MATHS

BOOKS - NIKITA MATHS (HINGLISH)

THREE DIMENSIONAL GEOMETRY

Multiple Choice Questions

1. All point X-axis have

A. x=0

B. x=0, y=0

C. y=0, z=0

D. z=0, x=0

Answer: C

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2. The pairs of rectangular co-ordinate planes have equations

A. xy=yz=zx=0

B. x=y=z=0

C. xyz=0

D. $xy = yz = zx \neq 0$

Answer: A

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3. The direction cosines of any normal to the xy-plane are

A. 1, 0, 0

B. 0, 1, 0

C. 0, 0, 1

D. 1, 1, 0

Answer: C

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4. The direction cosines of any normal to YZ-plane are

A. 1, 0, 0

B. 0, 1, 0

C. 0, 0, 1

D. 1, 1, 0

Answer: A

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5. The direction cosines of any normal to ZX-plane are

A. 1, 0, 0

B. 0, 1, 0

C. 0, 0, 1

D. 1, 1, 0

Answer: B

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6. If l, m, n are the direction consines of a line, then

A. $l + m + n = 0$

B. $l + m + n = 1$

C. $l^2 + m^2 + n^2 = 1$

D. $l^2 + m^2 + n^2 = 0$

Answer: C

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7. If $p\hat{i} + q\hat{j} + r\hat{k}$ is vector along a line, then p, q, r are

A. direction ratios of the line

B. direction cosines of the line

C. components of the line

D. co-ordinates of a point on the line

Answer: A

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8. The co-ordinate of the point P are (x, y, z) and the direction cosines of the line OP when O is the origin are l, m, n. If OP = r, then

A. $x = l, y = m, z = n$

B. $x = lr, y = mr, z = nr$

C. $l = xr, m = yr, n = zr$

D. $x = lr^2, y = mr^2, z = nr^2$

Answer: B

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9. Two lines $\frac{x - x_i}{l_i} = \frac{y - y_i}{m_i} = \frac{z - z_i}{n_i}, (i = 1, 2)$ are perpendicular to each other, if their direction ratios satisfy

A. $\frac{l_1}{l_2} = \frac{m_1}{m_2} = \frac{n_1}{n_2}$

B. $l_i = m_i = n_i$

C. $l_1l_2 + m_1m_2 + n_1n_2 = -1$

D. $l_1l_2 + m_1m_2 + n_1n_2 = 0$

Answer: D

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10. If α, β, γ are the angles which a line makes with OX,OY and OZ , then $\sin^2\alpha + \sin^2\beta + \sin^2\gamma$

A. 0

B. -1

C. 2

D. 1

Answer: C

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11. If a line makes angles α, β, γ with co-ordinate axes, then $\cos 2\alpha + \cos 2\beta + \cos 2\gamma =$

A. 0

B. -1

C. 2

D. 1

Answer: B

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12. If a line makes angles $\frac{\alpha}{2}, \frac{\beta}{2}, \frac{\gamma}{2}$ with co-ordinate axes, then $\cos\alpha + \cos\beta + \cos\gamma =$

A. 0

B. -1

C. 2

D. 1

Answer: B

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13. Two lines with direction cosines l_1, m_1, n_1 and l_2, m_2, n_2 are at right angle of

A. $l_1l_2 - m_1m_2 - n_1n_2 = 0$

B. $l_1l_2 + m_1m_2 + n_1n_2 = 0$

C. $l_2 = l_2, m_1 = m_2, n_1 = n_2$

D. $\frac{l_1}{l_2} = \frac{m_1}{m_2} = \frac{n_1}{n_2}$

Answer: B

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14. The straight lines whose direction cosines are given by $al + bm + cn = 0, fmn + gnl + hlm = 0$ are perpendicular if

A. $\frac{f}{a} + \frac{g}{b} + \frac{h}{c} = 1$

B. $\frac{f}{a} + \frac{g}{b} + \frac{h}{c} = -1$

C. $\frac{f}{a}+\frac{g}{b}+\frac{h}{c}=0$

D. $\frac{a}{f}+\frac{b}{g}+\frac{c}{h}=0$

Answer: C

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15. If the line $\overrightarrow{OR}$ makes angles $\theta_1, \theta_2, \theta_3$ with the planes XOY, YOZ, ZOX respectively , then $\cos^2\theta_1+\cos^2\theta_2+\cos^2\theta_3$ is equal to

A. 4

B. 2

C. 3

D. 1

Answer: B

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16. If the line passing through origin makes angles $\theta_1, \theta_2, \theta_3$ with the planes XOY, YOZ and ZOX, then $\sin^2\theta_1 + \sin^2\theta_2 + \sin^2\theta_3 =$

A. 4

B. 2

C. 3

D. 1

Answer: B

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17. If a variable line in two adjacent position has direction cosines l, m, n and $l + \delta l, m + \delta m, n + \delta n$ and $\delta\theta$ is the angel between two positions, then $(\delta l)^2 + (\delta m)^2 + (\delta n)^2 =$

A. $2(\delta\theta)^2$

B. $(\delta\theta)^2$

C. $3(\delta\theta)^2$

D. $4(\delta\theta)^2$

Answer: B

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18. A line makes angles α, β, $\gamma$and $\delta$with the diagonals of a cube, than$\cos^2\alpha + \cos^2\beta + \cos^2\gamma + \cos^2\delta = ?$

A. $\frac{4}{3}$

B. $\frac{2}{3}$

C. 4

D. 1

Answer: A

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19. Find the angle between any two diagonals of a cube.

A. $\cos^{-1}\left(\frac{\sqrt{2}}{3}\right)$

B. $\cos^{-1}\left(\frac{1}{\sqrt{3}}\right)$

C. $\cos^{-1}\left(\frac{2}{3}\right)$

D. $\cos^{-1}\left(\frac{1}{3}\right)$

Answer: D

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20. A line makes an angle $\alpha, \beta, \gamma, \delta$ with the four diagonals of a cube, then $\sin^2\alpha + \sin^2\beta + \sin^2\gamma + \sin^2\delta =$

A. $\frac{4}{3}$

B. $\frac{8}{3}$

C. $\frac{1}{3}$

D. $\frac{2}{3}$

Answer: B

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21. If the edges of a rectangular parallelepiped are a,b, c, prove that the angles between the four diagonals are given by $\cos^{-1}\left(\frac{\pm a^2 \pm b^2 \pm c^2}{a^2+b^2+c^2}\right)$.

