ANSWER KEY:

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| --- | --- | --- | --- | --- |
| 1. b | 11. a | 21. a | 31. b | 41. a |
| 2. d | 12. d | 22. a | 32. d | 42. d |
| 3. c | 13. a | 23. d | 33. c | 43. a |
| 4. a | 14. b | 24. d | 34. a | 44. b |
| 5. b | 15. d | 25. c | 35. c | 45. b |
| 6. a | 16. a | 26. a | 36. c | 46. c |
| 7. a | 17. a | 27. b | 37. b | 47. c |
| 8. a | 18. d | 28. b | 38. b | 48. b |
| 9. b | 19. a | 29. b | 39. a | 49. a |
| 10 .c | 20. a | 30. c | 40. c | 50. b |

EXPLANATION of 46-50

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| (i) (c) : If P is the rent price per apartment and N is the number of rented apartment, the profit is given by P(N) = NP – 500 N = N(P – 500) [Q ` 500/month is the maintenance charges for each occupied unit] |
| (ii) (c) : Now, if x be the number of non-rented apartments, then N = 50 – x and P = 8000 + 250 x Thus, P = N(P – 500) = (50 – x) (8000 + 250 x – 500) = (50 – x) (7500 + 250 x) = 250(50 – x) (30 + x |
| (iii) (b) : Clearly, if P = 8500, then 8500 = 8000 + 250 x ⇒ x = 2 ⇒ N = 48 |
| (iv) (a) : Also, if P = 8250, then 8250 = 8000 + 250 x ⇒ x = 1 and so profit P(1) = 250(50 – 1) (30 + 1) = ` 379750 |
| (v) (b) : We have, P(x) = 250(50 – x) (30 + x) Now, P′(x) = 250[50 – x – (30 + x)] = 250[20 – 2x] For maxima/minima, put P′(x) = 0 ⇒ 20 – 2x = 0 ⇒ x = 10 Thus, price per apartment is, P = 8000 + 2500 = 10500 Hence, the rent that maximizes the profit is ` 10500. |