# Sankalp IIT

A Must Do Test Series for Sure Shot Success in JEE Main And Advanced

# Solutions All India Test Series

# Test-9

| PHYSICS | | CHEMISTRY | | MATHEMATICS | |
|---|---|---|---|---|---|
| 1. | (4) | 31. | (4) | 61. | (1) |
| 2. | (2) | 32. | (2) | 62. | (2) |
| 3. | (2) | 33. | (2) | 63. | (3) |
| 4. | (3) | 34. | (3) | 64. | (4) |
| 5. | (2) | 35. | (3) | 65. | (1) |
| 6. | (4) | 36. | (3) | 66. | (3) |
| 7. | (2) | 37. | (4) | 67. | (3) |
| 8. | (3) | 38. | (3) | 68. | (3) |
| 9. | (4) | 39. | (2) | 69. | (1) |
| 10. | (2) | 40. | (1) | 70. | (2) |
| 11. | (1) | 41. | (1) | 71. | (4) |
| 12. | (3) | 42. | (4) | 72. | (3) |
| 13. | (4) | 43. | (1) | 73. | (2) |
| 14. | (1) | 44. | (4) | 74. | (2) |
| 15. | (2) | 45. | (2) | 75. | (3) |
| 16. | (4) | 46. | (1) | 76. | (4) |
| 17. | (4) | 47. | (4) | 77. | (2) |
| 18. | (1) | 48. | (1) | 78. | (1) |
| 19. | (3) | 49. | (2) | 79. | (2) |
| 20. | (3) | 50. | (1) | 80. | (2) |
| 21. | (1) | 51. | (3) | 81. | (2) |
| 22. | (1) | 52. | (2) | 82. | (1) |
| 23. | (4) | 53. | (4) | 83. | (2) |
| 24. | (3) | 54. | (2) | 84. | (3) |
| 25. | (1) | 55. | (3) | 85. | (1) |
| 26. | (2) | 56. | (4) | 86. | (4) |
| 27. | (1) | 57. | (4) | 87. | (1) |
| 28. | (1) | 58. | (1) | 88. | (1) |
| 29. | (2) | 59. | (3) | 89. | (3) |
| 30. | (4) | 60. | (4) | 90. | (2) |



Prepared By:
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1. Answer (4)
2. Answer (2)
3. Answer (2)
4. Answer (3)
5. Answer (2)
6. Answer (4)
7. Answer (2)
8. Answer (3)
9. Answer (4)
10. Answer (2)
11. Answer (1)
12. Answer (3)
13. Answer (4)
14. Answer (1)
15. Answer (2)
16. Answer (4)
17. Answer (4)
18. Answer (1)
19. Answer (3)
20. Answer (3)
21. Answer (1)
22. Answer (1)
23. Answer (4)
24. Answer (3)
25. Answer (1)
26. Answer (2)

At, $t = 0$, $i_1 = \frac{20}{6}$ A

At, $t = \infty$, $i_2 = \frac{20}{5}$ A = 4 s

$$\frac{i_1}{i_2} = \frac{20}{6} \times \frac{5}{20} = \frac{5}{6}$$

27. Answer (1)

$i = \eta e A v_d$

$$v_d = \frac{i}{\eta eA}$$

$F = ev_dB$

$$F = e \frac{i}{\eta eA} \cdot B$$

$$= \frac{iB}{\eta A}$$

$$= \frac{iB}{\eta hw}$$

28. Answer (1)

$\rho = 2\rho_2 + \rho_1$

$= 2\rho + 2\rho$

$= 4\rho$

29. Answer (2)

$$C_0 = \frac{C(V_0 - V')}{V'} = \frac{C\left(V - V/3\right)}{V/3} = 2C$$

30. Answer (4)
31. Answer (4)

$$\frac{dV}{dP} = -\frac{V}{P} = -\frac{K}{P^2} = -\frac{V^2}{K}$$

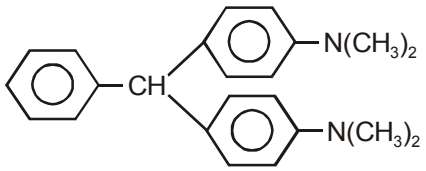
32. Answer (2)

Negative charge colloid.

33. Answer (2)

Michael type addition.

34. Answer (3)




35. Answer (3)

Fact

36. Answer (3)

Fact

37. Answer (4)

$\overset{+}{CO}$ bond order = 3.5

38. Answer (3)

Fact

39. Answer (2)

(1) is non-plannar and (3) is symmetrical

40. Answer (1)

Unsymmetric bidentate ligand

41. Answer (1)

$H_3BO_3$ is formed.

42. Answer (4)

V = 5.6 L

43. Answer (1)

Fact

44. Answer (4)

45. Answer (2)

$AlCl_3$ follows cationic mech.

46. Answer (1)

$\Delta n_g = 0$

47. Answer (4)

Diamond is less thermally stable

48. Answer (1)

Hg is liquid at room temperature.