A. $\cos^{-1}\left(\frac{a \pm b \pm c}{a+b+c}\right)$

B. $\frac{1}{2}\cos^{-1}\left(\frac{a \pm b \pm c}{a+b+c}\right)$

C. $\cos^{-1}\left(\frac{a^2 \pm b^2 \pm c^2}{a^2+b^2+c^2}\right)$

D. $\frac{1}{2}\cos^{-1}\left(\frac{a^2 \pm b^2 \pm c^2}{a^2+b^2+c^2}\right)$

Answer: C

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22. If $\cos\alpha = \frac{\sqrt{3}}{2}, \cos\gamma = \frac{-1}{2}$, then the direction angle of lines are

A. $\frac{\pi}{6}, \frac{\pi}{4}, \frac{\pi}{3}$

B. $\frac{5\pi}{6}, \frac{\pi}{2}, \frac{2\pi}{3}$

C. $\frac{\pi}{6}, \frac{\pi}{2}, \frac{2\pi}{3}$

D. $\frac{\pi}{6}, \frac{\pi}{2}, \frac{\pi}{3}$

Answer: C

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23. If a line makes angles of measure 45° and 60° with the positive direction of the Y and Z axex respectively, then the angle made by the line with the positive directions of the X-axis is

A. 30° or 150°

B. 30° or 120°

C. 60° or 120°

D. 60° or 150°

Answer: C

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24. A line makes angles of measures $\frac{\pi}{6}$ and $\frac{\pi}{3}$ with X-and Z-axes respectively. Find the angle made by the line with the Y-axis.

A. $\frac{\pi}{2}$

B. $\frac{2\pi}{3}$

C. $\frac{5\pi}{6}$

D. $\frac{3\pi}{4}$

Answer: A

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25. If a line is inclined at 60° and 30° with the X-and Y-axes respectively, then the angle which makes with the Z-axes is

A. 0

B. $\frac{\pi}{4}$

C. $\frac{\pi}{2}$

D. $\frac{\pi}{6}$

Answer: C

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26. If a line makes angles of measure 60° and 45° with OX and OZ, then the angle made by line with Y-axis is

A. 45°

B. 0°

C. 30°

D. 60°

Answer: D

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27. If a line which makes angle 60° with Y and Z axes, then the angle which it makes with X-axis is

A. 30°

B. 45°

C. 60°

D. 90°

Answer: B

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28. A line makes angles α, β, γ with X, Y, Z axes respectively.

If $\alpha = \beta$ and $\gamma = 45^\circ$, then $\alpha =$

A. 0°

B. 30°

C. 60°

D. 90°

Answer: C

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29. A line makes angles α, β, γ with X, Y, Z axes respectively.

If $\alpha = \beta$ and $\gamma = 45^\circ$, then $\alpha + \beta + \gamma =$

A. 165°

B. 180°

C. 135°

D. 120°

Answer: A

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30. A line makes angles $\alpha, \beta and \gamma$ with the coordinate axes. If $\alpha + \beta = 90^0,$ then find γ.

A. 0°

B. 90°

C. 180°

D. 300°

Answer: B

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31. If direction angles of a line are α, β, γ such that $\alpha + \beta = 90^\circ$, then $(\cos\alpha + \cos\beta + \cos\gamma)^2 =$

A. $1 - \cos 2\alpha$

B. $1 + \cos 2\alpha$

C. $1 - \sin 2\alpha$

D. $1 + \sin 2\alpha$

Answer: D

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32. A line lies in XZ-plane and makes an angle 60° with Z-axis, find its inclination with X-axis.

A. 30°

B. 45°

C. 60°

D. 90°

Answer: A

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33. A line lies in YZ- plane and makes angle of 30° with Y-axis, then its inclination to Z-axis is

A. $30^\circ \text{ or } 60^\circ$

B. $30^\circ \text{ or } 150^\circ$

C. $60^\circ \text{ or } 90^\circ$

D. $60^\circ \text{ or } 120^\circ$

Answer: D

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34. If a straight line in space is equally inclined to the co-rodinate axes, then the cosine of its angle of inclination to any one of the axes is

A. $\frac{1}{2}$

B. $\frac{1}{3}$

C. $\frac{1}{\sqrt{2}}$

D. $\frac{1}{\sqrt{3}}$

Answer: D

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35. Which of the following is false ?

A. $30^\circ, 45^\circ, 60^\circ$ can be the direction angles of a line in space.

B. $90^\circ, 135^\circ, 45^\circ$ can be the direction angles of a line in space.

C. $120^\circ, 60^\circ, 45^\circ$ can be the direction angles of a line in space.

D. $60^\circ, 45^\circ, 60^\circ$ can be the direction angles of a line in space.

Answer: A

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36. Which of the following is true ?

A. A line can make angle $30^\circ, 45^\circ$ with the X-axis, Y-axis respectively.

B. A line can not make angle $30^\circ, 60^\circ$ with the X-axis , Y-axis respectively.

C. A line can not make angle $30^\circ, 45^\circ$ with the X-axis , Y-axis respectively.

D. A line can not make angle $45^\circ, 60^\circ$ with the X-axis , Y-axis respectively.

Answer: C

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37. If a line makes angles $90^\circ, 135^\circ, 45^\circ$ with X,Y and Z axes respectively , then find its direction cosines.

A. $0, \frac{1}{\sqrt{2}}, \frac{-1}{\sqrt{2}}$

B. $0, \frac{-1}{\sqrt{2}}, \frac{-1}{\sqrt{2}}$

C. $0, \frac{1}{\sqrt{2}}, \frac{1}{\sqrt{2}}$

D. $0, \frac{-1}{\sqrt{2}}, \frac{1}{\sqrt{2}}$

Answer: D

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38. The direction cosines of the line which bisects the angle between positive direction of Y and Z axis are

A. $0, \frac{1}{\sqrt{2}}, \frac{1}{\sqrt{2}}$

B. $0, \frac{-1}{\sqrt{2}}, \frac{-1}{\sqrt{2}}$

C. $0, \frac{1}{\sqrt{2}}, \frac{-1}{\sqrt{2}}$

D. $0, \frac{-1}{\sqrt{2}}, \frac{1}{\sqrt{2}}$

Answer: A

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39. The direction consines of a line equally inclined with the co-ordinate axes are

A. $\pm 1,\ \pm 1,\ \pm 1$

B. $\pm \frac{1}{3\sqrt{2}},\ \pm \frac{1}{3\sqrt{2}},\ \pm \frac{1}{3\sqrt{2}}$

C. $\pm \frac{1}{\sqrt{3}},\ \pm \frac{1}{\sqrt{3}},\ \pm \frac{1}{\sqrt{3}}$

D. $\pm \frac{1}{\sqrt{2}},\ \pm \frac{1}{\sqrt{2}},\ \pm \frac{1}{\sqrt{2}}$

Answer: C

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40. Of line makes angle $60^\circ, 120^\circ, 45^\circ$ with X, Y, Z axes respectively, then the direction consines of a line are

A. $\frac{1}{2}, \frac{-1}{2}, \frac{1}{\sqrt{2}}$

B. $\frac{1}{\sqrt{2}}, \frac{1}{2}, \frac{\sqrt{3}}{2}$

C. $\frac{1}{2}, \frac{1}{\sqrt{2}}, \frac{-1}{\sqrt{2}}$

D. $\frac{1}{\sqrt{2}}, \frac{1}{2}, \frac{-1}{\sqrt{2}}$

Answer: A

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41. If the line makes angles $45^\circ, 60^\circ, 120^\circ$ with X, Y, Z axes respectively, then the direction consines of line are

