

FIITJEE MOCK TEST

For NTSE STAGE-1

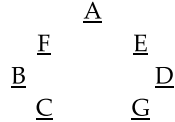
Mental Ability Test (MAT)

ANSWERS

1. A	2. C	3. D	4. C
5. B	6. B	7. C	8. B
9. D	10. C	11. D	12. D
13. D	14. D	15. B	16. C
17. B	18. C	19. A	20. C
21. B	22. B	23. B	24. D
25. A	26. D	27. A	28. D
29. C	30. D	31. B	32. D
33. C	34. C	35. A	36. C
37. B	38. B	39. A	40. C
41. B	42. A	43. C	44. A
45. B	46. B	47. C	48. D
49. B	50. C	51. D	52. B
53. B	54. C	55. D	56. C
57. A	58. A	59. D	60. B
61. C	62. B	63. B	64. B
65. A	66. B	67. C	68. A
69. B	70. C	71. D	72. A
73. A	74. D	75. C	76. D
77. C	78. C	79. B	80. C
81. D	82. A	83. A	84. D
85. B	86. C	87. C	88. D
89. A	90. A	91. B	92. D
93. B	94. A	95. B	96. C
97. A	98. B	99. C	100.A

HINTS & SOLUTIONS

- 1. A
- 2. C
- 3. D
- 4. C
- 5. B
- Sol. 1 – 5



- 6. B
- Sol. $\frac{102}{2} + 1 = 52$

- 7. C
- Sol. $\frac{4^2}{2} = 8$

- 8. B
- Sol. $(6+1)^2 = 49$

- 9. D
- 10. C

- 11. D
- Sol. In alphabet series M's position is 13th.
- 12. D

- Sol. OE3 means $\frac{15}{5} = 3$

- 13. D
- Sol. $1^2 + 2^2 = 5$

- 14. D
- Sol. Unit of pressure is pascal.

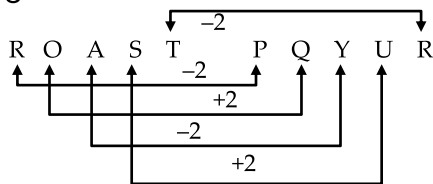
- 15. B
- Sol. Day on 31st Dec 1900 is Monday
Total odd days from 31st Dec 1900 to 15th Aug 1947
⇒ 4 odd days

- 16. C
- Sol. $12 - 4 : 46 = 8 : 14$

- 17. B
- Sol. Watch gains 28 min in 168 hrs
∴ 20 min gains in $-\frac{168}{28} \times 20 = 120$ hrs (Friday noon)

- 18. C
- Sol. $M : A : B = \frac{2}{3} : 1 : \frac{4}{2}$
 $= 2 : 3 : 6$
 $3M = 9B$

- 19. A
- Sol.
- 20. C



- Sol.
- 21. B

Sol. GOT $\Rightarrow 7(15)(20)$
 $\Rightarrow \begin{matrix} \downarrow & \downarrow \\ 7 & 6 & 2 \end{matrix}$

22. B

23. B

24. D

25. A

26. D

Sol. 22 – 26

By analysis

27. A

$$2^3 - 3, (3^3 - 3), 4^3 - 3, 5^3 - 3, 6^3 - 3, 7^3 - 3$$

↓
24

Sol.

28. D

Sol. +1, -2, +3, -4, +5

29. C

Sol. +5, +7, +9, +11, +13, +15

30. D

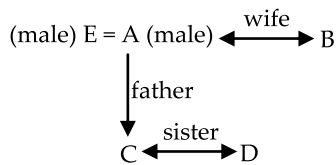
Sol. Average speed = $\frac{2S_1S_2}{S_1 + S_2} = \frac{2 \times 60 \times 50}{110} = \frac{600}{11}$

31. B

Sol. Average Speed = $\frac{2 \times 21 \times 24}{45} = \frac{14 \times 24}{15}$

So, $D = S \times T = 10 \times \frac{14 \times 24}{15} = 224 \text{ km}$

32. D

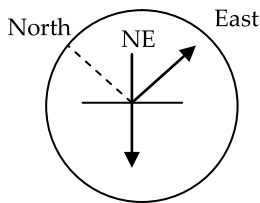


Sol.

