Studybeesofficial
EDUCATIONAL PLATFORM
www.studybeesofficial.com

HSSC-I NATIONAL BOOK FOUNDATION FBISE

MATHEMATICS TEST - CHAPTER 3: VECTORS

Name:		Roll No.		Section:

Total Time: 3:20 Hour
Time Allowed: 200 Minutes

Total Marks: 200

PAPER OBJECTIVE
SECTION-A (MARKS 200)

NOTE: Section-A is compulsory. All parts of this section are to be answered on these pages and handed over to the center superintendent. Deleting / overwriting is not allowed. Do not use lead pencil.

Q.1 Fill the relevant bubble for each part. All parts carry one mark.

Questions	A	B	C	D	A B C D
1. A quantity that possesses both magnitude and direction is called a:	vector	variable	constant	scalar	●○○○
2. A physical quantity completely specified by its magnitude only is called a:	component	vector	resultant	scalar	○○○●
3. Which of the following is a scalar quantity?	Weight	Mass	Velocity	Displacement	○●○○
4. Among the following, a scalar quantity is:	Velocity	Displacement	Distance	Acceleration	○○●○
5. Which of the following is a vector quantity?	Displacement	Time	Volume	Mass	●○○○
6. A vector quantity among the following is:	Mass	Distance	Acceleration	Time	○○●○
7. Newton's laws of motion are relationships between:	only scalars	vectors	only numbers	only constants	○●○○
8. Geometrically, a vector is represented by:	a line segment with an arrow head at one end	a circle	a curve without direction	a point	●○○○
9. The length of the line segment representing a vector describes its:	magnitude	position only	direction only	colour	●○○○
10. The arrow head of a vector indicates its:	tail	origin	magnitude	direction	○○○●
11. In the vector AB, the end A is called the:	tail or initial point	origin	midpoint	head or terminal point	●○○○
12. In the vector AB, the end B is called the:	initial point	centre	origin	terminal point or head	○○○●
13. The magnitude of a vector a is also called its:	unit	component	length or norm	direction	○○●○
14. Two vectors are equal if they have the same:	length only	magnitude and direction	initial point only	terminal point only	○●○○

Follow Studybeesofficial on Instagram, YouTube Channel & WhatsApp Channel — Link in Bio

Questions	A	B	C	D	A B C D
15. Equal vectors:	must have the same initial point	need not have the same position	must be perpendicular	must have the same terminal point	○●○○
16. A vector having the same magnitude as a but opposite direction is called the:	position vector of a	unit vector of a	negative of a	zero vector	○○●○
17. If the initial and terminal points of a vector coincide, it is called a:	zero (null) vector	unit vector	position vector	parallel vector	●○○○
18. The zero vector has:	direction along x-axis	no direction	direction along y-axis	direction along z-axis	○●○○
19. A vector in the direction of a non-zero vector a with magnitude 1 is called the:	position vector	unit vector of a	negative vector	zero vector	○●○○
20. The unit vector of a non-zero vector a is given by:	$\lvert a\rvert/a$	$a/\lvert a\rvert$	$-a$	$a\lvert a\rvert$	○●○○
21. Any vector a can be written as the product of its magnitude and its:	unit vector	component	position vector	negative	●○○○
22. The process of finding the unit vector of a vector is called:	normalising the vector	reversing the vector	projecting the vector	rotating the vector	●○○○
23. Two non-zero vectors a and b are parallel if:	$a + b = 0$ only	$a \cdot b = 0$	$a = \lambda b$ for a scalar λ	$\lvert a\rvert = \lvert b\rvert$ only	○○●○
24. If $a = \lambda b$ and λ is positive, the vectors have:	no direction	opposite directions	the same direction	perpendicular directions	○○●○
25. Vectors in opposite directions are known as:	unit vectors	antiparallel vectors	equal vectors	null vectors	○●○○
26. The vector that specifies the position of a point P with respect to the origin is called the:	null vector of P	negative vector of P	unit vector of P	position vector of P	○○○●
27. The tail of a position vector OP is located at the:	point (1, 1, 1)	midpoint of OP	origin	point P	○○●○
28. The head-to-tail rule of vector addition is also called the:	scalar law	polygon law only	parallelogram law only	triangle law of addition	○○○●
29. In the triangle law, the resultant a + b is obtained by joining the:	head of the first to the head of the second	tail of the first to the tail of the second	midpoints of the vectors	tail of the first vector to the head of the second	○○○●
30. In the parallelogram ABCD with AB = a and AD = b, the diagonal AC equals:	ab	$a + b$	$a - b$	$b - a$	○●○○
31. In a parallelogram ABCD, the vector BC equals the vector:	DC	CA	AB	AD	○○○●

