SNAP-2008
EXPLANATORY ANSWERS
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GENERAL ENGLISH SECTION

1. ‘To palm’ means ‘to impose something fraudulently on someone else’, ‘to foot’ means ‘to pay or settle’, the ‘eye’ is associated with the ‘manner or way of looking at things’ and ‘to stomach’ means ‘to endure or tolerate’. So, the correct combination is 1-7, 2-8, 3-6 and 4-5. Hence, [c].

2. 'Arise' fits in sentences i and iii, 'arose' fits in sentences ii and iv, 'rise' fits only in sentence iii and 'raise' does not fit in any of the sentences. Hence, [c].

3. The idiom ‘fool’s paradise’ means ‘a state of being happy for foolish or unfounded reasons’ and the idiom ‘can’t see the woods for the trees’ means ‘unable to understand what is important in a situation because one is giving too much attention to details’. Sentence [3], which speaks about reality and fancy, is not similar to either sentence [1] or sentence [2]. Sentence [4], which speaks about unimportant and important details, is similar in meaning to sentence [2]. Hence, [b].

4. As a noun, ‘then’ implies ‘that time’. Thus, ‘then’ is a noun in 6. As an adjective, ‘then’ implies ‘being at the time indicated’. Thus, ‘then’ is an adjective in 5. As an adverb, ‘then’ means ‘at that time’. So, it is used as an adverb in 8. When ‘then’ is used as a conjunction, it means ‘after that’ or ‘with that’. So, ‘then’ is a conjunction in 7. Thus, the correct order is 1-6, 2-5, 3-8, 4-7. Hence, [b].

5. Option [a] is neither mentioned nor can it be inferred from the passage. The second sentence of the passage ‘Even scientific……..even tomorrow’ negates option [b] and option [c] contradicts the third sentence of the passage ‘If we refuse….human race’. Based on the latter part of the passage, which brings out the difference between how animals/vegetables and human beings go through life, the author is most likely to agree with [d]. Hence, [d].

6. ‘Sanctimonious’ means ‘making a hypocritical show of religious devotion, piety, righteousness, etc.’ and ‘greens’ is used to refer to environmentalists. Hence, [c].

7. From the second sentence of paragraph 2 – ‘Elite greens own cars,………elite!’ we know that the elite are full of disdain that the poor can afford cars. Hence, [d].

8. The paradox in the situation is that even though London and New York have more cars than Delhi has, these cities are less polluted than Delhi has, these cities are less polluted than Delhi. Hence, [c].

9. Through the given sentence, the author is trying to bring out the incongruity between the size of land required for parking a car and the cost of that land. So, the writer is being ironical. Hence, [d].

10. Based on the information given in paragraphs 8 and 9, both options [a] and [b] can be inferred. So, there is no one answer to the given question. But, as [a] contains the ill effects of subsidizing, it should be selected. Hence, [a].

11. The passage is in support of abolishing the various subsidies on fuel and increasing the excise duty on all automotive vehicles, so the best title for the passage would be ‘Submerge Subsidies’. Hence, [c].

12. The plural of ‘virus’ is ‘viruses’. Hence, [a].

13. Sentence 3 can be placed at either position A or B. Usually, ‘thanks to’ is used at the beginning of the sentence. Hence, [a].

14. The plural of ‘belief’ is ‘beliefs’. Hence, [a].

15. ‘Pedestrian’ is used grammatically correctly in both [a] and [d]. Assuming that a story about spies would not be dull and lacking in imagination, only [d] uses 'pedestrian' correctly. Hence, [d].
16. All four options can fit the sentence grammatically. Even 'all' can be used as a pronoun, though it sounds awkward in this case.

17. B and C describe 'people', not him. The sentence should read 'He is one of those people who think they own the world'. So, the error can be said to be in B and C. Hence, [d].

18. A 'cynic' is a person who believes that only selfishness motivates human actions and who disbelieves in or minimizes selfless acts or disinterested points of view. Hence, [d].

19. Only option [b] is spelled correctly. The correct spellings for the other words are – categories, omission and inaugurate. Hence, [b].

20. Only sentences 1 and 2 are grammatically correct. In sentence 3 'a' is required before painting. In sentence 4 the use of the preposition 'with' after match is incorrect. Hence, [a].

21. The correct phrase is 'a two-day visit'. So, both the options are erroneous. Hence, [c].

22. According to the sixth sentence of the passage ‘And where then…..future events’, taxation in Roman times was based on population. Hence, [c].

23. The 'Mets' is an American baseball team with a low batting average. The author compares the record of statistical forecasts with the Mets’ batting average to show that even the highly admired forecasts have a lower average of being right than the batting average of the Mets. Thus, he wants to clarify the point that statistical predications have more probability of failing than the Mets. Options [a] and [b] are not mentioned anywhere in the passage. Option [c] is not right, as the passage shows how the statistical methods have changed but nothing about a change in attitudes is mentioned. Thus, only option [d] is correct. Hence, [d].

