1997, GROUND FLOOR OPPOSITE MUKHERJEE NAGAR POLICE STATION, OUTRAM LINES, GTB NAGAR, NEW DELHI - 09

## SSC MOCK TEST - 347 (SOLUTION)

1. (A) As, $22 \Rightarrow 22 \times(2+2)=88$

Similarly, $17 \Rightarrow 17 \times(1+7)=136$
2. (A) Depression is related to Mood, while Insomnia is related to Sleep.
3. $(\mathrm{C})(\mathrm{A})$

(B)

(C)

(D)

4. (B) Except Weight, others are related to each other.
5. (D)
 $\mathrm{E}^{-} \Longleftrightarrow \mathrm{C}^{+} \longrightarrow \mathrm{M}^{+}$

Hence, O is the Nephew of Q .
6. (A) $12+2^{2}=16$
$16+3^{2}=25$
$25+4^{2}=41$
$41+5^{2}=66$
$66+6^{2}=102$
7. (B)

8. (B) As, PRINT $\Rightarrow 16+18+9+14+20=77 \Rightarrow 7-7=0$

And, MAGICIAN $\Rightarrow 13+1+7+9+3+9+1+14=57 \Rightarrow 7-5=2$
Similarly, PLANET $\Rightarrow 16+12+1+14+5+26=68 \Rightarrow 8-6=2$
9. (A) As, $82 \Rightarrow(8+2) \times(8-2)=60$
$60 \Rightarrow(6+0) \times(6-0)=36$
Similarly,
$95 \Rightarrow(9+5) \times(9-5)=56$
$56 \Rightarrow(5+6) \times(5-6)=-11$
10. (A) L
11. (B)
12. (D) In first column,
$\sqrt{225}-\sqrt{169}=2 \Rightarrow(2)^{3}=8$
In second column,
$\sqrt{361}-\sqrt{256}=3 \Rightarrow(3)^{3}=27$
In third column,
$\sqrt{576}-\sqrt{225}=9 \Rightarrow(9)^{3}=729$
13. (C) $42 * 7 * 64 * 11 * 6 * 4$

Put the sign,
$42 \div 7+64-11 \times 6=4$
$6+64-66=4$
$70-66=4$
$4=4$
14. (D)


Hence, $K$ is in the South-East of $K$.
15. (A) 5. Fradud $\rightarrow$ 2. Freedom $\rightarrow$ 1. Freeze $\rightarrow$ 6. Fringe $\rightarrow$ 3. Fryer
16. (D) Let the age of $M, 4$ years ago be $x$ years.

Age of A, 7 years from now $=x$ years
Present age of $M=(x+4)$ years
Present age of $A=(x+7)$ years
Average age of $A$ and $M, 10$ years from now $=\frac{(x+4+10+x+7+10)}{2}$
$33.5=\frac{2 \mathrm{x}+31}{2}$
$2 x+31=67$
$x=\frac{67-31}{2}=18$ years
$\therefore \quad$ Present age of $A=18+7=25$ years
17. (A)

I. True II. False III. True

Hence, only conclusions I and III follow.

1997, GROUND FLOOR OPPOSITE MUKHERJEE NAGAR POLICE STATION, OUTRAM LINES, GTB NAGAR, NEW DELHI - 09
18. (D)
19. (B) As,


Similarly,

20. (A) The year 2004 is a leap year. So, it has 2 odd days.

But, Feb 2004 not included because we are calculating from March 2004 to March 2005.
So it has 1 odd day only.
The day on $6^{\text {th }}$ March, 2005 will be 1 day beyond the day on $6^{\text {th }}$ March, 2004.
Given that, $6^{\text {th }}$ March, 2005 is Monday." 6 th March, 2004 is Sunday ( 1 day before to $6^{\text {th }}$ March, 2005).
21. (B) As,