Follow Studybeesofficial on Instagram, YouTube Channel & WhatsApp Channel — Link in Bio

Questions	A	B	C	D	A B C D
32. In a parallelogram ABCD, the vector DC equals the vector:	AB	BC	BD	AD	●○○○
33. The rule for adding any number of vectors by placing them head to tail is the:	scalar law	dot product law	polygon law of addition	cross product law	○○●○
34. If λ is a non-zero scalar, the magnitude of λa is:	$\|a\|/\lambda$	$\lambda\|a\|^2$	$\lambda + \|a\|$	$\|\lambda\|\|a\|$	○○○●
35. If λ is negative, the vector λa has direction:	the same as a	undefined	perpendicular to a	opposite to that of a	○○○●
36. The position vector of the midpoint of AB, where A and B have position vectors a and b, is:	a + b	(a − b)/2	ab/2	(a + b)/2	○○○●
37. The position vector of a point P dividing AB internally in the ratio m : n is:	(n a + m b)/(m + n)	(m a + n b)/(m + n)	(n a − m b)/(m + n)	(m a − n b)/(m − n)	●○○○
38. If A(1, 2, 3) and B(7, 8, 9), the point dividing AB internally in the ratio 1 : 2 is:	(3, 4, 5)	(4, 5, 6)	(5, 6, 7)	(2, 3, 4)	●○○○
39. If A(1, 2, 3) and B(7, 8, 9), the point dividing AB internally in the ratio 2 : 1 is:	(3, 4, 5)	(6, 7, 8)	(5, 6, 7)	(4, 5, 6)	○○●○
40. The midpoint of the line segment joining A(2, 4, 6) and B(4, 6, 8) is:	(2, 5, 7)	(3, 5, 7)	(1, 1, 1)	(6, 10, 14)	○●○○
41. The three vertices of a parallelogram ABCD taken in order are A(3, 4), B(−1, 3) and C(6, 2). The fourth vertex D is:	(−4, 5)	(8, 1)	(10, 3)	(2, 3)	○○●○
42. In a parallelogram, the diagonals:	are always equal	never intersect	bisect each other	are always perpendicular	○○●○
43. The line joining the midpoints of two sides of a triangle is:	perpendicular to the third side	equal to the third side	twice the third side	parallel to the third side and half its length	○○○●
44. The line joining the midpoints of the non-parallel sides of a trapezium is:	twice the sum of the parallel sides	equal to one parallel side	parallel to the parallel sides and half their sum in length	perpendicular to the parallel sides	○○●○
45. The three-dimensional rectangular coordinate system is made of how many mutually perpendicular lines meeting at a point?	1	4	2	3	○○○●
46. The three mutually perpendicular lines in space are called the:	coordinate axes	polar axes	medians	altitudes	●○○○
47. A general point in space has coordinates:	(x, y)	(r, θ)	(x, y, z)	(x, y, z, w)	○○●○
48. The set of all points in space is denoted by:	$R \times R \times R$ or R^3	R^2	R^4	C	●○○○

Follow Studybeesofficial on Instagram, YouTube Channel & WhatsApp Channel — Link in Bio