A. $\frac{1}{\sqrt{2}}, \frac{-1}{2}, \frac{1}{2}$

B. $\frac{1}{\sqrt{2}}, \frac{-1}{2}, \frac{-1}{2}$

C. $\frac{1}{\sqrt{2}}, \frac{1}{2}, \frac{1}{2}$

D. $\frac{1}{\sqrt{2}}, \frac{1}{2}, \frac{-1}{2}$

Answer: D

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42. The direction cosines of a line which makes an angle of 45° with Z-axis and congruent angles with X and Y axes, are

A. $\frac{-1}{2}, \frac{-1}{2}, \frac{1}{\sqrt{2}}$

B. $\frac{1}{2}, \frac{-1}{2}, \frac{1}{\sqrt{2}}$

C. $\pm\frac{1}{2}, \pm\frac{1}{2}, \frac{1}{\sqrt{2}}$

D. $\frac{1}{2}, \frac{1}{2}, \frac{1}{\sqrt{2}}$

Answer: C

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43. The direction consines of a line which lies in XZ-plane and making an angle of 30° with positive Z-axis are

A. $\pm\frac{1}{2}, 0, \frac{\sqrt{3}}{2}$

B. $\pm\frac{1}{2}, 0, \frac{-\sqrt{3}}{2}$

C. $\pm\frac{\sqrt{3}}{2}, 0, \frac{1}{2}$

D. $\pm\frac{\sqrt{3}}{2}, 0, \frac{-1}{2}$

Answer: A

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44. If α, β, γ are the direction angles of a vector and $\cos\alpha = \frac{14}{15}, \cos\beta = \frac{1}{3}$, then $\cos\gamma =$

A. $\pm\frac{2}{15}$

B. $\pm\frac{1}{5}$

C. $\pm\frac{1}{15}$

D. $\pm\frac{4}{15}$

Answer: A

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45. A line makes the some angle θ with each of the x and z-axes. If the angle β, which it makes with y-axis, is such that

$\sin^2\beta = 3\sin^2\theta$ then $\cos^2\theta$ equals

A. $\frac{4}{5}$

B. $\frac{2}{5}$

C. $\frac{3}{5}$

D. $\frac{9}{5}$

Answer: C

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46. If the direction cosines of a line are $p, -p, \frac{-p}{2}$, then p =

A. $\pm\frac{4}{9}$

B. $\pm\frac{9}{4}$

C. $\pm\frac{2}{3}$

D. $\pm\frac{3}{2}$

Answer: C

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47. If $\frac{1}{2}, \frac{1}{3}, n$ are direction cosines of a line, then the value of n is

A. $\frac{7}{36}$

B. $\frac{7}{6}$

C. $\frac{\sqrt{23}}{36}$

D. $\frac{\sqrt{23}}{6}$

Answer: D

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48. If $\frac{1}{\sqrt{2}}, \frac{1}{2}$, n are the direction consines of a line, then n =

A. $\frac{-1}{2}$

B. $\frac{1}{2}$

C. $\pm\frac{1}{2}$

D. $\pm\frac{1}{\sqrt{2}}$

Answer: C

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49. Line with direction ratios 1, 1, 1 is

A. parallel to X-axis

B. parallel to Y-axis

C. parallel to Z-axis

D. equally inclined with co-ordinate axes

Answer: D

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50. If A(3, 5, -4), B(-1, 1, 2) and C(-5, -5, -2) are the vertices of Δ ABC, then the direction cosines of side AB are

A. $\frac{2}{\sqrt{17}}, \frac{2}{\sqrt{17}}, \frac{-3}{\sqrt{17}}$

B. $\frac{2}{\sqrt{17}}, \frac{3}{\sqrt{17}}, \frac{2}{\sqrt{17}}$

C. $\frac{4}{\sqrt{42}}, \frac{5}{\sqrt{42}}, \frac{-1}{\sqrt{42}}$

D. $\frac{-4}{\sqrt{17}}, \frac{-5}{\sqrt{17}}, \frac{1}{\sqrt{17}}$

Answer: A

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51. If A(3, 5, -4), B(-1, 1, 2) and C(-5, -5, -2) are the vertices of Δ ABC, then the direction cosines of side BC are

A. $\frac{2}{\sqrt{17}}, \frac{2}{\sqrt{17}}, \frac{-3}{\sqrt{17}}$

B. $\frac{2}{\sqrt{17}}, \frac{3}{\sqrt{17}}, \frac{2}{\sqrt{17}}$

C. $\frac{4}{\sqrt{42}}, \frac{5}{\sqrt{42}}, \frac{-1}{\sqrt{42}}$

D. $\frac{-4}{\sqrt{17}}, \frac{-5}{\sqrt{17}}, \frac{1}{\sqrt{17}}$

Answer: B

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52. If A(3, 5, -4), B(-1, 1, 2) and C(-5, -5, -2) are the vertices of Δ ABC, then the direction cosines of side AC are

A. $\frac{2}{\sqrt{17}}, \frac{2}{\sqrt{17}}, \frac{-3}{\sqrt{17}}$

B. $\frac{2}{\sqrt{17}}, \frac{3}{\sqrt{17}}, \frac{2}{\sqrt{17}}$

C. $\frac{4}{\sqrt{42}}, \frac{5}{\sqrt{42}}, \frac{-1}{\sqrt{42}}$

D. $\frac{-4}{\sqrt{17}}, \frac{-5}{\sqrt{17}}, \frac{1}{\sqrt{17}}$

Answer: C

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53. If A(3, 5, -4), B(-1, 1, 2) and C(-5, -5, -2) are the vertices of Δ ABC, then the triangle is

A. scalane

B. right angled

C. equilateral

D. isosceles

Answer: D

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54. Which of the following is true ?

A. $\frac{2}{\sqrt{3}}, \frac{-2}{\sqrt{3}}, \frac{-1}{\sqrt{3}}$ are the direction consines of a directed line.

B. $\frac{-2}{\sqrt{3}}, \frac{-2}{\sqrt{3}}, \frac{-1}{\sqrt{3}}$ are the direction consines of a directed line.

C. $\frac{2}{\sqrt{3}}, \frac{-2}{\sqrt{3}}, \frac{-1}{\sqrt{3}}$ are not the direction consines of a directed line.

D. $\frac{1}{\sqrt{3}}, \frac{-1}{\sqrt{3}}, \frac{-1}{\sqrt{3}}$ are not the direction consines of a directed line.

Answer: C

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55. Which of the following represents direction consines of the line ?

A. $0, \frac{1}{\sqrt{2}}, \frac{1}{2}$

B. $0, \frac{-\sqrt{3}}{2}, \frac{1}{\sqrt{2}}$

C. $0, \frac{\sqrt{3}}{2}, \frac{1}{2}$

D. $\frac{1}{2}, \frac{1}{2}, \frac{1}{2}$

Answer: C

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56. Which of the triplet can not represent direction cosines of a line ?