33. C

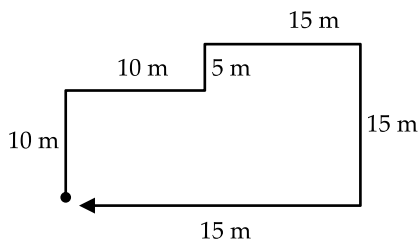
Sol. Directions rotated 45° in acw.

34. C



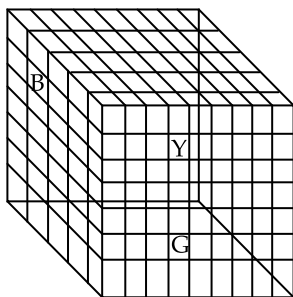
Sol.

35. A



Sol.

36. C



Sol.
37.

B

Sol. $(5-2)^3 + 18 + 3 = 48$

38. B

Sol. $9+9+3=21$

39. A

Sol. 16 (By observation)

40. C

Sol. 25 (By observation)

41. B

Sol. $4 + 4 = 8$

42. A

Sol. Clearly 5 is opposite to 4.

43. C

Sol. × is opposite to M

◆ is opposite to #

≠ is opposite to *

44. A

Sol. 1 is opposite to 7

3 is opposite to 9

4 is opposite to 8

45. B

Sol. $120 - \frac{1}{2} \times 20 = 110$

46. B

47. C

48. D

49. B

Sol. Let C.P. of each article be Re. 1 C.P. of x articles = Rs. x

S.P. of x articles = Rs. 20

Profit = Rs. $(20 - x)$

$\therefore \left(\frac{20-x}{x} \times 100 = 25 \right)$

$\Rightarrow 2000 - 100x = 25x$

$\Rightarrow 125x = 2000$

$\Rightarrow x = 16$

50. C

Sol. $85:18700 = 15:x$

$x = \left(\frac{18700 \times 115}{85} \right) = 25300$

Hence, S.P. = Rs.25,300

51. D

Sol. Second in the tool used by the first.

52. B

Sol. Second is the young one of the first

53. B

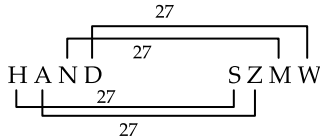
Sol. First is the product made from second

54. C

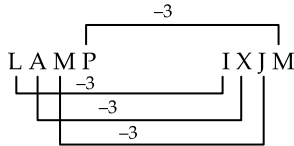
Sol. Second is the noise produced by the first

55. D
Sol. Second is a part of first
56. C
Sol. +5, +10, +15, +25, +25
57. A
Sol. $2^3 - 1, 3^3 - 1, 4^3 - 1, 5^3 - 1, 6^3 - 1, 7^3 - 1$
58. A
Sol. $5 + 2 = 7$
 $7 + 2 = 9$
 $9 + 7 = 16$ and so on
59. D
Sol. $MP = x$
 $CP = 3\frac{x}{4}$
 $SP = \frac{3}{2}x$
Profit percentage = $\frac{\frac{3}{2}x - \frac{3}{4}x}{\frac{3}{4}x} \times 100 = 100\%$
60. B
Sol. $x + y = 6$
 $x - y = 4$
So, $x = 5$ (man's rate)
And $y = 1$ (stream's rate)
61. C
Sol. TABLE $\Rightarrow 20 + 1 + 2 + 12 + 5 = 40$
62. B
Sol. $15 \times 3 - 10 \div 5 + 5 = 48$
63. B
Sol. $CP + x\% \text{ of } CP = SP$
64. B
Sol. $10 + 10 + 4 = 24$
65. A
Sol. Wife's husband \Rightarrow herself
Brother of daughter \Rightarrow son
66. B
Sol. $x = 4y$
 $x + 10 = 2(y + 10)$
67. C
Sol. $5 + 5 + 5 + 5 + 1 = 21$
68. A
Sol. ${}^5C_2 \times {}^5C_2 = 10 \times 10 = 100$
69. B
70. C
Sol. (19 to 20)
Gita > Kusum > Arthi > Archana > Suman
71. D
72. A
73. A
74. D
75. C
76. D
Sol. 1 3 4 - good and Tasty
4 7 8 - see good and Picture
7 2 9 - Pictures are paint
77. C