Similarly,

22. (A)
23. (C)
24. (D)
25. (C)
27. (C) Gandhi and Irwin signed a pact on March 5, 1931, which is popularly known as GandhiIrwin Pact. The Congress at its Karachi Session ratified this pact in March 1931. Regarding Gandhi-Irwin pact, Jawaharlal Nehru remarks, 'This is the way the world ends, not with a bang, but a whimper'.
29. (D) The Beas is an important tributary of the Indus, originating from the Beas Kund near the Rohtang Pass at an elevation of 4000 m above the mean sea level. The river flows through the Kullu Valley and forms gorges at Kati and Largi near in the Dhaoladhar Range. It enters the Punjab plains near Pong. Thereafter, it takes a south-westerly direction and meets the Sutlej River at Harike.
30. (B) In the 1920s, Earth's age crept up toward 3 billion years, making it for a time even older than the universe, which was then estimated to be about 1.8 billion years old. The best estimate for Earth's age is based on radiometric dating of fragments from the Canyon Diablo iron meteorite.
32. (C) When a mountain range lies in the path of the rain-bearing wind, it causes the wind to rise along its slope. As a result, it cools and gets saturated. Further cooling due to its ascent leads to rainfall. This type of rainfall is known as Relief Rainfall or Orographic Rainfall. The windward side of the mountain gets heavy rainfall. On the leeward side, air descends and gets warmer. It gives very little rainfall. The leeward side of*the mountain is called Rain-Shadow Region. In India, the western part of Western Ghats receives heavy rainfall but the eastern part falls in the rainshadow region.
34. (C) Krishnadeva Raya was the greatest of all the Vijayanagar rulers.
35. (B) The Competition Commission of India (CCI) suspended its over two-year-old approval for Amazon's deal to acquire stake in retailer Future Coupons Private Limited.
37. (D) The per capita income in India was Rs. 20 in 1867-68, was ascertained for the first time by DadabhaiNaoroji. The average income earned per person in a particular area in a specific year is called as Per Capita Income.
38. (D) The Kushan period is considered the Golden Period of Gandhara. Peshawar Valley and Taxila are littered with ruins of stupas and monasteries of this period. Gandharan art flourished and produced some of the best pieces of sculpture from the Indian subcontinent.
40. (C) Glass articles must be annealed before use, otherwise they will become exceedingly brittle and may crumble to pieces when cut.
42. (A) Apsara is the oldest Indian research reactor. The reactor was designed by the Bhabha Atomic Research Centre and built with assistance from the United Kingdom.
44. (C) These reflected wavelengths of light reach our eyes and we perceive them. Therefore the colour we see of an opaque object is due to the light waves that it reflects.
45. (C) The construction of rock caves continued as in the Mauryan period. However, this period saw the development of Viharas and Chaitya halls.
47. (B) The longitude of other places is measured as the angle east or west from the Prime Meridian, ranging from $0^{\circ}$ at the Prime Meridian to $+180^{\circ}$ eastward and ? $180^{\circ}$ westward.
48. (C) Flint glass has a high refractive index. So it is used to make optical instruments.
50. (C) World Arabic Language Day is observed on 18 December to honour the language, which is spoken by over 400 million people globally.
51. (D) $(\mathrm{a}+\mathrm{b}-\mathrm{c}+\mathrm{d})^{2}-(\mathrm{a}-\mathrm{b}+\mathrm{c}-\mathrm{d})^{2}$
$=[(a+b)-(c-d)]^{2}-[(a-b)+(c-d)]^{2}$
$=(a+b)^{2}+(c-d)^{2}-2(a+b)(c-d)-\left[(a-b)^{2}+(c-d)^{2}+2(a-b)(c-d)\right]$
$=a^{2}+b^{2}+2 a b+c^{2}+d^{2}-2 c d-2 a c+2 a c-2 b c+2 b d-\left(a^{2}+b^{2}-a b+c^{2}+d^{2}-2 c d+2 a c-2 a d\right.$
$-2 b c+2 b d)=4 a b+4 a d-4 a c=4 a(b+d-c)$
52. (B) Principal $=₹ 15000$

Rate $=7 \%$
Time $=2 \frac{5}{7}$ years
Amount $=P\left(1+\frac{R}{100}\right)^{T}$
$=15000\left(1+\frac{7}{100}\right)^{2}\left(1+\frac{7 \times \frac{5}{7}}{100}\right)$
$=15000 \times \frac{107}{100} \times \frac{107}{100} \times \frac{21}{20}=₹ 18032.175$
$\therefore \quad \mathrm{CI}=18032.175-15000=₹ 3032.175$
53. (C) Average marks of top 5 students $=\frac{86 \times 40-85 \times 35}{5}$
$=\frac{3440-2975}{5}=\frac{465}{5}=93$
54. (A) Let a two digit number be $10 x+y$ when its digits reversed, two digit number will be $x+10 y$,
difference $=\frac{10 x+y-(x+10 y)}{10}=3.6$
$9(x-y)=3.6 \times 10$
$x-y=4$
55. (D) $\mathrm{B}+\mathrm{C}=3 \mathrm{~A}$ and $\mathrm{A}+\mathrm{C}=4 \mathrm{~B}$