A. $\left(\frac{2}{5}, \frac{3}{5}, \frac{4}{5}\right)$

B. $\left(\frac{1}{\sqrt{3}}, \frac{1}{\sqrt{3}}, \frac{1}{\sqrt{3}}\right)$

C. $\left(\frac{3}{\sqrt{50}}, \frac{3}{\sqrt{50}}, \frac{3}{\sqrt{50}}\right)$

D. $\left(\frac{4}{\sqrt{77}}, \frac{4}{\sqrt{77}}, \frac{4}{\sqrt{77}}\right)$

Answer: A

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57. If $P \equiv (3, 4, -12)$, then the direction cosines of $\overline{OP}$ are

A. 6, 6, -3

B. $\frac{1}{5}, \frac{6}{5}, \frac{7}{5}$

C. $\frac{-2}{7}, \frac{3}{7}, \frac{6}{7}$

D. $\frac{3}{13}, \frac{4}{13}, \frac{-12}{13}$

Answer: D

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58. The direction cosine of vector $3\hat{i} + 4\hat{j} + 5\hat{k}$ in the direction of X-axis is

A. $\frac{1}{\sqrt{2}}$

B. $\frac{4}{5\sqrt{2}}$

C. $\frac{3}{5\sqrt{2}}$

D. $\frac{3}{\sqrt{2}}$

Answer: C

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59. If the vector $2\hat{i} - 3\hat{j} + 7\hat{k}$ makes angles α, β, γ with the co-ordiante axes respectively, then the direction cosine of vector are

A. $\frac{-2}{\sqrt{62}}, \frac{3}{\sqrt{62}}, \frac{-7}{\sqrt{62}}$

B. $\frac{2}{\sqrt{62}}, \frac{-3}{\sqrt{62}}, \frac{7}{\sqrt{62}}$

C. $\frac{-2}{\sqrt{31}}, \frac{3}{\sqrt{31}}, \frac{-7}{\sqrt{31}}$

D. $\frac{2}{\sqrt{31}}, \frac{-3}{\sqrt{31}}, \frac{7}{\sqrt{31}}$

Answer: B

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60. The position vectors of points A and B are $\hat{i} + 3\hat{j} - 7\hat{k}$ and $5\hat{i} - 2\hat{j} + 4\hat{k}$ respectively, then the direction cosine of $\overline{AB}$ along Y-axis is

A. $\frac{-5}{\sqrt{162}}$

B. $\frac{4}{\sqrt{162}}$

C. $\frac{11}{\sqrt{162}}$

D. $\frac{5}{\sqrt{162}}$

Answer: A

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61. The direction cosines of a line parallel to the line $\frac{x+1}{2} = \frac{y}{-3} = \frac{z-5}{6}$ are

A. $1, \frac{-3}{2}, 3$

B. $\frac{-2}{3}, 1, -2$

C. $\frac{1}{3}, \frac{-1}{2}, 1$

D. $\frac{2}{7}, \frac{-3}{7}, \frac{6}{7}$

Answer: D

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62. The line joining the points $-2, 1, -8) and (a, b, c)$ is parallel to the line whose direction ratios are $6, 2, and 3$. Find the values of $a, band \cdot$

A. a=0, b=5, c=-5

B. a=4, b=3, c=-5

C. $a = 3, b = 5, c = 11$

D. `a=1, b=2, c=-6

Answer: B

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63. If the line segment joining the points A(7, p, 2) and B(q, -2, 5) be parallel to the line segment joining the points C(2, -3, 5) and D(-6, -15,11), find the value of p and q.

A. a=4, b = -3

B. a=-4, b=3

C. a=4, b=3

D. a=-4, b=3

Answer: C

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64. The line joining the points (4, 1, 2) and (5, p, 0) is parallel to the lne joining the points (2, 1, 1) and (3, 3, -1), then p =

A. -1

B. 1

C. -3

D. 3

Answer: D

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65. If A(-1, 2, -3), B(5, 0, -6) and C(0, 4, -1) are the vertices of triangle ABC, then the direction ratios of the internal bisector of $\angle BAC$ are

A. (5, 6, 7)

B. (4, -3, 9)

C. (25, 8, 5)

D. (5, 8, 25)

Answer: C

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66. A line passes through the points (3, 1, 2) and (5, -1, 1) . Then the direction ratios of the line are

A. 2, -2, -1

B. 2, 2, -1

C. 2, 2, 1

D. $-2, \ -2, 1$

Answer: A

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67. A line passes through the point $(3, 1, 2)$ and $(5, \ -1, 1)$, find the direction cosines of the line.

A. $\pm\frac{2}{9}, \pm\frac{-2}{9}, \pm\frac{-1}{9}$

B. $\pm\frac{2}{9}, \pm\frac{2}{9}, \pm\frac{-1}{9}$

C. $\pm\frac{2}{3}, \pm\frac{-2}{3}, \pm\frac{-1}{3}$

D. $\pm\frac{2}{3}, \pm\frac{2}{3}, \pm\frac{-1}{3}$

Answer: C

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68. Direction cosines of the line passing through the points $A(-4, 2, 3)$ and $B(1, 3, -2)$ are

A. $-5, 1, -5$

B. $5, 1, -5$

C. $5, \ -1, 5$

D. $5, 1, 5$

Answer: B

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69. Direction cosines of the line passing through the points $A(-4, 2, 3)$ and $B(1, 3, -2)$ are

A. $\pm\frac{1}{\sqrt{51}}, \pm\frac{5}{\sqrt{51}}, \pm\frac{1}{\sqrt{51}}$

B. $\pm\frac{5}{\sqrt{51}}, \pm\frac{1}{\sqrt{51}}, \pm\frac{-5}{\sqrt{51}}$

C. $\pm 5, \pm 1, \pm 5$

D. $\pm\sqrt{51}, \pm\sqrt{51}, \pm\sqrt{51}$

Answer: B

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70. If a line has the direction ratios 4, -12, 18, then its direction cosines are

A. $\frac{2}{11}, \frac{6}{11}, \frac{-9}{11}$

B. $\frac{2}{11}, \frac{-3}{11}, \frac{9}{11}$

C. $\frac{2}{22}, \frac{-6}{22}, \frac{9}{22}$

D. $\frac{2}{11}, \frac{-6}{11}, \frac{9}{11}$

Answer: D

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71. If a line has the direction ratios -1, 2, 3, then its direction cosines are

A. $\frac{-1}{\sqrt{14}}, \frac{2}{\sqrt{14}}, \frac{3}{\sqrt{14}}$

B. $\frac{1}{\sqrt{14}}, \frac{-2}{\sqrt{14}}, \frac{3}{\sqrt{14}}$

C. $\frac{1}{\sqrt{14}}, \frac{2}{\sqrt{14}}, \frac{-3}{\sqrt{14}}$

D. $\frac{1}{\sqrt{14}}, \frac{2}{\sqrt{14}}, \frac{3}{\sqrt{14}}$

Answer: A

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72. The direction cosines of a line whose direction ratios are 1, -2, 3 are