Sol. 'Ear' is called nose
78. C



Sol. 79. B
Sol. Education is given to students
80. C



Sol. 81. D
Sol. $13 + \frac{13+1}{2} = 20, 17 + \frac{17+1}{2} = 26$

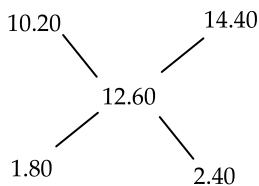
82. A
Sol. By observations
83. A
Sol. By observations

84. D
Sol. $x^2 - 1$ then $x^2 + 1$
85. B
Sol. $11 + ? = 27$
 $? = 16 \Rightarrow P$

86. C
Sol. $16 \times 9 = 135$
87. C
Sol. $10 \times 2 + 13 = 33$
88. D
Sol. $2 \times 4 \times 2 \times 3 = 48$

89. A
90. A
91. B
92. D
Sol. (39 - 42)
U, Q, P, T, S, R

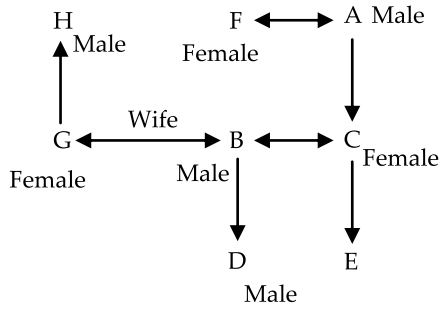
93. B
Sol. $180 : 240 = 3 : 4$



94. A
Sol. 90% — 600
120% — $\frac{600}{90} \times 120 = \text{Rs } 800$

95. B

Sol. 96. C
97. A
Sol. (96 - 97)



- 98. B
- 99. C
- 100. A

Sol. It is the inverted image obtained by turning the object upside down.

FIITJEE MOCK TEST-1

For NTSE STAGE-1

Scholarship Aptitude Test (SAT)

ANSWERS

- | | | | |
|-------|-------|-------|--------|
| 1. C | 2. D | 3. C | 4. B |
| 5. D | 6. B | 7. D | 8. C |
| 9. C | 10. C | 11. C | 12. B |
| 13. A | 14. A | 15. C | 16. D |
| 17. B | 18. C | 19. D | 20. D |
| 21. C | 22. D | 23. B | 24. D |
| 25. B | 26. B | 27. A | 28. A |
| 29. D | 30. B | 31. A | 32. A |
| 33. D | 34. C | 35. B | 36. A |
| 37. D | 38. B | 39. A | 40. C |
| 41. C | 42. C | 43. D | 44. A |
| 45. C | 46. B | 47. D | 48. C |
| 49. C | 50. D | 51. A | 52. A |
| 53. B | 54. B | 55. D | 56. A |
| 57. B | 58. A | 59. B | 60. D |
| 61. D | 62. C | 63. C | 64. B |
| 65. B | 66. A | 67. C | 68. B |
| 69. A | 70. B | 71. C | 72. C |
| 73. C | 74. C | 75. D | 76. C |
| 77. D | 78. B | 79. D | 80. C |
| 81. B | 82. B | 83. A | 84. C |
| 85. D | 86. C | 87. A | 88. B |
| 89. C | 90. C | 91. B | 92. D |
| 93. A | 94. C | 95. C | 96. B |
| 97. A | 98. D | 99. B | 100. D |

HINTS & SOLUTIONS

1. C

Sol. $P = \frac{1}{F} = \frac{1}{+1m} = +1D$

2. D

Sol. If the initial speed is doubled, the stopping distance becomes four times, i.e. 80 m.