Questions	A	B	C	D	A B C D
49. The fundamental unit vectors along the x, y and z axes are:	**i, j, k**	**x, y, z**	**a, b, c**	**u, v, w**	●○○○
50. The position vector of the point P(x, y, z) is:	xyz	(x, y)	x + y + z	x**i** + y**j** + z**k**	○○○●
51. In r = xi + yj + zk, the numbers x, y and z are called the:	directions of the vector	components of the vector	units of the vector	moduli of the vector	○●○○
52. The magnitude of the vector xi + yj + zk is:	x + y + z	√(x + y + z)	$x^2 + y^2 + z^2$	$\sqrt{(x^2 + y^2 + z^2)}$	○○○●
53. The magnitude of 2i + 3j + 6k is:	√11	7	5	11	○●○○
54. The magnitude of i + 2j + 2k is:	3	9	√5	5	●○○○
55. The magnitude of i + j + k is:	3	√3	1	√2	○●○○
56. The magnitude of 6i + 2j + 3k is:	7	9	11	√11	●○○○
57. The magnitude of 4i − 2j + 4k is:	10	√12	6	4	○○●○
58. The unit vector of 2i + 3j + 6k is:	(2**i** + 3**j** + 6**k**)/7	(2**i** + 3**j** + 6**k**)/11	2**i** + 3**j** + 6**k**	(2**i** + 3**j** + 6**k**)/√11	●○○○
59. The vector in the direction of i + 2j + 2k and having magnitude 12 is:	12**i** + 24**j** + 24**k**	4**i** + 8**j** + 8**k**	3**i** + 6**j** + 6**k**	**i** + 2**j** + 2**k**	○●○○
60. A vector in space having all three components equal to zero is the:	position vector	unit vector	zero vector	parallel vector	○○●○
61. The negative of the vector xi + yj + zk is:	x**i** − y**j** + z**k**	−x**i** + y**j** + z**k**	−x**i** − y**j** − z**k**	(1/x)**i** + (1/y)**j** + (1/z)**k**	○○●○
62. For a = 2i + 3j − 5k and b = i − 5j + 2k, the sum a + b is:	3**i** − 2**j** − 3**k**	3**i** − 2**j** + 3**k**	3**i** + 2**j** − 3**k**	**i** + 8**j** − 7**k**	●○○○
63. For a = 2i + 3j − 5k and b = i − 5j + 2k, the difference a − b is:	**i** − 8**j** + 7**k**	**i** + 2**j** − 3**k**	**i** + 8**j** − 7**k**	3**i** − 2**j** − 3**k**	○○●○
64. The vectors 2i − 4j + 6k and i − 2j + 3k are:	perpendicular	unrelated	parallel	equal	○○●○
65. For the vectors 2i + 3j + mk and 4i + 6j + 8k to be parallel, m must be:	6	8	4	2	○○●○

Follow Studybeesofficial on Instagram, YouTube Channel & WhatsApp Channel — Link in Bio

Questions	A	B	C	D	A B C D
66. The commutative law of vector addition states that:	$a + b = b + a$	$a \cdot b = b \cdot a$ only	$a + b = a - b$	$a - b = b - a$	●○○○
67. The associative law of vector addition states that:	$a + b = b + a$	$a(b + c) = ab + ac$	$a + (b + c) = (a + b) + c$	$a + b = c$	○○●○
68. The identity for vector addition is the:	position vector	zero vector	vector **i**	unit vector	○●○○
69. The additive inverse of a vector r is:	0	r^{-1}	$r/\|r\|$	$-r$	○○○●
70. The distance between the points $P(x_1, y_1, z_1)$ and $Q(x_2, y_2, z_2)$ is:	$(x_2^2 - x_1^2) + (y_2^2 - y_1^2)$	$(x_2 - x_1) + (y_2 - y_1) + (z_2 - z_1)$	$\sqrt{[x_1x_2 + y_1y_2 + z_1z_2]}$	$\sqrt{[(x_2 - x_1)^2 + (y_2 - y_1)^2 + (z_2 - z_1)^2]}$	○○○●
71. The distance between P(1, 2, 3) and Q(4, 6, 3) is:	5	25	$\sqrt{7}$	7	●○○○
72. The distance between the points (1, −1, 2) and (3, 1, 3) is:	$\sqrt{3}$	3	9	5	○●○○
73. The distance of the point (2, 3, 6) from the origin is:	11	7	6	$\sqrt{11}$	○●○○
74. The distance between two points is the magnitude of the vector:	$P \cdot Q$	$P + Q$	PQ	$P \times Q$	○○●○
75. The dot product of two vectors a and b is defined as:	$\|a\| + \|b\| \cos\theta$	$\|a\|\|b\|$	$\|a\|\|b\| \sin\theta$	$\|a\|\|b\| \cos\theta$	○○○●
76. The dot product of two vectors is a:	unit vector	matrix	scalar	vector	○○●○
77. The angle θ between two vectors in the dot product is measured:	from the y-axis	in radians only	from the second vector to the first only	from the first vector to the second, $0 \le \theta \le 180°$	○○○●
78. The dot product of two non-zero perpendicular vectors is:	negative	one	maximum	zero	○○○●
79. When the angle between two vectors is 0°, the dot product a · b equals:	$\|a\|\|b\|$	1	0	$-\|a\|\|b\|$	●○○○
80. When the angle between two vectors is 180°, the dot product a · b equals:	0	1	$\|a\|\|b\|$	$-\|a\|\|b\|$	○○○●
81. The dot product of the fundamental unit vector i with itself is:	−1	1	0	**i**	○●○○
82. The dot product i · j equals:	0	**k**	−1	1	●○○○