A. $\frac{1}{2\sqrt{14}}, \frac{-1}{\sqrt{14}}, \frac{3}{\sqrt{14}}$

B. $\frac{1}{\sqrt{14}}, \frac{-2}{\sqrt{14}}, \frac{3}{\sqrt{14}}$

C. $\frac{1}{2}, -1, \frac{3}{2}$

D. $\frac{1}{3}, \frac{-2}{3}, 1$

Answer: B

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73. If $|\bar{r}| = 9$ and $\bar{r}$ is equally inclined to the co-ordinate axes, then $\bar{r} =$

A. $\pm 3\left(\hat{i} + \hat{j} + \hat{k}\right)$

B. $\pm 9\left(\hat{i} + \hat{j} + \hat{k}\right)$

C. $\pm\sqrt{3}\left(\hat{i}+\hat{j}+\hat{k}\right)$

D. $\pm 3\sqrt{3}\left(\hat{i}+\hat{j}+\hat{k}\right)$

Answer: D

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74. If $|\bar{u}|=3$ and $\bar{u}$ is equally inclined to the unit vectors $\hat{i}, \hat{j}, \hat{k}$, then $\bar{u}=$

A. $\pm 3\left(\hat{i}+\hat{j}+\hat{k}\right)$

B. $\pm\sqrt{3}\left(\hat{i}+\hat{j}+\hat{k}\right)$

C. $\pm\frac{1}{3}\left(\hat{i}+\hat{j}+\hat{k}\right)$

D. $\pm\frac{1}{\sqrt{3}}\left(\hat{i}+\hat{j}+\hat{k}\right)$

Answer: B

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75. If OP=8 and OP makes angles 45° and 60° with OX-axis and OY-axis respectively, then OP is equal to

A. $12\left(\sqrt{2}i + \hat{j} \pm \hat{k}\right)$

B. $6\left(\sqrt{2}\hat{i} + \hat{j} \pm \hat{k}\right)$

C. $3\left(\sqrt{2}\hat{i} + \hat{j} \pm \hat{k}\right)$

D. $2\left(\sqrt{2}i + \hat{j} \pm \hat{k}\right)$

Answer: B

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76. If vector r wiith dc's l,m,n is equally inclined to the coordinate axes, then the total number of such vectors is

A. 4

B. 6

C. 8

D. 2

Answer: C

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77. The number of lines which are equally inclined to the axes is :

A. 4

B. 2

C. 8

D. 6

Answer: A

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78. The direction ratios of AB are -2,2,1. If $A \equiv (4, 1, 5)$ and l(AB) = 6 units, find coordinates of B.

A. (8, 5, 7) or (0, -3, 3)

B. (0, 5, 7) or (8, -3, 3)

C. (0, 5, 7) or (8, 3, -3)

D. (8, 5, 7) or (0, 3, -3)

Answer: B

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79. If the direction cosines of $\overline{AB}$ are $\frac{-2}{\sqrt{17}}, \frac{3}{\sqrt{17}}, \frac{-2}{\sqrt{17}}$ such that $A \equiv (3, -6, 10)$ and $l(AB) = \sqrt{17}$, then the co-ordinates of point B are

A. (1, 3, -8) or (5, -9, 12)

B. (1, -3, 8) or (5, -9, 12)

C. (1, -3, 8) or (5, 9, -12)

D. (1, 3, -8) or (5, 9, -12)

Answer: B

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80. If OP = 21 and direction cosines of $\overline{OP}$ are $\frac{2}{7}, \frac{6}{7}, \frac{-3}{7}$, then the co-ordinates of P are

A. (6, 18, -9)

B. (-6, -12, 9)

C. (-6, 18, -9)

D. (6, 18, 9)

Answer: A

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81. The ratio in which the line joining points (2, 4, 5) and (3, 5, -4) divide YZ-plane is

A. $-2:3$

B. $2:3$

C. $-3:2$

D. $3:2$

Answer: A

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82. XY-plane divides the line joining the points (2, 4, 5) and (-4, 3, -2) in the ratio

A. $3:5$

B. $5:2$

C. $5:3$

D. $2:5$

Answer: B

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83. The plane XOZ divides the join of $(1, -1, 5)$ and $(2, 3, 4)$ in the ratio of $\lambda:1$, then λ is

A. 3

B. -3

C. $\frac{1}{3}$

D. $\frac{-1}{3}$

Answer: C

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84. उस बिंदु के निर्देशांक ज्ञात कीजिए जहाँ बिंदुओं $A(3, 4, 1)$ और $B(5, 1, 6)$ को मिलाने वाली रेखा XY-तल को काटती है |

A. $\left(\frac{-13}{5}, \frac{-23}{5}, 0\right)$

B. $\left(\frac{-13}{5}, \frac{23}{5}, 0\right)$

C. $\left(\frac{13}{5}, \frac{-23}{5}, 0\right)$

D. $\left(\frac{13}{5}, \frac{23}{5}, 0\right)$

Answer: D

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85. The co-ordinate of the point in which the line joining the points (3, 5, -7) and (-2, 1, 8) is inscribed by YZ-plane are

A. $\left(0, \frac{13}{5}, -2\right)$

B. $\left(0, \frac{13}{5}, 2\right)$

C. $\left(0, \frac{-13}{5}, 2\right)$

D. $\left(0, \frac{-13}{5}, -2\right)$

Answer: B

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86. The point which divides the line joining the points (2, 4, 5) and (3, 5, -4) in the ratio $-2:3$, lies on

A. XOY plane

B. YOZ plane

C. ZOX plane

D. XYZ plane

Answer: B

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87. The distance of point (1, 2, 3) from X-axis is

A. $\sqrt{14}$

B. $\sqrt{13}$

C. $\sqrt{10}$

D. $\sqrt{5}$

Answer: B

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88. Perpendicular distance of point (3, 4, 5) from Y-axis is

A. 4

B. 5

C. $\sqrt{34}$

D. $\sqrt{41}$

Answer: C

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89. The points (2, -1, -1), (4, -3, 0) and (0, 1, -2) are

A. collinear

B. non-coplanar

C. non-collinear

D. non-collinear and non-coplanar

Answer: A

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90. The points (-7, 4, -2), (-2, 1, 0) and (3, -2, 2) are

A. non-collinear

B. non-coplanar

C. non-collinear and non-coplanar

D. collinear

Answer: D

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91. If the points $(6, -1, 2), (8, -7, \lambda)$ and (5, 2, 4) are collinear then $\lambda =$

A. 4

B. 2

C. -2

D. -4

Answer: C

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92. If the points (5, 2, 4), (6, -1, 2) and (8, -7, k) are collinear, then k =

A. -2

B. 2

C. -10

D. 10

Answer: A

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93. If the points $A(-1, 3, \lambda), B(-2, 0, 1)$ and $C(-4, \mu, -3)$ are collinear, then the values of λ and μ are

A. $\lambda = 3, \mu = -6$

B. $\lambda = -3, \mu = 6$

C. $\lambda = -6, \mu = 3$

D. $\lambda = 6, \mu = -3$

Answer: A

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94. ABC is a triangle and $A = (235)\dot{B} = (-1, 3, 2) and C = (\lambda, 5, \mu)\cdot$ If the median through A is equally inclined to the axes, then find the value of $\lambda and \mu\cdot$

A. 10, 7

B. 9, 10

C. 7, 9

D. 7, 10

Answer: D

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95. ABC is a triangle and $A = (235)\dot{B} = (-1, 3, 2) and C = (\lambda, 5, \mu)$. If the median through A is equally inclined to the axes, then find the value of $\lambda and \mu$.