3. C

Sol. $a \propto r$

4. B

Sol. $P = P_1 + P_2 = -10$

$$f = \frac{1}{p} \Rightarrow -0.1 \text{ m} \Rightarrow -10 \text{ cm}$$

5. D

Sol. For the satellite, the gravitational force provides the necessary centripetal force i.e.

$$\frac{GM_e m}{(R+X)^2} = \frac{Mv_0^2}{(R+X)} \text{ and } \frac{GM_e}{R^2} = g$$

$$\therefore v_e = \left(\frac{gR^2}{R+X} \right)^{1/2}$$

6. B

Let I_1 and I_2 are the currents from 12 V and 2 V battery respectively,

$$500I_1 + R(I_1 + I_2) = 12V$$

$$R(I_1 + I_2) = 2V$$

Given that $I_2 = 0$

$$500I_1 + RI_1 = 12 \quad \dots(i)$$

$$\text{and } RI_1 = 2 \quad \dots(ii)$$

On solving (i) and (ii), we get

$$R = 100 \Omega$$

7. D

Sol. $V = 220 \text{ Volt}, P = 100 \text{ Watt}$

$$\therefore R = \frac{220 \times 220}{100} = 484 \Omega$$

$$\therefore P = \frac{V^2}{R} = \frac{110 \times 110}{484} = 25 \text{ watt}$$

8. C

$$\text{Sol. } B = \frac{\mu_0 i}{2r} = \frac{4\pi^2 \times 10^{-7} \times 3}{2 \times 2\pi} = 3 \times 10^{-7} \text{ weber/m}^2$$

$$B = \frac{\mu_0 i}{2r} = \frac{4\pi^2 \times 10^{-7} \times 4}{2 \times 2\pi} = 4 \times 10^{-7} \text{ weber/m}^2$$

$$B_{\text{res}} = \sqrt{B_1^2 + B_2^2} = 5 \times 10^{-5} \text{ weber/m}^2$$

9. C

$$\text{Sol. } \frac{1}{2}mv^2 = \frac{1}{2}kx^2$$

$$\Rightarrow x = v\sqrt{\frac{m}{k}} = 8\sqrt{\frac{5}{2000}} = \frac{2}{5} \text{ m}$$

10. C

Sol. $R_A = R_B$
 $\rho_B = 2\rho_A$
 $2D_A = D_B$
 $\frac{\rho_A l_A}{A_A} = \frac{\rho_B l_B}{A_B}$
 $l_A = \frac{2 \times l_B}{4} \Rightarrow \frac{l_A}{l_B} = \frac{1}{2}$

11. C

Sol. $t_1 = \sqrt{\frac{2h}{g}} = 4s$

$$t_2 = \frac{D}{S}$$

$$t_1 + t_2 = 4.2s \Rightarrow t_2 = 0.2s$$

$$0.2 = 80/S \Rightarrow S = 80/0.2 = 400$$

12. B

Sol. Applying, $v^2 - u^2 = 2gh \Rightarrow v \propto h$

13. A

14. A

15. C

16. D

17. B

18. C

19. D

20. D

21. C

22. D

23. B

24. D

25. B

26. B

27. A

Sol. Golgi bodies of plants are called dictyosomes.

28. A

Sol. Light causes photolysis of water in photosynthesis.

29. D

Sol. Lymph acts as middle man.

30. B

Sol. Peristalsis helps to move food through alimentary canal.

31. A

Sol. The mast cells of connective tissue secrete histamine.

32. A

Sol. The largest part of the brain is cerebrum.

