



الاختبار تجريبى

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1) If $\vec{A} = (-2, 1, 2)$, then the direction cosines of \vec{A} are

(A) $(-\frac{2}{3}, \frac{1}{3}, \frac{2}{3})$

(B) $(0, 1, 2)$

(C) $(\frac{2}{3}, -\frac{1}{3}, \frac{2}{3})$

(D) $(\frac{2}{3}, \frac{1}{3}, \frac{2}{3})$

2) If $\vec{A} = (12, 18, -9)$ and $\vec{A} + 3\vec{C} = \vec{0}$, then $\vec{C} =$

(A) $-4\hat{i} - 3\hat{j} - 6\hat{k}$

(B) $-4\hat{i} - 6\hat{j} + 3\hat{k}$

(C) $-4\hat{i} - 6\hat{j} - 3\hat{k}$

(D) $4\hat{i} + 6\hat{j} - 3\hat{k}$

3) If $Z_1 = 8(\cos \pi + i \sin \pi)$ and $Z_2 = 4e^{\frac{3\pi i}{2}}$, then $\frac{Z_1}{Z_2} =$

where $i^2 = -1$

(A) $2i$

(B) $2 - 2i$

(C) $-2i$

(D) $2 + 2i$



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- 4) If the straight line $\frac{x+5}{-2} = \frac{y-3}{3} = \frac{z-2}{k}$ is perpendicular to the straight line $\frac{x+1}{6} = \frac{y+2}{m} = \frac{z-4}{-6}$, then : $2k - m = \dots\dots\dots$
- (A) - 13
(B) 4
(C) - 4
(D) 13
- 5) If the two planes $x - y + mz = 6$ and $\vec{r} \cdot (3, L, 9) = 12$ are parallel, then $\frac{m}{L} = \dots\dots\dots$
- (A) 2
(B) - 1
(C) 1
(D) zero



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- 6) If $1, \omega, \omega^2$ are the cubic roots of unity and $a = 2\omega - 3\omega^2$,
 $b = 3 + 5\omega^2$, then the value of the expression $(a + b)^n = \dots$.
where $n \in \mathbb{R}$
- (A) 5ω
(B) Zero
(C) 1
(D) $2\omega^2$
- 7) In the expansion of $x^3(1 + x)^7$, the coefficient of the term
contains x^4 is.....
- (A) 7C_2
(B) 7C_1
(C) 7C_7
(D) 7C_4



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8) If the cartesian equation of a sphere is

$$(x + 2)^2 + (y - 1)^2 + (z - 3)^2 = 9, \text{ then its cartesian equation after}$$

translation of magnitude four units in the direction of \overrightarrow{oy} is.....

- (A) $(x + 2)^2 + (y + 3)^2 + (z - 3)^2 = 9$
- (B) $(x - 2)^2 + (y + 3)^2 + (z - 3)^2 = 49$
- (C) $(x - 4)^2 + (y - 1)^2 + (z + 3)^2 = 9$
- (D) $(x + 2)^2 + (y - 5)^2 + (z - 3)^2 = 49$

9) If $Z_1 = 2e^{\frac{\pi i}{6}}$, $Z_2 = 2e^{\frac{-\pi i}{6}}$ and $Z = Z_1 + Z_2 + Z_1Z_2$, then $Z = \dots$

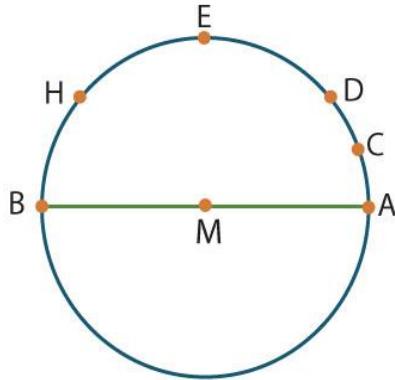
where $i^2 = -1$

- (A) $2\sqrt{3} + 1$
- (B) $\sqrt{3} + 2$
- (C) $2(\sqrt{3} + 2)$
- (D) $2\sqrt{3}$



10) In the opposite figure:

\overline{AB} is a diameter of circle M , the points C , D , E and H are on the circle, then the number of different triangles that could be formed from the points A , B , C , D , E , H and M equals.....



- (A) 35
- (B) 204
- (C) 210
- (D) 34

11) ABC is a triangle in which D is the midpoint of \overline{BC} , E is the

midpoint of \overline{AB} where A (3 , 0 , 5) and C (0 , $\sqrt{7}$, 2),
then DE =.....length unit.

- (A) 3
- (B) 2.5
- (C) 2.4
- (D) 2



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- 12) In the expansion of $x^n \left(\frac{1}{x} - 2 \right)^n$ according to the ascending power of x , if $T_5 = 2016 x^4$, then the ratio between the coefficient of T_3 and the coefficient of T_4 equals.....
- (A) 3 : 7
(B) -3 : 14
(C) -3 : 7
(D) -1 : 14
- 13) The measure of the angle between the two planes:
 $3x - 6y + 6z - 5 = 0$ and $x + z - 5 = 0$ equals.....[°]
- (A) 90
(B) 30
(C) 45
(D) 60
- 14) If $Z_1 = e^{\frac{\pi}{3}} - \frac{\pi}{3}i$ and $Z_2 = e^{\frac{\pi}{6}} - \frac{\pi}{6}i$, then $Z_1 Z_2 = \dots$.
where $i^2 = -1$
- (A) $e^{\frac{\pi}{2}}i$
(B) $-e^{\frac{\pi}{2}}i$
(C) $-e^{\frac{\pi}{2}}i$
(D) $e^{\frac{-\pi}{2}}i$



15) If x is a complex number, then the sum of the roots of the equation

$$\begin{vmatrix} x+1 & 1 & 2 \\ x & x & 3 \\ 0 & 0 & x \end{vmatrix} = 8 \text{ equals}$$

- (A) 2
- (B) 8
- (C) Zero
- (D) -2

16) ABC is a triangle whose vertices are A(4 , 0 , 0) , B (0 , k , 0) and C (0 , 0 , 2) . If the area of triangle ABC = 6 square unit, then $k = \dots$ where $k \in \mathbb{R}$

- (A) ± 2
- (B) ± 4
- (C) -2
- (D) 4

17) In the expansion of $\left(2x^2 + \frac{1}{2x}\right)^{3n}$ according to the descending power of x, if T_9 is the term free of x, then the coefficient of x^3 equals.....

- (A) $\frac{495}{16}$
- (B) 198
- (C) 792
- (D) 495



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18) If A is the coefficients matrix of the system of the linear equations:

$$x + L y + z = 1 , 2x - y - L z = 2 , 3x + 2y - 2z = 3 \text{ and } \text{RK}(A) = 2,$$

then $L = \dots$ where $L \geq 0$

- (A) 2
- (B) -1
- (C) 3
- (D) Zero

19) If $\begin{vmatrix} x & y & z + 2 \\ x & y + 2 & z \\ x + 2 & y & z \end{vmatrix} = -4$, then find the value of $x + y + z$

20) Find the equation of the straight line which passing through the point $(2, -1, 3)$ and cuts six units from the positive part x -axis .