Ratio of their work A: B:C=5:4:11
Time taken by A alone $=\frac{24 \times 20}{5}=90$ days
56. (A) Base of the prism = ABCD

$\mathrm{BD}^{2}=9^{2}+12^{2}=225$
$\mathrm{BD}=15 \mathrm{~cm}$
$\operatorname{ar}(\triangle B C D)=\sqrt{21(21-14)(21-15)(21-13)}=\sqrt{21 \times 7 \times 6 \times 8}=84 \mathrm{~cm}^{2}$

Area of the base $=\operatorname{ar}(\triangle \mathrm{BAD})+\operatorname{ar}(\Delta \mathrm{BCD})=\frac{1}{2} \times 9 \times 12+84=138 \mathrm{~cm}^{2}$
Height of the prism $=\frac{\text { Volume }}{\text { area of the base }}=\frac{2070}{138}=15 \mathrm{~cm}$
Lateral surface area $=P$. of the base $\times$ height $=48 \times 15=720 \mathrm{~cm}^{2}$
57. (A) Let the time of meet $=t \mathrm{~h}$


Now, $15\left(t-\frac{20}{60}\right)+20 t=450$
$t=13 \mathrm{~h}$
Distance from $\mathrm{A}=15\left(13+\frac{1}{3}\right)=190 \mathrm{~km}$
58. (D) Let $\mathrm{OT}=$ height of tower $=h$ metres
$\mathrm{PQ}=$ width of the river


Where,
$P=$ point of the near shore to tower.
$Q=$ point of the far shore to the tower.
$\angle \mathrm{ZTA}=\mathrm{A}^{\circ}$ (angle of depression)
$\angle \mathrm{ZTQ}=\mathrm{B}^{\circ}$ (angle of depression)
Then,
$\angle \mathrm{ZTA}=\angle \mathrm{TPO}=\mathrm{A}^{\circ}$
$\angle \mathrm{ZTQ}=\angle \mathrm{TQO}=\mathrm{B}^{\circ}$
Now,
In $\Delta T O P, \tan A=\frac{h}{O P}$
$\mathrm{OP}=h \cot \mathrm{~A}$
(i)

In $\triangle T Q O, \tan \mathrm{~B}=\frac{h}{O Q}=\frac{h}{O P+O Q}$
From (i) and (ii),
$P Q=h(\cot B-\cot A)$
59. (C)

|  | A |  | B |  | C |
| :--- | :--- | :--- | :--- | :--- | :--- |
| Efficiency | 3 | $:$ | 2 | $:$ | 6 |
| Number of days | 2 | $:$ | 3 | $:$ | 1 |

Number of days taken by $\mathrm{A}=12$
Number of days taken by B = 18 and
Number of days taken by $\mathrm{C}=6$
1 day's work of $(A+B)=\frac{5}{36}$
1 day's work of $(B+C)=\frac{8}{36}$

1 day's work $(\mathrm{C}+\mathrm{A})=\frac{9}{36}$


In 5 days total work done $=\frac{35}{36}$
Now, the rest of work $\left(\right.$ i.e. $\left.\frac{1}{36}\right)$ is done by AC.

Number of days taken by AC for the rest of the work $=\frac{\frac{1}{36}}{\frac{9}{36}}$

There, total time taken to complete the work $=5+\frac{1}{9}=5 \frac{1}{9}$ days
60. (A) Let no. of persons buying the tickets
on the three days are $2 x, 5 x, 13 x$ respectively.
Number of total tickets bought $=20 x$
Then from question,
Total cost of tickets $=15 \times 2 x+7.5 \times 5 x+2.5 \times 13 x$
$=(30+37.5+32.5) x=(100.0) x=₹ 100 x$
$\therefore \quad$ Average cost of ticket per person $=\frac{100 x}{20 x}=₹ 5$
61. (D) Let the age's of three children be $x_{1}, x_{2}$ and $x_{3}$ years

Then,
$\frac{x_{1}+x_{2}+x_{3}}{3}=\frac{20}{100}\left(\frac{26+x_{3}}{2}\right)$
$\frac{x_{1}+x_{2}+x_{3}}{3}=\frac{26+x_{3}}{10}$
Also,
$\mathrm{M}+x_{1}=39$
From Equation (i) and (ii), we cannot determine the value of $x_{2}$.
62. (D) Given, $b+c+d+g=23$

$a+b+g+e=15$
$\mathrm{e}+\mathrm{f}+\mathrm{g}+\mathrm{d}=18$
and $a+b+c+d+e+f+g=50$
Solving Equation (i), (ii),. (iii) and (iv)
$b=3, f=6, d=6, c=9$ and $g=5$
63. (C) Mangoes of ₹ 20 are available for ₹ 19 .