33. D

Sol. Cnidaria is characterized by tissue level of organization, gastro vascular cavity coelenterons and *nematocysts*.

34. C

Sol. Leydig cells are present in testis and secrete testosterone.

35. B

Sol. BCG vaccine is used to cure Tuberculosis.

36. A

Sol. Pyramids of energy are always upright.

37. D

Sol. Bronchitis caused due to air pollution.

38. B

Sol. Infrared rays causes greenhouse effect as they are absorbed by the green house gases in the atmosphere.

39. A

Sol. Mixed farming is when both crops and livestock are raised on same farm.

40. C

Sol. The inheritance of skin colour in humans is an example of polygenic inheritance.

27. A

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 39. A
 Sol. Mixed farming is when both crops and livestock are raised on same farm.
 40. C
 Sol. The inheritance of skin colour in humans is an example of polygenic inheritance.
 41. C
 Sol. Let three consecutive even numbers be A, A + 2, A + 4
 $\Rightarrow 3A = 2(A + 4) + 2$
 $A = 10$
 $\therefore A + 4 = 14$
 42. C
 Sol. Coordinates of P(12, 0)
 $\Rightarrow d = \sqrt{(12-8)^2 + (3-0)^2} = 5$
 43. D
 Sol. Putting the options in the second equation and check for LHS = RHS.
 $(x, y) = \left[\frac{1}{2}, \frac{1}{2} \right]$
 44. A
 Sol. ΔPQR is formed by joining mid-point, sides of ΔABC is half of each side, so in ΔPQR
 $\text{Area of } \Delta PQR = \frac{1}{4} \text{ Area of } \Delta ABC$
 $\text{Area of } \Delta PQR = \frac{1}{4} \times 32 = 8 \text{ square cm}$
 45. C
 Sol. $\cos^2 \theta + \cos^4 \theta = \cos^2 \theta + (\cos^2 \theta)^2$
 $= \cos^2 \theta + (1 - \sin^2 \theta)^2 = \cos^2 \theta + (\sin \theta)^2 \left[\because \sin \theta = 1 - \sin^2 \theta \right]$
 $= \cos^2 \theta + \sin^2 \theta = 1$
 46. B
 Sol. Required probability $= \frac{1}{6} + \frac{1}{12} + \frac{1}{8} = \frac{3}{8}$

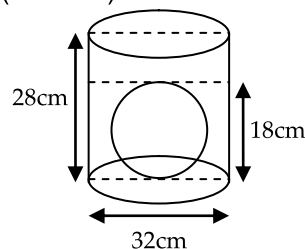
47. D
 Sol. Let the number be xy ($10x + y$)
 Then $x + y + 7 = 3x \Rightarrow 2x - y = 7$... (i)
 and $10x + y - 18 = 10y + x \Rightarrow 9x - 9y = 18$... (ii)
 Solving (i) and (ii) we get
 $x = 5, y = 3$
 \therefore Number = 53

48. C
 Sol. $\frac{1}{0.5} = 2 \Rightarrow 2x - 20 + 200x - 2000 = 0$
 $x = 10$

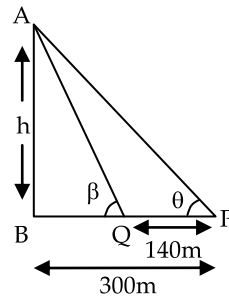
49. C
 Sol. $5a + b = 13$ and $13a + b = 29$
 Solving both we get
 $a = 2, b = 3$
 When $x = 0.5$
 $ax + b = 2 \times 0.5 + 3 = 4.$

50. D
 Sol. Angle at centre = $2 \times$ angle at circumference
 $\Rightarrow x = 2\theta$
 In a cyclic quadrilateral ABCD
 $\angle y + \theta = 180^\circ$
 $\Rightarrow y = 180 - \theta$
 Adding x to both sides
 $x + y = 180 - \theta + 2\theta$
 $[x + y = 180 + \theta]$