Follow Studybeesofficial on Instagram, YouTube Channel & WhatsApp Channel — Link in Bio

Questions	A	B	C	D	A B C D
83. The dot product j · k equals:	1	**i**	−1	0	○○○●
84. In component form, a · b for a = a_1i + a_2j + a_3k and b = b_1i + b_2j + b_3k is:	a_1b_1**i** + a_2b_2**j** + a_3b_3**k**	$a_1b_1 + a_2b_2 + a_3b_3$	$a_1b_2 - a_2b_1$	$(a_1 + b_1)(a_2 + b_2)(a_3 + b_3)$	○●○○
85. The dot product of 2i + 3j + k and i − j + 2k is:	3	−1	7	1	○○○●
86. The dot product of i + 2j + 3k and 3i − k is:	3	6	−6	0	○○○●
87. Two non-zero vectors are orthogonal if and only if their:	dot product is zero	magnitudes are equal	sum is zero	cross product is zero	●○○○
88. The vectors i + 2j + 3k and 3i − k are:	equal	orthogonal	parallel	antiparallel	○●○○
89. The value of k for which 2i + 3j + kk is perpendicular to i + 2j − 4k is:	4	−2	−4	2	○○○●
90. The dot product is commutative, that is:	a · b = a × b	a · b = b · a	a · b = −b · a	a · b = a + b	○●○○
91. The angle between two non-zero vectors a and b satisfies cos θ equal to:	a · b/(|a||b|)	a × b/(|a||b|)	(a · b)(|a||b|)	|a||b|/(a · b)	●○○○
92. The angle between i + j and j + k is:	45°	90°	60°	30°	○○●○
93. The angle between i and i + j is:	30°	60°	45°	90°	○○●○
94. The angle between i + j + k and i − j is:	90°	60°	45°	0°	●○○○
95. For a = i − 2j + k and b = 2i − 3j + k, the value of cos θ is:	9/√14	9/84	3/√84	9/√84	○○○●
96. The angles which a non-zero vector makes with the coordinate axes in the positive direction are called its:	reference angles	polar angles	projection angles	direction angles	○○○●
97. The cosines of the direction angles of a vector are called its:	projections	direction cosines	direction ratios	components	○●○○
98. The direction cosines are usually denoted by:	a, b, c	l, m, n	p, q, r	x, y, z	○●○○
99. For a vector r = xi + yj + zk, the direction cosine l is:	x/y	x/|r|	x|r|	|r|/x	○●○○