Hence, discount $=\left(\frac{1}{20} \times 100\right) \%=5 \%$
If one gets mangoes of ₹ 20 for ₹ 18 , then discount $=\left(\frac{2}{20} \times 100\right) \%=10 \%$
$\therefore \quad$ Required integer $=\left(\frac{2}{20} \times 27\right)=2.7 \approx 3$
64. (C) If the time taken by B to complete the work be $x$ days.

Time taken by A to complete the work $=(x+5)$ days ATQ,
$\frac{1}{x}+\frac{1}{x-5}=\frac{9}{100}$
$\frac{x-5+x}{x^{2}-5 x}=\frac{9}{100}$
$9 x^{2}-45 \mathrm{x}=200 \mathrm{x}-500$
$9 x^{2}-245 x+500=0$
$9 \mathrm{x}^{2}-225 \mathrm{x}-20 \mathrm{x}+500=0$
$9 x(x-25)-20(x-25)=0$
$(9 x-20)(x-25)=0$
$x=25$, because $x \neq \frac{20}{9}$
$\therefore$ Time taken by B to complete the work alone is 25 days.
65. (D)

$\therefore \quad \mathrm{RP}>\mathrm{PQ}$

1997, GROUND FLOOR OPPOSITE MUKHERJEE NAGAR POLICE STATION, OUTRAM LINES, GTB NAGAR, NEW DELHI - 09
66. (A) Volume of rectangular block $=21 \times 77 \times 24 \mathrm{~cm}^{3}$

Let the radius of sphere be rcm ,
$\frac{4}{3} \pi r^{3}=21 \times 77 \times 24$
$\mathrm{r}^{3}=\frac{21 \times 77 \times 24 \times 3 \times 7}{4 \times 22}$
$\mathrm{r}^{3}=3^{3} \times 7^{3}$
$\mathrm{r}=3 \times 7=21 \mathrm{~cm}$
67. (A) $\frac{\left[2 \sin \left(45^{\circ}+\theta\right) \cdot \sin \left(45^{\circ}-\theta\right)\right]}{\cos 2 \theta}$
$=\frac{\left[2 \sin 45^{\circ} \cos \theta+\cos 45^{\circ} \sin \theta\right] \cdot\left[\sin 45^{\circ} \cos \theta-\cos 45^{\circ} \sin \theta\right]}{\cos 2 \theta}$
$=\frac{2\left[\frac{1}{\sqrt{2}}(\cos \theta+\sin \theta) \frac{1}{\sqrt{2}}(\cos \theta-\sin \theta)\right]}{\cos ^{2} \theta-\sin ^{2} \theta}$
$=2 \times \frac{1}{2} \times \frac{\cos ^{2} \theta-\sin ^{2} \theta}{\cos ^{2} \theta-\sin ^{2} \theta}=2$
68. (C) Let the length of each train be x m .

Speed of first train $=\frac{x}{24} \mathrm{~m} / \mathrm{s}$

Speed of second train $=\frac{x}{16} \mathrm{~m} / \mathrm{s}$
ATQ,
$\frac{x+x}{\frac{x}{24}+\frac{x}{16}}=\frac{2 x}{\frac{2 x+3 x}{48}}$
$=\frac{2 \mathrm{x}}{5 \mathrm{x}} \times 48=19.2$ seconds
69. (B)


