b)(iv).

$\text{area} = 3.142 * \text{radius} * \text{radius}$

Figure B2(b)(iv)/ *Rajah B2(b)(iv)*

[3 marks]

[3 markah]

SOALAN TAMAT