StudyBees OFFICIAL PAK

Questions	A	B	C	D	A B C D
100. The sum of the squares of the direction cosines of a vector is:	3	2	1	0	○○●○
101. The direction cosines of 2i − 3j + 4k are:	2/3, −1, 4/3	2/√29, −3/√29, 4/√29	2/9, −3/9, 4/9	2/√9, −3/√9, 4/√9	○●○○
102. The direction cosines of i + j + k are each equal to:	1/3	√3	1	1/√3	○○○●
103. Two direction angles of a vector are 30° and 60°. The third direction angle is:	90°	60°	45°	30°	●○○○
104. A vector equally inclined with the coordinate axes has each direction cosine equal to:	1	1/2	1/3	1/√3 (taking positive direction)	○○○●
105. Numbers proportional to the direction cosines of a vector are called its:	position ratios	direction ratios	direction angles	components	○●○○
106. If a vector has magnitude r and direction cosines l, m, n, the coordinates of the end point P of its position vector are:	(rl, rm, rn)	(l, m, n)	(r + l, r + m, r + n)	(l/r, m/r, n/r)	●○○○
107. The projection of a vector a along a vector b is:	a · b/|a|	|a||b|	a · b/|b|	a × b/|b|	○○●○
108. For a = i + 2j + 3k and b = 2i + j − 2k, the projection of a along b is:	−2/3	2/√14	−2/√14	2/3	●○○○
109. For a = i + 2j + 3k and b = 2i + j − 2k, the projection of b along a is:	2/√14	−2/3	−2/√14	2/3	○○●○
110. The work done by a constant force F in moving an object through displacement d is:	F · d	|F| + |d|	F/d	F × d	●○○○
111. The work done is a:	scalar quantity	unit vector	position vector	vector quantity	●○○○
112. If F = 2i + 3j + 4k moves an object from (1, 1, 1) to (3, 2, 4), the work done is:	9 units	19 units	14 units	24 units	○●○○
113. If a force is perpendicular to the displacement, the work done is:	maximum	negative	zero	infinite	○○●○
114. The cross product of two vectors a and b is defined as:	|a||b| sin θ	|a||b| cos θ	|a| + |b|	|a||b| sin θ n̂	○○○●
115. In the definition of the cross product, n̂ is a unit vector:	parallel to a + b	along b	along a	normal to the plane containing a and b	○○○●
116. The cross product of two vectors is a:	matrix	vector	number	scalar	○●○○

Follow Studybeesofficial on Instagram, YouTube Channel & WhatsApp Channel — Link in Bio

Questions	A	B	C	D	A B C D
117. The vectors a × b and b × a are:	opposite in direction	unrelated	equal	perpendicular	●○○○
118. In the cross product, i × j equals:	0	**k**	**−k**	1	○●○○
119. In the cross product, j × k equals:	**i**	**−i**	0	1	●○○○
120. In the cross product, k × i equals:	**−j**	**j**	1	0	○●○○
121. In the cross product, j × i equals:	**−k**	**k**	1	0	●○○○
122. In the cross product, i × i equals:	**k**	1	0	**j**	○○●○
123. The cross product a × b in component form can be written as a:	product of magnitudes	sum of components	determinant with rows **i j k**, components of a and components of b	single scalar	○○●○
124. The cross product (i + j) × (j + k) equals:	**i − j + k**	**k**	**i + j + k**	**−i + j − k**	●○○○
125. The cross product of a = i + 2j + 3k and b = 3i − j + 2k is:	**i** + 2**j** + 3**k**	7**i** + 7**j** − 7**k**	−7**i** − 7**j** + 7**k**	7**i** − 7**j** − 7**k**	○●○○
126. The magnitude of a × b equals:	|a||b| cos θ	a · b	|a||b| sin θ	|a| + |b|	○○●○
127. The area of the parallelogram having adjacent sides a and b is:	|a × b|/2	|a||b|	a · b	|a × b|	○○○●
128. The area of the triangle having adjacent sides a and b is:	|a × b|	(1/2)|a||b|	(1/2)|a × b|	a · b/2	○○●○
129. The area of the parallelogram with adjacent sides 2i + j and i + 3j is:	1	6	7	5	○○○●
130. The area of the triangle with adjacent sides 2i + j and i + 3j is:	7/2	3	5/2	5	○○●○
131. The area of the triangle with vertices (0, 0), (4, 0) and (0, 3) is:	3	7	12	6	○○○●
132. Two non-zero vectors are parallel if and only if their:	difference is a unit vector	dot product is zero	cross product is zero	sum is zero	○○●○
133. The vector perpendicular to both a and b is:	a · b	a × b	a + b	a − b	○●○○

