

SULIT



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

JABATAN MATEMATIK, SAINS & KOMPUTER

**PENILAIAN ALTERNATIF BERIKUTAN
PELAKSANAAN PERINTAH KAWALAN BERSYARAT**

SESI JUN 2020

DBM2013 : ENGINEERING MATHEMATICS 2

NAMA PENYELARAS KURSUS : NORAZILA BINTI MAD

KAEDAH PENILAIAN : PEPERIKSAAN ONLINE

**JENIS PENILAIAN : SOALAN ESEI BERSTRUKTUR
(2 SOALAN)**

TARIKH PENILAIAN : 21 DISEMBER 2020

TEMPOH PENILAIAN : 1 JAM

LARANGAN TERHADAP PLAGIARISM (AKTA 174)

**PELAJAR TIDAK BOLEH MEMPLAGIAT APA-APA IDEA, PENULISAN, DATA
ATAU CIPTAAN ORANG LAIN. PLAGIAT ADALAH SALAH SATU
PENYELEWENGAN AKADEMIK. SEKIRANYA PELAJAR DIBUKTIKAN
MELAKUKAN PLAGIARISM, PENILAIAN BAGI KURSUS BERKENAAN AKAN
DIMANSUHKAN DAN DIBERI GRED F DENGAN NILAI MATA 0.**

**(RUJUK BUKU ARAHAN-ARAHAN PEPERIKSAAN DAN KAEDAH PENILAIAN (Diploma) EDISI 6, JUN 2019,
KLAUSA 17.3)**

INSTRUCTION:

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

ARAHAN:

Bahagian ini mengandungi DUA (2) soalan subjektif. Jawab SEMUA soalan.

QUESTION 1**SOALAN 1**CLO1
C2

(a) Simplify the following expressions:

Permudahkan setiap yang berikut:

i. $\frac{m^{2-3n}}{m^{n-6} \times m^{2n+1}}$

[5 marks]
[5 markah]

ii. $\log 7 + 2\log \frac{2}{5} - 3\log 4$

[5 marks]
[5 markah]

CLO1
C3

(b) Solve the following equations by applying suitable method:

Selesaikan setiap persamaan yang berikut dengan menggunakan kaedah yang sesuai:

i. $5^{x-3} \times 125^{3+2x} = 1$

[5 marks]
[5 markah]

ii. $2\log_x 3 + \log_x 9 = 4$

[5 marks]
[5 markah]

CLO1
C3(c) Given $\log_2 3 = 1.59$ and $\log_2 5 = 2.32$. Solve the value of $\log_2 75 + \log_3 5$ without using calculator.

Diberi $\log_2 3 = 1.59$ dan $\log_2 5 = 2.32$. Selesaikan $\log_2 75 + \log_3 5$ tanpa menggunakan kalkulator.

[5 marks]
[5 markah]

QUESTION 2
SOALAN 2

CLO 1
C3

(a) Solve the following functions using a suitable method.

Selesaikan fungsi-fungsi berikut mengikut kaedah yang bersesuaian.

i. $y = (2x + 3)^2(x - 1)$

[5 marks]

[5 markah]

ii. $y = \frac{4x-2}{2x^2}$

[5 marks]

[5 markah]

CLO 1
C3

(b) i. The parametric equations are given as $x = 6e^{2t-1}$ and $y = 2t^3$. Calculate $\frac{dy}{dx}$.

Persamaan – persamaan parametrik diberi sebagai $x = 6e^{2t-1}$ dan $y = 2t^3$.

Kirakan $\frac{dy}{dx}$.

[4 marks]

[4 markah]

ii. Use implicit differentiation to find $\frac{dy}{dx}$ if $3x - 2y^2 + 5xy = 4$.

