Answer Ex–I SINGLE CORRECT (OBJECTIVE QUESTIONS)

1. C	**2**. D	**3**. C	**4**. B	**5**. A	**6**. D	**7**. B	**8**. C
9. A	**10**. D	**11**. B	**12**. B	**13**. A	**14**. D	**15**. D	**16**. A
17. C	**18**. A	**19**. C	**20**. B	**21**. C	**22**. A	**23**. B	**24**. C
25. A	**26**. C	**27**. A	**28**. C	**29**. C	**30**. C	**31**. D	**32**. D
33. D	**34**. C	**35**. B	**36**. A	**37.** C	**38.** C	**39**. D	**40.** B
41. B	**42**. D	**43**. C	**44**. D	**45**. C	**46**. B	**47**. C	**48**. B
49. C	**50**. C	**51**. A	**52**. A	**53**. B	**54**. B	**55**. C	**56**. A
57. A	**58**. A	**59**. B	**60**. D	**61**. B	**62**. A		

Answer Ex–II MULTIPLE CORRECT (OBJECTIVE QUESTIONS)

1. B,C,D	**2**. A,C,D	**3**. A,C	**4**. A,D	**5**. A,B	**6**. A,B,C,D	**7**. A,B,C	**8**. B,D
9. A,B	**10**. A,D	**11**. A,C,D	**12**. A,C,D	**13**. A,D	**14**. A,D	**15**. B,D	
16. A,B,C,D	**17**. A,B,C						

Answer Ex–III SUBJECTIVE QUESTIONS

2. OP : PD = 3 : 2

4. $\vec{r} = (\hat{i} + 2\hat{j} + 3\hat{k}) + \lambda(\hat{j} - \hat{k})$

5. (i) $-\hat{i} + \hat{j} + \hat{k}$ **(ii)** $\frac{6}{\sqrt{19}}(6\hat{i} - \hat{j} + \hat{k})$ **(iii)** $\frac{2\pi}{3}$

6. (i) 60^o

7. (i) $3(-\hat{i} - \hat{j} + \hat{k})$ **(ii)** 16

8. $\frac{6}{\sqrt{5}}$ unit

9. (i) $\sin\alpha\cos\alpha$ **(ii)** $\frac{\sqrt{3}}{2}$

10. (i) p = 0; q = 10; r = –3 **(ii)** –100

11. $\vec{x} = \vec{q} - \frac{(\vec{p}.\vec{q})\vec{p}}{2|\vec{p}|^2}$

12. (i) No **(ii)** Yes

13. 3

14. $\vec{r}.(4\hat{i} - 2\hat{j} - 5\hat{k}) = 45$

15. $\frac{5}{3}$ unit

18. (i) $\vec{R} = -\hat{i} - 8\hat{j} + 2\hat{k}$ **(ii)** $9(-\hat{j} + \hat{k})$

20. $\vec{r} = \left(\frac{6}{13}\hat{i} + \frac{5}{13}\hat{j}\right) + \lambda(-2\hat{i} + 7\hat{j} + 13\hat{k})$

21. (b) $\frac{k\sqrt{6}}{4}, \frac{k}{2\sqrt{6}}$

22. $3\hat{i} + 3\hat{k}$

25. $\tan^{-1}\frac{5}{2}$

26. $(2\hat{i} + 2\hat{j} - \hat{k}).\vec{r} = 3$

27. 9

Answer Ex–IV | ADVANCED SUBJECTIVE QUESTIONS

1. x = 2, x = – 1 **2. (b)** externally in the ratio 1 : 3

4. (i) parallel **(ii)** the lines intersect at the point p.v. $-2\hat{i} + 2\hat{j}$ **(iii)** lines are skew

5. 2 : 1 **6.** 9 **9.** 34 **12.** $-\hat{i}+2\hat{j}+5\hat{k}$ **13.** $\frac{5a^2}{12\sqrt{3}}$ sq. units **14.** $2\sqrt{17}$

15. $\pm \frac{1}{3\sqrt{3}}(\hat{i} + 5\hat{j} - \hat{k})$ **17. (i)** $\frac{6}{7}\sqrt{14}$ **(ii)** 6 **(iii)** $\frac{3}{5}\sqrt{10}$ **(iv)** $\sqrt{6}$ **18.** $\frac{11}{\sqrt{170}}$

19. $\frac{4}{\sqrt{2}}\hat{i} - \frac{1}{\sqrt{2}}\hat{j} - \frac{1}{\sqrt{2}}\hat{k}$ **20.** p.v. of $\vec{R} = r = 3i + 3k$ **23.** $\alpha = n\pi + \frac{(-1)^n\pi}{2}$, $n \in I$ & $\beta = 1$

24. 110 **26.** $\alpha = 2/3$; if $\alpha = 0$ then vector product is $-60(2\hat{i} + \hat{k})$ **27.** $9(-\hat{j}+\hat{k})$

29. $F = 2\vec{a}_1 + 5\vec{a}_2 + 3\vec{a}_3$ **31. (b)** $\left\{\vec{p} = \frac{[\vec{a}\vec{b}\vec{c}]}{(\vec{a}.\vec{c})(\vec{a}.\vec{b})}(\vec{a} + \vec{c}\times\vec{b}) + \frac{(\vec{b}.\vec{b})\vec{b}}{(\vec{a}.\vec{b})} - \frac{(\vec{b}.\vec{b})\vec{c}}{(\vec{a}.\vec{b})}\right\}$

Answer Ex–V | JEE PROBLEMS

1. (a) (i) B **(ii)** A **(iii)** A **2. (i)** $\pm\hat{i}$; **(ii)** $\frac{\vec{b}}{\vec{b}^2} + \frac{\vec{a}\times\vec{b}}{(\vec{a}\times\vec{b})^2}$; **(iii)** $\frac{2\pi}{3}$

3. (a) $\frac{1}{2}(5\hat{i}-\hat{j}-7\hat{k})$, $\frac{1}{2}(-\hat{i}+7\hat{j}-5\hat{k})$; $\frac{1}{2}\sqrt{1274}$ sq. units **(b)** $\lambda = 0, \lambda = -2 \pm \sqrt{29}$

4. (a) $\vec{r} = -13\hat{i} + 11\hat{j} + 7\hat{k}$; **(b)** $\frac{5}{7}\hat{i} + \frac{17}{7}\hat{j}$ **5. (a)** B **(b)** C **7. (a)** B ; **(b)** C

8. D **10. (a)** B, **(b)** A **12.** $\hat{w} = \hat{v} - 2(\hat{a}.\hat{v})\hat{a}$ **13. (a)** A ; **(b)** B, D

14. (a) C ; **(b)** B ; **(c)** C **15. (a)** A ; **(b)** A

16. (a) C ; **(b)** (A)–Q,S ; (B)–P,R,S,T ; (C)–T ; (D)–R **17.** A **18.** 5

19. B **20.** C **21.** A,D **22.** 0009 **23.** C **24.** 3