Follow Studybeesofficial on Instagram, YouTube Channel & WhatsApp Channel — Link in Bio

Questions	A	B	C	D	A B C D
134. Lagrange's identity states that $\|a \times b\|^2$ equals:	$\|a\|^2\|b\|^2 - (a \cdot b)^2$	$(a \cdot b)^2 - \|a\|^2\|b\|^2$	$\|a\|\|b\| - a \cdot b$	$\|a\|^2\|b\|^2 + (a \cdot b)^2$	●○○○
135. The sine of the angle between a and b is given by:	$(a \times b)/(a \cdot b)$	$\|a\|\|b\|/\|a \times b\|$	$a \cdot b/(\|a\|\|b\|)$	$\|a \times b\|/(\|a\|\|b\|)$	○○○●
136. The moment (torque) of a force F about a point is:	$r \times F$	$r \cdot F$	$F + r$	F/r	●○○○
137. In the moment M = r × F, the vector r is the position vector of the point of application of the force relative to the:	point about which the moment is taken	centre of the Earth	end of the force	origin always	●○○○
138. The magnitude of the moment of a force F about a point is the product of the force and the:	perpendicular distance from the point to the line of action	mass of the body	angle only	length of the position vector	●○○○
139. The moment of the force k applied at the point i + j about the origin is:	**$i + j$**	**k**	**$i - j$**	**$-i + j$**	○○●○
140. The scalar triple product of vectors a, b and c is:	$a \times (b \cdot c)$	$a \cdot (b \times c)$	$a + b + c$	$(a \cdot b) \times c$	○●○○
141. The scalar triple product is a:	scalar	matrix	vector	unit vector	●○○○
142. The scalar triple product in component form is the value of a:	2×2 determinant	dot product only	scalar multiple	3×3 determinant	○○○●
143. In the scalar triple product, if any two vectors are same or parallel, the value is:	zero	one	infinite	negative	●○○○
144. If two vectors in a scalar triple product are interchanged, its value:	doubles	changes sign	becomes zero	remains the same	○●○○
145. The scalar triple product $i \cdot (j \times k)$ equals:	**i**	**-1**	**1**	**0**	○○●○
146. In the scalar triple product, the dot and the cross are:	never interchangeable	only valid for unit vectors	interchangeable	equal to zero	○○●○
147. Which of the following is equal to $a \cdot (b \times c)$?	$(a \cdot b) \times c$	$a \cdot b + c$	$a \times (b \cdot c)$	$(a \times b) \cdot c$	○○○●
148. The volume of a parallelopiped with adjacent sides a, b and c is:	$\|a \cdot (b \times c)\|$	$\|a \times b\|$	$a \cdot b$	$(1/6)\|a \cdot (b \times c)\|$	●○○○
149. The volume of a tetrahedron with adjacent edges a, b and c is:	$\|a \cdot (b \times c)\|$	$(1/6)\|a \cdot (b \times c)\|$	$(1/3)\|a \times b\|$	$(1/2)\|a \cdot b\|$	○●○○
150. The volume of the parallelopiped with sides 2i, 3j and 4k is:	9	1	24	12	○○●○

Follow Studybeesofficial on Instagram, YouTube Channel & WhatsApp Channel — Link in Bio