Gunakan pembezaan implicit untuk mendapatkan $\frac{dy}{dx}$ sekiranya

$$3x - 2y^2 + 5xy = 4.$$

[5 marks]

[5 markah]

CLO 1
C3

(c) Given $z = 4x^3 + 3x^4y^2 - 5y^2$, use partial differential to solve $\frac{\partial z}{\partial x}$, $\frac{\partial z}{\partial y}$, $\frac{\partial^2 z}{\partial x \partial y}$

and $\frac{\partial^2 z}{\partial y \partial x}$.

Diberi bahawa $z = 4x^3 + 3x^4y^2 - 5y^2$, gunakan pembezaan separa untuk

selesaikan $\frac{\partial z}{\partial x}$, $\frac{\partial z}{\partial y}$, $\frac{\partial^2 z}{\partial x \partial y}$ dan $\frac{\partial^2 z}{\partial y \partial x}$.

[6 marks]

[6 markah]

SULIT

FORMULA SHEET FOR DBM20023

EXPONENTS AND LOGARITHMS			
LAW OF EXPONENTS		LAW OF LOGARITHMS	
1.	$a^m \times a^n = a^{m+n}$	8.	$\log_a a = 1$
2.	$\frac{a^m}{a^n} = a^{m-n}$	9.	$\log_a 1 = 0$
3.	$(a^m)^n = a^{m \times n}$	10.	$\log_a b = \frac{\log_c b}{\log_c a}$
4.	$a^0 = 1$	11.	$\log_a MN = \log_a M + \log_a N$
5.	$a^{-n} = \frac{1}{a^n}, a \neq 0$	12.	$\log_a \frac{M}{N} = \log_a M - \log_a N$
6.	$a^{\frac{m}{n}} = (\sqrt[n]{a})^m$	13.	$\log_a N^P = P \log_a N$
7.	$(ab)^n = a^n b^n$	14.	$N = a^x \Leftrightarrow \log_a N = x$
DIFFERENTIATION			
1.	$\frac{d}{dx}(k) = 0, k \text{ is constant}$	2.	$\frac{d}{dx}(ax^n) = nax^{n-1}$ [Power Rule]
3.	$\frac{d}{dx}(f(x) \pm g(x)) = f'(x) \pm g'(x)$	4.	$\frac{d}{dx}[a\{u(x)\}^n] = na\{u(x)\}^{n-1} \cdot u'(x)$ [Composite]
5.	$\frac{d}{dx}(uv) = u \frac{dv}{dx} + v \frac{du}{dx}$ [Product Rule]	6.	$\frac{d}{dx}\left(\frac{u}{v}\right) = \frac{v \frac{du}{dx} - u \frac{dv}{dx}}{v^2}$ [Quotient Rule]
7.	$\frac{dy}{dx} = \frac{dy}{du} \times \frac{du}{dx}$ [Chain Rule]	8.	$\frac{d}{dx}(ae^{u(x)}) = ae^{ux} \cdot u'(x)$
9.	$\frac{d}{dx}[a \ln u(x)] = \frac{a}{u(x)} \cdot u'(x)$	10.	$\frac{d}{dx}[a \sin u(x)] = a \cos u(x) \cdot u'(x)$
11.	$\frac{d}{dx}[a \sin^n u(x)] = an \cos u(x) \cdot \sin^{n-1} u(x) \cdot u'(x)$	12.	$\frac{d}{dx}[a \cos u(x)] = -a \sin u(x) \cdot u'(x)$
13.	$\frac{d}{dx}[a \cos^n u(x)] = -an \sin u(x) \cdot \cos^{n-1} u(x) \cdot u'(x)$	14.	$\frac{d}{dx}[a \tan u(x)] = a \sec^2 u(x) \cdot u'(x)$
15.	$\frac{d}{dx}[a \tan^n u(x)] = an \tan^{n-1} u(x) \cdot \sec^2 u(x) \cdot u'(x)$	16.	$\frac{dy(t)}{dx(t)} = \frac{dy(t)}{dt} \times \frac{dt}{dx(t)}$ [Parametric Rule]