51. A
 Sol. Volume of sphere = volume of water raised.
 $\frac{4}{3}\pi \times 8^3 = \pi \times 16^2 \times x$
 $\Rightarrow x = 1.5 \text{ cm}$
 Level of water below the top = $28 - (18 + 1.5) = 8.5 \text{ cm}.$

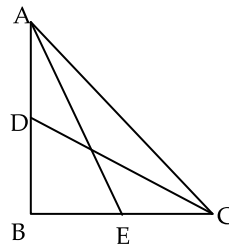


52. A
 Sol. Let AB is a tower of height h .
 In rt $\triangle ABP$,
 $\tan \theta = \frac{h}{300} = \frac{2}{5}$
 $h = 120 \text{ m}$
 In rt $\triangle ABQ$, $\tan \beta = \frac{h}{BQ}$
 $= \frac{120}{300 - 140} = \frac{120}{160} = \frac{3}{4}$



53. B
 Sol. AQ is tangent and AB is secant
 $AQ^2 = AP \times AB$
 $\Rightarrow \frac{b^2}{4} = a \times b \Rightarrow a = \frac{b}{4} \Rightarrow b = 4a$

54. B
 Sol. From $\triangle ABC$
 $AE^2 + CD^2 > AC^2$
 The only option (2) satisfies the condition.



55. D
 Sol. $\angle OBC = \angle OCB = 45^\circ$
 $\Rightarrow \angle BOC = 90^\circ$
 $\Rightarrow \angle BAC = \frac{90}{2} = 45^\circ$
 $\therefore \angle ACB = 180 - (45 + 60) = 75^\circ$
 $\Rightarrow \angle OCA = 75 - 45 = 30^\circ$

56. A
 Sol. Shyam's age after 10 years = $8 + 3 + 10 = 21$
 Ram's father's age after 10 years = $42 + 12 = 54$
 His present age = 42 years
 \Rightarrow Ram's age = 14 years.

57. B
 Sol. Check with option
 (i) $2x + 3x + 5x = 180^\circ \Rightarrow x = 18^\circ$
 \angle s are $36^\circ, 54^\circ, 90^\circ$
 (ii) $x + 3x + 6x = 180^\circ$
 $x = 18$
 Angles $18^\circ, 54^\circ, 108^\circ$, cannot be a right triangle.

58. A
 Sol. Given that
 $t_{11} + t_{12} + t_{13} = 144$
 $\Rightarrow 3a + (36 - 3)d = 144 \quad \dots (i)$
 $t_{21} + t_{22} + t_{23} = 264$
 $\Rightarrow 3a + (66 - 3)d = 264 \quad \dots (ii)$
 Subtracting (i) from (ii)

$$d = 4 \text{ and } a = 4$$

$$\therefore t_8 = a + 7d = 4 + 7 \times 4 = 32$$

59. B

Sol. Let the height raised = h m

$$22 \times 14 \times h = \frac{22}{7} \times \left[\frac{7}{2} \right]^2 \times 20$$

$$h = 2.5 \text{ m}$$

60. D

Sol. $\frac{-3x+3}{x+1} = \frac{3}{5}$

$$\lambda = \frac{2}{3}$$

$$\frac{x}{(3, 5)} \quad \bullet \quad \frac{1}{(-3, -2)}$$

$C \left[\frac{3}{5}, \frac{11}{5} \right]$

61. D

Sol. According to India-waste lands (2000) table 10% of total waste land belongs to wind eroded area.

62. C

Sol. Due to colonial forest polices Himalayan oak tree had been planted leaving natural Chir Pine tree in Himalayan region.

63. C

Sol. Multi purpose river projects often lead to large scale displacement of populations.

64. B

Sol. In 11th five year plan projected contribution of agriculture was about 4.1%.

65. B

Sol. HVJ pipe line have 6 destinations in Uttar Pradesh including Auraiya, Jagdishpur, Babrala and Shahjahanpur.