Questions	A	B	C	D	A B C D
151. The volume of the parallelopiped with adjacent sides i + j, j + k and k + i is:	4	2	3	1	○●○○
152. The volume of the tetrahedron with vertices (0, 0, 0), (1, 0, 0), (0, 2, 0) and (0, 0, 3) is:	2	1	6	3	○●○○
153. Vectors lying in the same plane are called:	coplanar vectors	parallel vectors only	null vectors	unit vectors	●○○○
154. Three vectors a, b and c are coplanar if and only if:	a + b + c = 1	a · b = 0	a × b = 0	a · (b × c) = 0	○○○●
155. The vectors i + j + k, i + 2j + 3k and 2i + 3j + λk are coplanar if λ equals:	5	3	2	4	○○○●
156. Vectors are used by air-traffic controllers for:	counting votes	painting	tracking planes	baking	○○●○
157. Meteorologists use vectors to describe:	colour	taste	wind conditions	prices only	○○●○
158. A GPS unit gives a distance (magnitude) and a:	price	weight	colour	direction	○○○●
159. In programming, a vector is a type of:	two-dimensional matrix only	polynomial	fraction	one-dimensional array	○○○●
160. Vector images maintain their quality irrespective of:	format only	size	name	colour	○●○○
161. A projectile thrown with speed u at angle θ has a horizontal component of velocity equal to:	u − gt	u cos θ	u sin θ	u tan θ	○●○○
162. A projectile thrown with speed u at angle θ has a vertical component of velocity at time t equal to:	u sin θ − gt	u cos θ − gt	u sin θ + gt	gt	●○○○
163. The components of Earth's magnetic field are perpendicular to and parallel to the:	Moon	Sun	equator only	Earth's surface	○○○●
164. The magnitude of the zero vector is:	undefined	1	0	infinite	○○●○
165. For any vector a, the magnitude |−a| equals:	1/|a|	0	|a|	−|a|	○○●○
166. The position vector of the point P(3, −2, 5) is:	5**i** − 2**j** + 3**k**	3**i** + 2**j** + 5**k**	3**i** − 2**j** + 5**k**	−3**i** + 2**j** − 5**k**	○○●○
167. The y-component of the vector 4i − 3j + 7k is:	−3	4	7	3	●○○○

Follow Studybeesofficial on Instagram, YouTube Channel & WhatsApp Channel — Link in Bio

Questions	A	B	C	D	A B C D
168. The negative of the vector 2i − 3j + k is:	$-2\mathbf{i} + 3\mathbf{j} - \mathbf{k}$	$2\mathbf{i} - 3\mathbf{j} - \mathbf{k}$	$2\mathbf{i} + 3\mathbf{j} - \mathbf{k}$	$-2\mathbf{i} - 3\mathbf{j} + \mathbf{k}$	●○○○
169. The sum of 2i + j and i + 2j + k is:	$3\mathbf{i} + 2\mathbf{j} + \mathbf{k}$	$2\mathbf{i} + 2\mathbf{j} + \mathbf{k}$	$3\mathbf{i} + 3\mathbf{j} + \mathbf{k}$	$\mathbf{i} + 3\mathbf{j} + \mathbf{k}$	○○●○
170. The vector 3(i + 2j − k) equals:	$3\mathbf{i} + 6\mathbf{j} - \mathbf{k}$	$3\mathbf{i} + 6\mathbf{j} - 3\mathbf{k}$	$\mathbf{i} + 6\mathbf{j} - 3\mathbf{k}$	$3\mathbf{i} + 2\mathbf{j} - \mathbf{k}$	○●○○
171. The unit vector of 3i + 4j is:	$(3\mathbf{i} + 4\mathbf{j})/7$	$(3\mathbf{i} + 4\mathbf{j})/25$	$3\mathbf{i} + 4\mathbf{j}$	$(3\mathbf{i} + 4\mathbf{j})/5$	○○○●
172. For any vector a, the dot product a · a equals:	$\lvert a\rvert^2$	$\lvert a\rvert$	1	0	●○○○
173. For any vectors a and b, (a + b) · (a − b) equals:	$\lvert a\rvert^2 - \lvert b\rvert^2$	$\lvert a\rvert^2 + \lvert b\rvert^2$	0	$2a \cdot b$	●○○○
174. For any vectors a and b, $\lvert a + b\rvert^2$ equals:	$(\lvert a\rvert + \lvert b\rvert)^2$	$\lvert a\rvert^2 + 2\,a \cdot b + \lvert b\rvert^2$	$\lvert a\rvert^2 + \lvert b\rvert^2$	$\lvert a\rvert^2 - 2\,a \cdot b + \lvert b\rvert^2$	○●○○
175. The angle between i + j and −i − j is:	0°	180°	45°	90°	○●○○
176. If |a + b| = |a − b| for two non-zero vectors, then the angle between them is:	0°	90°	180°	45°	○●○○
177. The statement "the angle in a semicircle is a right angle" is proved by showing that a certain dot product is:	negative	infinite	one	zero	○○○●
178. The statement "the altitudes of a triangle are concurrent" is proved using the:	scalar triple product only	dot product	cross product only	polygon law	○●○○
179. The identity cos(α − β) = cos α cos β + sin α sin β is proved using the:	triple product	distance formula only	cross product of two unit vectors	dot product of two unit vectors	○○○●
180. The identity sin(α − β) = sin α cos β − cos α sin β is proved using the:	cross product of two unit vectors	dot product of two unit vectors	triple product	midpoint formula	●○○○
181. In a triangle ABC, the projection formula a = b cos C + c cos B is proved using the:	scalar triple product	cross product	dot product	polygon law	○○●○
182. The cosine law $c^2 = a^2 + b^2 - 2ab\cos C$ can be proved using vectors and the:	cross product only	distance of a point from a plane	scalar triple product only	dot product	○○○●
183. The vector moment of a force about a point is a:	scalar	vector	unit	number	○●○○
184. The magnitude of the moment of a force is measured in:	N·m	m	kg	N	●○○○

