SAMPEL PERCUMA

Kertas Trial STPM Semester 1 Mathematics T Terengganu 2024

Set penuh: Kertas Percubaan STPM

Sem 1 · Mathematics T

Sampel ini: 4 muka surat. Set penuh ada:

- 2 fail PDF
- Semester 1: kertas percubaan (trial) negeri, subjek yang dipilih + skema
- Blueprint 30 hari Semester 1 (setiap subjek)
- Semester 3: percubaan 2024, 10 subjek, banyak negeri, soalan + skema dalam satu fail

RM12.90

BELI SET PENUH RM12.90 >

nightmew.com/p/stpm · FPX semua bank · download sejurus lepas bayar

Sampel bermula di muka surat sebelah

KEMENTERIAN PENDIDIKAN
JABATAN PENDIDIKAN NEGERI TERENGGANU

STPM 2024

PEPERIKSAAN PERCUBAAN SEMESTER 1

MATHEMATICS (T)

954/1

Nama :.....

Kelas :.....

DIBIAYAI OLEH KERAJAAN NEGERI TERENGGANU

Tidak dibenarkan menyunting atau mencetak mana-mana bahagian dalam modul ini tanpa kebenaran Pengarah Pendidikan Negeri Terengganu

ANJAKAN MUAFAKAT NEKAD

954/1 **STPM 2024**

JABATAN PELAJARAN NEGERI TERENGGANU

MATHEMATICS (T)

PAPER 1 (KERTAS 1)

One and a half hours
(Satu jam setengah)

SIJIL TINGGI PERSEKOLAHAN MALAYSIA

(MALAYSIA HIGHER SCHOOL CERTIFICATE)

Instruction to candidates:

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

Answer **all** *questions in Section A and any* **one** *question in Section B*

Answers may be written in either English or Bahasa Malaysia.

All necessary working should be shown clearly.

Scientific calculators may be used. Programmable and graphic display calculators are prohibited.

A list of mathematical formulae is provided on page of this question paper.

Arahan kepada calon:

JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIBERITAHU UNTUK BERBUAT DEMIKIAN.

Jawab **semua** *soalan dalam Bahagian A dan mana-mana* **satu** *soalan dalam Bahagian B.*

Jawapan boleh ditulis dalam bahasa Inggeris atau Bahasa Malaysia.

Semua kerja yang perlu hendaklah ditunjukkan dengan jelas.

Kalkulator sainstifik boleh digunakan. Kalkulator boleh atur cara dan kalkulator paparan grafik tidak dibenarkan.

Senarai rumus matematik dibekalkan pada halaman dalam kertas soalan ini.

Section A [45 marks]

Answer **all** questions in this section

1. The polynomial $P(x) = 2x^4 - 7x^3 + 5x^2 + ax + b$, where a *and* b are real constant, is divisible by $2x^2 + x - 1$

   (a) Find the value of a *and* b and hence, factorise $P(x)$ completely. [5]

   (b) Determine the set of values of x such that $P(x) \leq 0$ [2]

2. Given that the first n terms of a series is $\mathbf{3 - \frac{1}{3^{n-1}}}$. Obtain an expression for the nth term of the series, $\boldsymbol{U_n}$. Prove that the series is geometric and state the first term and common ratio. Hence, find $\sum_{r=1}^{\infty} U_r$. [7]

3. Matrix P is given by $P = \begin{pmatrix} 1 & 0 & 0 \\ 1 & -2 & 0 \\ -1 & 3 & 1 \end{pmatrix}$ for which $P^2 + \boldsymbol{a}P + \boldsymbol{b}I = 0$

   (a) Find the values of $\boldsymbol{a}$ *and* $\boldsymbol{b}$. [4]

   (b) Hence deduce $\boldsymbol{P^3}$ *and* $\boldsymbol{P^{-1}}$ **[3]**

4. The complex number z is given $z = \mathbf{1} + \sqrt{\mathbf{3}}\,\boldsymbol{i}$.

   (a) Find $|z|$ and $\arg z$ and express z in polar form. [3]

   (b) Using De Moivre's Theorem , find that $\boldsymbol{z^5}$ [3]

   (c) Express $\frac{\boldsymbol{z^4}}{\boldsymbol{z^*}}$ in the form of $\boldsymbol{x + yi}$, where $\boldsymbol{z^*}$is the conjugate of z *and* $x, y \in$ R. [3]

5. Show that the parametric equation of a conic below represents a hyperbola

   $x = \frac{3}{2}\left(t + \frac{1}{t}\right), \quad y = \frac{5}{2}\left(t - \frac{1}{t}\right), \quad t \neq 0$ [2]

   (a) Find the centre, foci and equations of the asymptotes. [5]

   (b) Sketch the hyperbolas [2]

6. The position vectors of the points A, B, C and P are $\mathbf{2i + j + 3k}, \boldsymbol{i} + \mathbf{3j} + \boldsymbol{k}$,

   $\mathbf{3i - 6j + 6k}$ ***and*** $\mathbf{(2 - 2t)i + (1 + 4t)j + (3 - 4t)k}$ respectively.

   (a) Find the angle OBC. [3]

   (b) Find the value of $\boldsymbol{t}$ if CP is perpendicular to CB. [3]

Section B [15 marks]

Answer any **one** question in this section .

7. (a) Use the properties of determinant to express the following determinant in fully factorise form. [7]

$$\begin{vmatrix} x & y & z \\ x^2 & y^2 & z^2 \\ yz & zx & xy \end{vmatrix} = (z-y)(y-x)(z-x)(xy+yz+zx)$$

(b) A system of linear equation is given by

$$x + 2y + z = q,$$
$$2x + py + 4z = 3q,$$
$$x + y + pz = q,$$

Where p and q are constants.

i) Write the augmented matrix for the system above and reduce it to row-echelon form. [5]

ii) Determine the values of p and q such that the system has a unique solution. [3]\

8. The equation of two planes are given by:

$\boldsymbol{\pi_1 : x + 2y + z = 4}$ and

$\boldsymbol{\pi_2 : 2x - 4y - z = 2}$

(a) Find the vector equation and cartesian equation of the line of intersection of the two given planes. [7]

(b) Find the vector equation of the plane which contains the point **(3, 0 , 0)** and is perpendicular to the two given planes. [4]

(c) Show that the angle between the planes π_1 *and* π_2 is obtuse. [4]

----------END OF QUESTIONS----------

TAMAT SAMPEL

Suka sampel ini?

Set penuh: Kertas Percubaan STPM

Sem 1 · Mathematics T

Sampel ini: 4 muka surat. Set penuh ada:

- 2 fail PDF
- Semester 1: kertas percubaan (trial) negeri, subjek yang dipilih + skema
- Blueprint 30 hari Semester 1 (setiap subjek)
- Semester 3: percubaan 2024, 10 subjek, banyak negeri, soalan + skema dalam satu fail

RM12.90

BELI SET PENUH RM12.90 >

nightmew.com/p/stpm · FPX semua bank · download sejurus lepas bayar