66. A

Sol. According to the given table in 2009 the total finished steel production of India was 56.6 million tones / annum.

67. C

Sol. Bhilai plant – Soviet Union, Durgapur – UK, Rourkela - Germany

68. B

Sol. Kandla port is not situated at the head of Gulf of Khambhat.

69. A

Sol. Haldia has been incorporated as a company under Indian Companies Act, 1956.

70. B

Sol. India has a major population in the age group of 15-59 years.

71. C

Sol. Biodiversity is normally greater in lower latitudes as well as lower altitudes.

72. C

Sol. Arunachal Pradesh, Assam, Sikkim and West Bengal has common borders with Bhutan.

73. C

Sol. Zoji La Pass - Jammu & Kashmir; Bara Lacha Pass- Himachal Pradesh; Jelep La Pass – Uttarakhand and Niti Pass - Sikkim

74. C

Sol. South-West monsoon has two branches; One is Arabian sea branch and second is Bay of Bengal Branch.

75. D

Sol. Manas is a tributary of Brahmaputra.

76. C

Sol. After the battle of Leipzig this picture was shown in which Napoleon was represented as a postman dropping letters from his bag bearing names of lost territories.

77. D

Sol. French wanted to impose their civilization to Vietnames and they also needed local labour force.

78. B

Sol. A crescent moon in tricolor flag represented Hindu and Muslims.

79. D
Sol. Population growth in Britain led to increased food demands and they also imposed Corn Laws to protect interests of local agriculturalists.
80. C
Sol. In countryside poor peasants and artisans began working for merchants as it was very difficult for merchants to work in city having different guilds.
81. B
Sol. Aristocrats of that time normally preferred hand made products due to its uniqueness.
82. B
Sol. Minerva, the Goddess is known as 'the Goddess of wisdom'
83. A
Sol. "Sketches by Boz (1836)" was written by Charles Dickens.
84. C
Sol. With no censorship – opposing view could be given and also there is no need to take permissions of king for publishing Books and Newspapers.
85. D
Sol. Freedom of slaves-1848; Execution of olympe de Gouges – 1793; Execution of Robespierre-1794; and Declaration of war against Prussia and Austria - 1792
86. C
Sol. Due to Centralized planning rapid construction work occurred which made lives of workers hard.
87. A
Sol. Hitler was a powerful speaker and Nazis held massive rallies and public meetings for support.
88. B
Sol. Huitotes was a powerful speaker and Nazis held massive rallies and public meetings.
89. C
Sol. The British landowners were making profits, labour was in abundance thus when threshing machine was introduced, Labourers became restless.
90. C
Sol. Rational Dress society was started in – 1881; Abolition of slavery in Travancore – 1855; Gandhiji adopted short dhoti – 1921; and Govt of Travancore issued proclamation ordering Shanar women to abstain from covering upper parts of the body - 1829
91. B
Sol. Motilal Nehru - Prepared a constitution for India in 1928; B.R. Ambedkar was -Chairman of Drafting Committee; Rajendra Prasad was President of the Constituent Assembly and Sarojini Naidu was member of Constituent Assembly
92. D
Sol. All India Bar Association is a professional Interest Group.
93. A
Sol. Large number of voters is not a good reason to be democratic electorate.
94. C
Sol. In dictatorship decisions are taken by one individual or party not by the consent of people
95. C
Sol. Panchayati Raj – Article 40
Abolition of Titles – Article 18
Right to education – Article 21A
Fundamental Duties – Article 51A
96. B
Sol. Integration between countries is called Globalisation.
97. A
Sol. In COPRA, there is a provision of separate departments of consumer affairs in Center and State
98. D
Sol. Banks have higher interest rates on loans than deposits.
99. B
Sol. Due to little discount, APL card holders don't take interest buying rations from ration shops.
100. D
Sol. In Latin America, the ratio of poverty remained almost same.