Follow Studybeesofficial on Instagram, YouTube Channel & WhatsApp Channel — Link in Bio

Questions	A	B	C	D	A B C D
185. The scalar triple products i·(j × k), j·(k × i) and k·(i × j) are each equal to:	−1	**i**	0	1	○○○●
186. The scalar triple product a · (b × c) is equal to:	a × (b × c)	b · (c × a)	a · (c × b)	b · (a × c)	○●○○
187. If vector b is parallel to vector c, then a · (b × c) equals:	|a|	1	0	|b||c|	○○●○
188. The rows of the determinant representing a · (b × c) are formed by the:	angles of a, b and c	magnitudes of a, b and c	components of a, b and c	unit vectors of a, b and c	○○●○
189. The cross product of a vector with itself, a × a, is:	the unit vector	equal to $\|a\|^2$	a scalar	the zero vector	○○○●
190. If a × b = 0 for non-zero vectors, then:	a = b	a and b are perpendicular	a and b are parallel	a + b = 0 only	○○●○
191. The area of triangle ABC with position vectors a, b, c of the vertices is:	|AB · AC|	(1/2)|AB · AC|	|AB × AC|	(1/2)|AB × AC|	○○○●
192. The dot product of any vector with the zero vector is:	1	0	undefined	the vector itself	○●○○
193. The origin in R^3 has the coordinates:	(1, 0, 0)	(1, 1, 1)	(0, 0, 0)	(0, 0, 1)	○○●○
194. A point lying on the x-axis has coordinates of the form:	(0, y, 0)	(x, y, 0)	(0, 0, z)	(x, 0, 0)	○○○●
195. Every point in the xy-plane has its z-coordinate equal to:	0	y	1	x	●○○○
196. The scalar multiplication of vectors satisfies λ(a + b) =	λa + b	λab	a + λb	λa + λb	○○○●
197. If A and B have position vectors a and b, then the vector AB is:	a − b	b − a	a + b	a · b	○●○○
198. For A(1, 2, 3) and B(4, 6, 3), the vector AB is:	−3**i** − 4**j**	3**i** + 4**j** + 6**k**	3**i** + 4**j**	5**i** + 8**j** + 6**k**	○○●○
199. The dot product i · k equals:	−1	0	**j**	1	○●○○
200. The magnitude of i + j is:	0	√2	1	2	○●○○

Follow Studybeesofficial on Instagram, YouTube Channel & WhatsApp Channel — Link in Bio