A. (-7, 5, 14)

B. (7, 5, -14)

C. (-7, 5, -14)

D. (7, 5, 14)

Answer: D

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96. If a line drawn from point (1, 2, 1) is perpendicular to the line joining points (1, 4, 6) and (5, 4, 4), then the foot of the perpendicular is

A. (2, 4, 5)

B. (3, 4, 1)

C. (3, 4, 5)

D. (3, 0, 5)

Answer: C

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97. If a line drawn from point (2, 4, 3) is perpendicular to the line joining points (1, 2, 4) and (3, 4, 5) then the foot of the perpendicular is

A. $\left(\frac{11}{9}, \frac{28}{9}, \frac{41}{9}\right)$

B. $\left(\frac{19}{9}, \frac{28}{9}, \frac{41}{9}\right)$

C. $\left(\frac{19}{9}, \frac{11}{9}, \frac{41}{9}\right)$

D. $\left(\frac{19}{9}, \frac{28}{9}, 1\right)$

Answer: B

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98. If a line drawn from point (4, 3, 2) is perpendicular to the line joining points (2, 4, 1) and (4, 5, 3), then the foot of the perpendicular is

A. $\left(\frac{28}{9}, 1, \frac{19}{9}\right)$

B. $\left(\frac{28}{9}, \frac{41}{9}, \frac{11}{9}\right)$

C. $\left(\frac{4}{3}, \frac{41}{9}, \frac{19}{9}\right)$

D. $\left(\frac{28}{9}, \frac{41}{9}, \frac{19}{9}\right)$

Answer: D

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99. If A(1, 2, 3), B(4, 5, 6) are two points, then the foot of the perpendicular from point B to the line joining the origin and point A is

A. $\left(\frac{8}{7}, \frac{16}{7}, \frac{24}{7}\right)$

B. $\left(\frac{16}{7}, \frac{32}{7}, \frac{48}{7}\right)$

C. $\left(\frac{1}{7}, \frac{2}{7}, \frac{3}{7}\right)$

D. $\left(\frac{4}{7}, \frac{8}{7}, \frac{12}{7}\right)$

Answer: B

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100. If the line with direction ratios 2, -1, 2 is perpendicular to the line with direction ratios 1, k, -3, then k =

A. -4

B. 4

C. -8

D. 8

Answer: A

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101. If the line with direction ratios 5, 3k, 7 is perpendicular to the line with direction ratios k, 1, -8, then k =

A. 7

B. 8

C. 14

D. 16

Answer: A

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102. If the line with direction ratios k, -4, -1 is perpendicular to the line with direction ratios k, 5, -4 then k =

A. ± 16

B. ± 2

C. ± 4

D. ± 1

Answer: C

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103. If a line passing through (4, 1, 2) and (5, k, 0) is perpendicular to the line passing through (2, 1, 1) and (3, 3, -1), then k =

A. $\frac{1}{2}$

B. $\frac{-1}{2}$

C. $\frac{3}{2}$

D. $\frac{-3}{2}$

Answer: D

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104. Find the measure of a acute angle between the line direction ratios are 5, 12, -13 and 3, -4, 5.

A. $\cos^{-1}\left(\frac{7}{65}\right)$

B. $\cos^{-1}\left(\frac{-7}{65}\right)$

C. $\cos^{-1}\left(\frac{49}{65}\right)$

D. $\cos^{-1}\left(\frac{-49}{65}\right)$

Answer: D

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105. Find the angles between the line whose direction ratios are $4, -3, 5$ and $3, 4, 5$.

A. 30°

B. 45°

C. 60°

D. 90°

Answer: C

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106. The acute angle between the lines whose direction ratios are 3, 2, 6 and -2, 1, 2 is

A. $\cos^{-1}\left(\frac{8}{21}\right)$

B. $\cos^{-1}\left(\frac{12}{21}\right)$

C. $\cos^{-1}\left(\frac{2}{21}\right)$

D. $\cos^{-1}\left(\frac{2}{3}\right)$

Answer: A

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107. The acute angle between the lines whose direction ratios are 1, 2, 2 and -3, 6, -2 is

A. $\cos^{-1}\left(\frac{13}{21}\right)$

B. $\cos^{-1}\left(\frac{5}{21}\right)$

C. $\cos^{-1}\left(\frac{11}{21}\right)$

D. $\cos^{-1}\left(\frac{5}{9}\right)$

Answer: B

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108. The acute angle between the lines whose direction ratios are 1, 1, 2 and $\sqrt{3}-1, -\sqrt{3}-1, 4$ is

A. 45°

B. 30°

C. 90°

D. 60°

Answer: D

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109. An angle between the lines whose direction number are 1, -2, 1 and -6, -1, 4 is

A. $\frac{\pi}{6}$

B. $\frac{\pi}{4}$

C. $\frac{\pi}{3}$

D. $\frac{\pi}{2}$

Answer: D

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110. If the angle between the lines with direction ratios a, 3, 5 and 2, -1, 2 is 45°, then a =

A. 2, 26

B. 4, 52

C. 2, 104

D. 8, 26

Answer: B

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111. If the angle between the vectors $\bar{a}$ and $\bar{b}$ having direction ratios 1, 2, 1 and 1, 3k, 1 is $\frac{\pi}{4}$, then k =

A. $\frac{2 \pm 3\sqrt{2}}{3}$

B. $\frac{-2 \pm 3\sqrt{2}}{3}$

C. $\frac{4 \pm 3\sqrt{2}}{3}$

D. $\frac{-4 \pm 3\sqrt{2}}{3}$

Answer: D

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112. If the angle between the lines with direction ratios 2, -1, 1 and 1, k, 2 is 60°, then k =

A. 1, 17

B. $-1, 17$

C. $1, \ -17$

D. $-1, \ -17$

Answer: C

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113. The two values of k for which the lines with direction ratios $k, \ -6, \ -2$ and $k-1, k, 4$ are perpendicular to each other are

A. 1, 8

B. 1, -8

C. $-1, 8$

D. $-1, \ -8$

Answer: C

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114. If the cosine of the angle between the lines with direction ratios 1, -1, 2 and 0, 1, k is $\frac{\sqrt{3}}{2}$, then k =

A. $-1, \ -7$

B. $1, \ -7$

C. $-1, 7$

D. 1, 7

Answer: A

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115. The acute angle between the lines joining points (2, 1, 3) and (1, -1, 2) and the line having direction ratios 2, 1, -1 is

A. 30°

B. 45°

C. 60°

D. 120°

Answer: C

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116. If $A \equiv (3, 4-2), B \equiv (1, -1, 2), C \equiv (0, 3, 2)$ and $D \equiv (3, 5, 6)$, then the angle between $\overline{AB}$ and $\overline{CD}$ is

A. 45°

B. 90°

C. 30°

D. 60°

Answer: B

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117. The acute angle between the vectors $\overline{AB}$ and $\overline{CD}$, where

$A \equiv (1, 2-1), B \equiv (2, 1, 1), C \equiv (2, 1, -2), D \equiv (3, 2, 1)$

is

A. $\cos^{-1}\sqrt{\frac{6}{11}}$

B. $\cos^{-1}\sqrt{\frac{3}{11}}$

C. $\cos^{-1}\left(\frac{6}{\sqrt{11}}\right)$

D. $\cos^{-1}\left(\frac{3}{\sqrt{11}}\right)$

Answer: A

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118. If $\triangle ABC$ is right angled at B , where A(5,6,4), B(4,4,1) and C(8,2,x) , then find the value of x.