49. Answer (2)

Fact

50. Answer (1)

51. Answer (3)

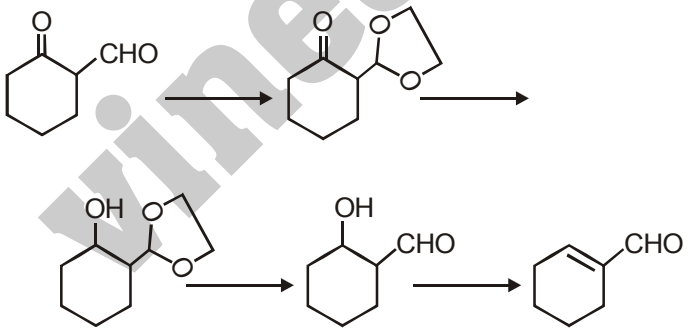
$R_2NH \xrightarrow{CHCl_3/KOH} R_2N-CHO$ (No carbyl amine test)

52. Answer (2)

53. Answer (4)

54. Answer (2)

**Solution for Q. 52 to 54**




55. Answer (3)

Stork reaction.

56. Answer (4)

$$\frac{1}{P} = \frac{y_A}{P_A^\circ} + \frac{y_B}{P_B^\circ},\ X_A P_A^\circ = y_A P$$

57. Answer (4)

Atoms from 4 corner, one body centre, two edge centre, two face & u to v are removed.

58. Answer (1)

59. Answer (3)

60. Answer (4)

61. Answer (1)

62. Answer (2)

63. Answer (3)

64. Answer (4)

65. Answer (1)

66. Answer (3)

67. Answer (3)

68. Answer (3)

69. Answer (1)

We have,

$i^i = e^{-\frac{\pi}{2}}$, hence imaginary part = 0

70. Answer (2)

Maximum number of rational terms

$$= \left[\frac{95}{15}\right] + 1 = 7$$

71. Answer (4)

This is standard result if $S_p = S_q$ then $S_{p+q} = 0$

72. Answer (3)

$$P(B \cap C) = P(B) - P(A \cap B \cap \overline{C}) - P(\overline{A} \cap B \cap \overline{C})$$

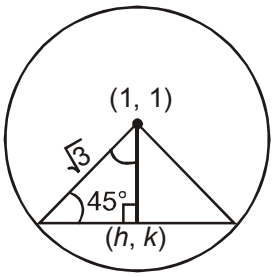
$$= \frac{1}{2} - \frac{1}{8} - \frac{1}{8} = \frac{1}{2} - \frac{1}{4} = \frac{1}{4}$$

73. Answer (2)

$$\text{Centroid} = \left(\frac{2+6+1}{3}, \frac{4+8+3}{3}\right)$$

= (3, 5)

74. Answer (2)




by the figure

$(h-1)^2 + (k-1)^2 = \frac{3}{2}$

locus of $(h, k)$ is $x^2 - 2x + 1 + y^2 - 2y + 1 = \frac{3}{2}$

$\Rightarrow x^2 + y^2 - 2x - 2y + \frac{1}{2} = 0$

$\Rightarrow 2x^2 + 2y^2 - 4x - 4y + 1 = 0$

75. Answer (3)

$a^2 = 9, b^2 = 4$

Area $= 4ab = 4 \times 3 \times 2 = 24$ sq. units

76. Answer (4)

The point (–502, 2011) lies on the directrix of the given parabola.

Hence angle between the tangents $= \frac{\pi}{2}$

77. Answer (2)

78. Answer (1)

79. Answer (2)

80. Answer (2)

81. Answer (2)

82. Answer (1)

$$\int \frac{dx}{(\sin x - \cos x)^{1/3}(\sin x - 2\cos x)^{5/3}}$$

$$= \int \frac{\sec^2 x dx}{(\tan x - 1)^{1/3}(\tan x - 2)^{5/3}}$$

Let $\tan x = t \Rightarrow \sec^2 x\, dx = dt$

$$I = \int \frac{dt}{(t-1)^{1/3}(t-2)^{5/3}} = \int \frac{dt}{\left(\frac{t-1}{t-2}\right)^{1/3}(t-2)^2}$$

Let $\frac{t-1}{t-2} = u \Rightarrow \frac{t-2+1}{t-2} = 1 + \frac{1}{t-2} = u$

$$\Rightarrow -\frac{1}{(t-2)^2} dt = du$$

$$\therefore I = \int \frac{-du}{u^{\frac{1}{3}}} = \frac{-u^{\frac{2}{3}}}{\frac{2}{3}} = -\frac{3}{2}u^{\frac{2}{3}}$$

$$= -\frac{3}{2}\left(\frac{t-1}{t-2}\right)^{\frac{2}{3}} = -\frac{3}{2}\left(\frac{\tan x - 1}{\tan x - 2}\right)^{\frac{2}{3}}$$

$\Rightarrow f(x) = \frac{\tan x - 1}{\tan x - 2} \Rightarrow f(0) = \frac{1}{2}$

$d = \frac{1}{\sqrt{3}} \Rightarrow d\sqrt{3} - 2f(0) = 0$

83. Answer (2)

84. Answer (3)

85. Answer (1)

86. Answer (4)

87. Answer (1)

88. Answer (1)

89. Answer (3)

90. Answer (2)

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