

الرياضيات البحتة [الجبر والهندسة الفراغية] باللغة الإنجليزية

تنبيه مهم: ١ - يسلم الطالب ورقة امتحانية باللغة العربية مع الورقة المترجمة .

٢ - الإجابات المتكررة عن أسئلة الاختيار من متعدد لن تقدر ويتم تقدير الإجابة الأولى فقط .

Remark: 1- Calculators are allowed. 2- $\{ 1, \omega, \omega^2 \}$ are the cubic roots of unity and $i^2 = -1$

[الأسئلة في صفتين]

First: Answer only One question of the following:**First Question: Complete the following statements: (6 marks)**

- a) If ${}^{25}C_{2r-14} = {}^{25}C_{r-1}$, then the value of $r = \dots\dots\dots$
- b) The system of equations: $kx + y + 3z = 9$, $2x + ky + 2z = 2$ and $x + 2y + z = 1$ has no solution if $k = \dots\dots\dots$
- c) If a line not belonging to a plane is parallel to a line in the plane, then it is $\dots\dots\dots$
- d) ABCD is a square of side length 8 cm. \overline{AM} is drawn perpendicular to the plane of the square. If $AM = 8\sqrt{3}$ cm, then the measure of the angle between \overline{MB} and the plane ABCD equals $\dots\dots\dots^\circ$
- e) If the sum of lengths of the diagonals of a cube is $24\sqrt{3}$ cm, then the area of one of its faces equals $\dots\dots\dots \text{cm}^2$.
- f) MABCD is a right quadrilateral pyramid, the length of its lateral altitude is 5 cm. If the area of its base is 36 cm^2 , then its height equals $\dots\dots\dots$ cm.

Second Question: Choose the correct answer from those given: (6 marks)

- a) If ${}^9P_r : {}^9P_{r+1} = 1 : 7$, then $r = \dots\dots\dots$ [2 or 3 or 4 or 5]
- b) If $1, \omega, \omega^2$ are the cubic roots of the unity, $n \in \mathbb{Z}^+$, then
- $$\Delta = \begin{vmatrix} 1 & \omega^n & \omega^{2n} \\ \omega^n & \omega^{2n} & 1 \\ \omega^{2n} & 1 & \omega^n \end{vmatrix} \text{ equals } \dots\dots\dots [1 \text{ or } \omega \text{ or } \omega^2 \text{ or } 0]$$
- c) If MABCD is a right quadrilateral pyramid, then the line of intersection of the two planes MBC, MAD is $\dots\dots\dots$
- [\overleftrightarrow{AD} or \overleftrightarrow{MB} or a line passing by M parallel to \overline{BC}
or a line passing by M parallel to \overline{AB}]
- d) If the sum of areas of the faces of a regular triangular pyramid = $100\sqrt{3} \text{ cm}^2$, then the sum of lengths of its edges equals $\dots\dots\dots$ cm

[60 or $60\sqrt{2}$ or $60\sqrt{3}$ or 120]

[بقية الأسئلة في الصفحة الثانية]