A. 0

B. -1

C. 1

D. 3

Answer: C

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119. If ΔABC is right angled at A, where $A \equiv (4, 2, 3), B \equiv (3, 1, 8)$ and $C \equiv (x, -1, 2)$, then x =

A. -4

B. -2

C. 2

D. 4

Answer: C

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120. If ΔABC, if $A \equiv (3, 2, 6), B \equiv (1, 4, 5)$ and $C \equiv (3, 5, 3)$, then $m\angle ABC =$

A. 90°

B. 60°

C. 45°

D. 30°

Answer: A

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121. If A (0, 7, 10), B(-1, 6, 6) and C(-4, 9, 6) are the vertices of ΔABC, then ΔABC is right angled at vertex

A. A

B. B

C. C

D. either A or C

Answer: B

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122. If $\bar{a}, \bar{b}, \bar{c}$ are three mutually perpendicular vectors of equal magnitude, then the angle made by $\bar{a} + \bar{b} + \bar{c}$ with

each of $\bar{a}, \bar{b}, \bar{c}$ is

A. $\cos^{-1}\left(\frac{1}{3}\right)$

B. $\cos^{-1}\left(\frac{2}{3}\right)$

C. $\cos^{-1}\left(\frac{1}{\sqrt{3}}\right)$

D. $\cos^{-1}\left(\frac{2}{\sqrt{3}}\right)$

Answer: C

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123. The angle between the lines whose direction cosines satisfy the equations $l + m + n = 0$ and $l^2 = m^2 + n^2$ is

(1) $\frac{\pi}{3}$ (2) $\frac{\pi}{4}$ (3) $\frac{\pi}{6}$ (4) $\frac{\pi}{2}$

A. $\frac{\pi}{3}$

B. $\frac{\pi}{4}$

C. $\frac{\pi}{6}$

D. $\frac{\pi}{2}$

Answer: A

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124. Find the direction cosines of the two lines which are connected by th relations.

$l - 5m + 3n = 0 and 7l^2 + 5m^2 - 3n^2 = 0$

A. 1, 2, 3 and 1, 1, 2

B. 1, 2, 3 and -1, 1, 2

C. 1, 2, 3 and 1, -1, 2

D. 1, 2, 3 and 1, 1, -2

Answer: B

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125. Find the acute angle between the two straight lines whose direction cosines are given by $l + m + n = 0$ and $l^2 + m^2 - n^2 = 0$

A. $\frac{\pi}{6}$

B. $\frac{\pi}{4}$

C. $\frac{\pi}{3}$

D. $\frac{\pi}{2}$

Answer: C

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126. The direction cosines l, m and n of two lines are connected by the relations $l + m + n = 0$ and $lm = 0$, then the angle between the lines is

A. 0°

B. 45°

C. 60°

D. 90°

Answer: C

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127. If the direction ratio of two lines are given by $3lm - 4\ln + mn = 0$ and $l + 2m + 3n = 0$, then the angle between the lines, is

A. 0°

B. 45°

C. 60°

D. 90°

Answer: D

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128. The angle between the lines whose direction cosines l, m, n satisfy the equations $5l + m + 3n = 0$ and $5mn - 2nl + 6lm = 0$ is

A. $\cos^{-1}\left(\frac{1}{\sqrt{6}}\right)$

B. $\cos^{-1}\left(\frac{1}{\sqrt{3}}\right)$

C. $\cos^{-1}\left(\frac{1}{6}\right)$

D. $\cos^{-1}\left(\frac{1}{3}\right)$

Answer: C

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129. Find the angle between the lines whose direction cosines are given by the equations $3l + m + 5n = 0$ and $6mn - 2nl + 5lm = 0$

A. $\cos^{-1}\left(\frac{-1}{6}\right)$

B. $\cos^{-1}\left(\frac{1}{2}\right)$

C. $\cos^{-1}\left(\frac{-1}{3}\right)$

D. $\cos^{-1}\left(\frac{1}{3}\right)$

Answer: A

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130. Direction ratios of two lines satisfy the relations $2a - b + 2c = 0$ and $ab + bc + ca = 0$. Then the angle between two lines is

A. 60°

B. 30°

C. 90°

D. 145°

Answer: C

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131. IF the direction ratios of two vectors are connected by the relations $p+q+r=0$ and $p^2+q^2-r^2=0$. Find the angle between them.

A. 90°

B. 60°

C. 45°

D. 30°

Answer: B

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132. The angle between diagonal of a cube and diagonal of a face of the cube will be

A. $\cos^{-1}\left(\frac{2}{3}\right)$

B. $\cos^{-1}\left(\frac{1}{3}\right)$

C. $\cos^{-1}\sqrt{\frac{2}{3}}$

D. $\cos^{-1}\sqrt{\frac{1}{3}}$

Answer: C

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133. Let $l_1, m_1, n_1, l_2, m_2, n_2$ and l_3, m_3, n_3 are direction cosine of three mutually perpendicular line OA, OB and OC.

If the direction cosines of OP are proportional to $l_1 + l_2 + l_3, m_1 + m_2 + m_3, n_1 + n_2 + n_3$ and angle made by OP with lines OA, OB, OC are respectively $\theta_1, \theta_2, \theta_3$, then

A. $\theta_1 < \theta_2 < \theta_3$

B. $\theta_1 = \theta_2 = \theta_3$

C. $\theta_1 > \theta_2 > \theta_3$

D. $\theta_1 = \theta_2 + \theta_3$

Answer: B

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134. The direction cosines of a line equally inclined to three mutually perpendiclar lines having direction cosines as $l_1, m_1, n_1, l_2, m_2, n_2$ and l_3, m_3, n_3 are

A. $l_1 + l_2 + l_3, m_1 + m_2 + m_3, n_1 + n_2 + n_3$

B. $\frac{l_1 + l_2 + l_3}{\sqrt{3}}, \frac{m_1 + m_2 + m_3}{\sqrt{3}}, \frac{n_1 + n_2 + n_3}{\sqrt{3}}$

C. $\frac{l_1 + l_2 + l_3}{3}, \frac{m_1 + m_2 + m_3}{3}, \frac{n_1 + n_2 + n_3}{3}$

D. $\frac{l_1 + l_2 + l_3}{3}, \frac{m_1 + m_2 + m_3}{-3}, \frac{n_1 + n_2 + n_3}{3}$

Answer: B

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135. Find the direction cosines of the two lines which are connected by th relations.