1997, GROUND FLOOR OPPOSITE MUKHERJEE NAGAR POLICE STATION, OUTRAM LINES, GTB NAGAR, NEW DELHI - 09
Let $A B$ is the observer and $C E$ is thw tower.
$\mathrm{AB}=\mathrm{DE}=1.4 \mathrm{~m}$
$\mathrm{BD}=\mathrm{AE}=25 \sqrt{3} \mathrm{~m}$
In ABCD ,
$\tan 30^{\circ}=\frac{\mathrm{CD}}{\mathrm{BD}}$
$\frac{1}{\sqrt{3}}=\frac{C D}{25 \sqrt{3}}$
$\mathrm{CD}=25 \mathrm{~m}$
Now, $\mathrm{CE}=\mathrm{CD}+\mathrm{DE}=25+1.4=26.4 \mathrm{~m}$
$\therefore$ Height of tower $=26.4 \mathrm{~m}$
70. (D) $x=\frac{2 \sqrt{6}}{\sqrt{3}+\sqrt{2}} \times \frac{\sqrt{3}-\sqrt{2}}{\sqrt{3}-\sqrt{2}}$
$x=2 \sqrt{18}-2 \sqrt{12}=6 \sqrt{2}-4 \sqrt{3}$
$\therefore \frac{\mathrm{x}+\sqrt{2}}{\mathrm{x}-\sqrt{2}}+\frac{\mathrm{x}+\sqrt{3}}{\mathrm{x}-\sqrt{3}}$
$=\frac{6 \sqrt{2}-4 \sqrt{3}+\sqrt{2}}{6 \sqrt{2}-4 \sqrt{3}-\sqrt{2}}+\frac{6 \sqrt{2}-4 \sqrt{3}+\sqrt{3}}{6 \sqrt{2}-4 \sqrt{3}-\sqrt{3}}$
[From (ii)]
$=\frac{7 \sqrt{2}-4 \sqrt{3}}{5 \sqrt{2}-4 \sqrt{3}}+\frac{6 \sqrt{2}-3 \sqrt{3}}{6 \sqrt{2}-5 \sqrt{3}}$
$=\frac{(84-35 \sqrt{6}-24 \sqrt{6}+60)+(60-15 \sqrt{6}-24 \sqrt{6}+36)}{60-25 \sqrt{6}-24 \sqrt{6}+60}$
$=\frac{240-98 \sqrt{6}}{120-49 \sqrt{6}}=\frac{2(120-49 \sqrt{6})}{120-49 \sqrt{6}}=2$
71. (D) Let the total number of employees be 100.

Number of male employees $=40$
Number of female employees $=100-40=60$
Number of male employees, who earn more than $₹ 25,000=75 \%$ of $40=\frac{75}{100} \times 40=30$

Total number of employees, who earn more than $₹ 25,000=45 \%$ of $100=\frac{45}{100} \times 100=45$
Number of female employees, who earn more than ₹ $25,000=45-30=15$
Number of female employees, who earn less than ₹ $25,000=60-15=45$
Required fraction $=\frac{45}{60}=\frac{3}{4}$

1997, GROUND FLOOR OPPOSITE MUKHERJEE NAGAR POLICE STATION, OUTRAM LINES, GTB NAGAR, NEW DELHI - 09
72. (A) Required $\%$ decrease $=\left(\frac{900-800}{900} \times 100\right) \%=\left(\frac{100}{900} \times 100\right) \%=\frac{100}{9} \%=11 \frac{1}{9} \%$
73. (C) Required $\%$ increase $=\left(\frac{1200-600}{600} \times 100\right) \%=\left(\frac{600}{600} \times 100\right) \%=100 \%$
74. (D) In 2003-04, \% increase $=\left(\frac{200}{400} \times 100\right) \%=50 \%$

In 2004-05, \% increase $=\left(\frac{300}{600} \times 100\right) \%=50 \%$
In 2006-07, \% increase $=\left(\frac{200}{800} \times 100\right) \%=25 \%$
In 2007-08, \% increase $=\left(\frac{200}{1000} \times 100\right) \%=20 \%$
75. (A) Required $\%$ increase $=\left(\frac{1000-400}{400} \times 100\right) \%=\left(\frac{600}{400} \times 100\right) \%=150 \%$

1997, GROUND FLOOR OPPOSITE MUKHERJEE NAGAR POLICE STATION, OUTRAM LINES, GTB NAGAR, NEW DELHI - 09

## MEANINGS IN ALPHABETICAL ORDER



## SSC MOCK TEST - 347 (ANSWER KEY)

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

76. (C) Change 'faster' into 'fast'. Comparative degree is used in comparision.
77. (C) Change 'any' into either'.

For 'one out of two' we use 'either'.
78. (B) Replace 'among' by 'between', as we are talking about two group of people.
79. (B) 'Too ....... to' is a pair of conjunction.