$l - 5m + 3n = 0 and d 7l^2 + 5m^2 - 3n^2 = 0$

A. $\pm \frac{-1}{\sqrt{6}}, \pm \frac{1}{\sqrt{6}}, \pm \frac{2}{\sqrt{6}}$

B. $\pm \frac{1}{\sqrt{6}}, \pm \frac{1}{\sqrt{6}}, \pm \frac{-2}{\sqrt{6}}$

C. $\pm \frac{2}{\sqrt{6}}, \pm \frac{2}{\sqrt{6}}, \pm \frac{-1}{\sqrt{6}}$

D. $\pm \frac{2}{\sqrt{6}}, \pm \frac{2}{\sqrt{6}}, \pm \frac{1}{\sqrt{6}}$

Answer: A

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136. If l_1, m_1, n_1 and l_2, m_2, n_2 are the direction cosines of two lines and l, m, n are the direction cosines of a line perpendicular to the given two lines, then

A. $\frac{l}{\begin{vmatrix} m_1 & n_1 \\ m_2 & m_2 \end{vmatrix}} = \frac{-m}{\begin{vmatrix} l_1 & n_1 \\ l_2 & n_2 \end{vmatrix}} = \frac{n}{\begin{vmatrix} l_1 & n_1 \\ l_2 & n_2 \end{vmatrix}}$

B. $\frac{l}{\begin{vmatrix} m_1 & n_1 \\ m_2 & m_2 \end{vmatrix}} = \frac{-m}{\begin{vmatrix} l_1 & n_1 \\ l_2 & n_2 \end{vmatrix}} = \frac{-n}{\begin{vmatrix} l_1 & n_1 \\ l_2 & n_2 \end{vmatrix}}$

C. $\frac{-l}{\begin{vmatrix} m_1 & n_1 \\ m_2 & m_2 \end{vmatrix}} = \frac{-m}{\begin{vmatrix} l_1 & n_1 \\ l_2 & n_2 \end{vmatrix}} = \frac{n}{\begin{vmatrix} l_1 & n_1 \\ l_2 & n_2 \end{vmatrix}}$

D. $\frac{l}{\begin{vmatrix} m_1 & n_1 \\ m_2 & m_2 \end{vmatrix}} = \frac{m}{\begin{vmatrix} l_1 & n_1 \\ l_2 & n_2 \end{vmatrix}} = \frac{n}{\begin{vmatrix} l_1 & n_1 \\ l_2 & n_2 \end{vmatrix}}$

Answer: A

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137. The direction ratios of vector perpendicular to the two lines whose direction ratios are -2, 1, -1 and -3, -4 , 1 are

A. $-3, 5, 11$

B. $3, -5, 11$

C. $3, 5, 11$

D. $3, 5, -11$

Answer: A

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138. The direction ratios of a vector perpendicular to the two lines whose direction ratios are 1, 3, 2 and -1, 1, 2 are

A. $-1, 1, 1$

B. $1, 1, -1$

C. $1, -1, 1$

D. $1, 1, 1$

Answer: C

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139. Find the direction cosines of the line which is perpendicular to the lines with direction ratios $4, 1, 3$ and $2, -3, 1$.

A. $\pm\frac{5}{5\sqrt{3}}, \pm\frac{1}{5\sqrt{3}}, \pm\frac{7}{5\sqrt{3}}$

B. $\pm\frac{1}{\sqrt{3}}, \pm\frac{1}{5\sqrt{3}}, \pm\frac{-7}{5\sqrt{3}}$

C. $\pm\frac{5}{\sqrt{3}}, \pm\frac{1}{\sqrt{3}}, \pm\frac{7}{\sqrt{3}}$

D. $\pm\frac{5}{\sqrt{3}}, \pm\frac{1}{\sqrt{3}}, \pm\frac{-7}{\sqrt{3}}$

Answer: B

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140. Direction ratios of the line which is perpendicular to the lines with direction ratios (-1,2,2) and (0,2,1) are

A. 1, 1, 2

B. 2, -1, 2

C. $-2, 1, 2$

D. 2, 1, -2

Answer: B

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141. The direction cosines of the line which is perpendicular to the lines with direction ratios -1, 2, 2 and 0, 2, 1 are

A. $\frac{2}{9}, \frac{-1}{9}, \frac{-2}{9}$

B. $\frac{2}{3}, \frac{-1}{3}, \frac{-2}{3}$

C. $\frac{2}{9}, \frac{-1}{9}, \frac{2}{9}$

D. $\frac{2}{3}, \frac{-1}{3}, \frac{2}{3}$

Answer: D

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142. The direction ratios of a line which is perpendicular to the two lines whose direction ratios are 3, -2, 4 and 1, 3, -2 is

A. $-8, 10, 11$

B. $8, -10, 11$

C. $8, 10, -11$

D. $8, 10, 11$

Answer: A

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143. The direction ratios of a line which is perpendicular to the two lines whose direction ratios are 3, -2, 1 and 2, 4, -2 is

A. 0, 2, 1

B. 0, -1, 2

C. 0, 1, 2

D. 0, 1, -2

Answer: C

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144. Points (-2, 4, 7), (3, -6 -8) and (1, -2, -2) are

A. collinear

B. vertices of an equilateral triangle

C. vertices of an isosceles triangle

D. vertices of a scalene triangle

Answer: A

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145. If the points (-1, 3, 3), (-2, 0, 1), (-4, -6, -3) and (2, 12, 9) are

A. vertices of square

B. vertices of rhombus

C. vertices of rectangle

D. collinear

Answer: D

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146. prove that point `A(5, -1, 1), B(7, -4, 7), C(1, -6, 10) and D(-1, -3, 4) are vertices of a rhombus

A. square

B. rhombus

C. rectangle

D. parallelogram

Answer: B

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147. The points (5, -4, 2), (4, -3, 1), (7, -6, 4) and (8, -7, 5) are the vertices of a

A. square

B. rectangle

C. rhombus

D. parallelogram

Answer: D

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148. The points (5, 0, 2), (2, -6, 0), (4, -9, 6) and (7, -3, 8) are the vertices of a

A. square

B. rectangle

C. rhombus

D. parallelogram

Answer: A

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149. The points (0, 7, 10), (-1, 6, 6), (-4, 9, 6) form

A. an isosceles triangle

B. an equilateral triangle

C. a right angled triangle

D. a right angled isoceles triangle

Answer: D

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150. If the points A(4, 7, 6), B(2, 3, 2), C(-1, -2, -1) and D form a parallelogram, then $D \equiv$

A. (3, 2, 1)

B. (1, 2, 3)

C. (3, 1 , 2)

D. (2, 3, 1)

Answer: B