24. The author is not showing contempt or disapproval for statistical methods, so option [b] is incorrect. The author does not display a despairing or hopeless attitude in the passage, so option [c] is also incorrect. The author's tone is not humanistic as he is not showing concern for human welfare or values. But from the references to the Mets and a fair maiden, we can discern that the author intended to make the write-up light-hearted and humorous. Hence, [a].

25. ‘Disinterested’ means ‘unbiased by personal interest or advantage’. Hence, [b].

26. ‘Berate’ means ‘to scold’, ‘praise’, which means ‘to express approval or admiration’, is its opposite. Hence, [b].

27. The sentence can begin only with ii, as it introduces the subject of the sentence. There is only one option in the answer choices in which the sequence begins with ii – [a]. Hence, [a].

28. ‘Natural’, ‘inborn’ and ‘inherent’ are synonyms and mean ‘naturally present at birth’. ‘Latent’, which means ‘dormant or hidden potential’, is the odd word. Hence, [a].

29. By rule, if the main clause is in the past tense then the subordinate clause must also be in the past tense, but if the subordinate clause expresses a general truth then it can be in the present tense. So, in this case, [c] is a better option than [a]. Hence, [c].

30. Only option [b] has the correct combination. Hence, [b].

31. ‘Honey-pot’ is a ‘pot used for storing or serving honey’; ‘honey-comb’ is ‘a structure of rows of hexagonal wax cells, formed by bees in their hive for the storage of honey, pollen and their eggs’; ‘honey-suckle’ is ‘a type of a shrub’. No sensible word can be made by clubbing honey and taste. Hence, [d].

32. According to the second line of the second paragraph, the New York bankers counted on their reputation. Hence, [d].
33. The first line of the passage gives the reason for the downfall of the share market. Hence, [c].

34. ‘Minimal’ means ‘barely adequate or least possible’, ‘maximal’, which means ‘highest or the greatest possible’, is its opposite. (However, both ‘maximal’ and ‘significant’ are not in the passage.) Hence, [c].

35. Only option [b] is grammatically correct. When using ‘opposite’ to giving locations or directions, the preposition ‘to’ is omitted. ‘Opposite of’ is used when showing the dissimilarity between two things or ideas. ‘Opposite from’ is grammatically incorrect. Hence, [b].

ANALYTICAL & LOGICAL REASONING

36. For the wheel B the upper rope as well as the lower rope will rotate in the opposite direction hence wheel cannot move. Hence, [b].

37. From statement (A) and (B)
   brightly = ba
   From statement (A) and (C)
   sun = lo
   Hence, [a].

38. Let
   \[ \Box = a \]
   \[ \bigcirc = b \]
   \[ \bigtriangleup = c \]
   \[ \Diamond = d \]
   given \( ab = c \) ... (1)
   \( a = bd \) ... (2)
   \( c^2 = d^3 \) ... (3)
   Squaring (1)
   \( a^3 b^2 = c^2 \)
   \( a^3 b^2 = d^3 \) ... from (3)
   \[ \frac{a^3}{b^2} = d^3 \] ... from (2)

   \[ \therefore a^3 b^2 = \frac{a^3}{b^2} \]
   \[ \therefore a = b^5 \]

   Thus \[ \Box = \bigcirc \bigcirc \bigcirc \bigcirc \bigcirc \bigcirc \bigcirc \]
   Hence, [a].

39. From given question,
   For a boy to have 4 brothers total number of boys have to be 5.
   For a girl to have 3 sisters, total number of girls have to be 4.
   \[ \therefore \] Smallest number of children 5 + 4 = 9
   Hence, [c].

40. Only conclusion II follows from the first statement. Hence, [b].
41. From given question,

Debu is pointing towards northwest now. Hence, [d].

42. Given a rectangular block of dimensions $4 \times 3 \times 3$
Number of cubes having one colour is given by
\[2(4-2)(3-2) + (3-2)(3-2) + (3-2)(4-2)\]
\[2(2 + 1 + 2) = 10\]
Hence, [a].

43. Number of cubes having no colour is given by
\[(4-2)(3-2)(3-2) = 2 \times 1 \times 1 = 2\]
Hence, [b].

44. Number of cubes having two colours is given by
\[4[(4-2) + (3-2) + (3-2)] = 4(2 + 1 + 1)\]
\[= 16\]
Hence, [c].

45. From given conditions, table can be made as follows:

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6</td>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>7</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
<td>9</td>
<td>5</td>
</tr>
</tbody>
</table>

B3 holds 9
Hence, [b].

46. 4, 32, 288, ______, 31680
4 × 8 = 32
32 × 9 = 288
288 × 10 = 2880
2880 × 11 = 31680
Hence, [b].

47. Jamuna sells at rate of 0.5 for 2 lemons
Seema sells at rate of 0.5 for 3 lemons
Let the lemon remained be 6 (LCM of 2 and 3) for each of them
Revenue generated is

<table>
<thead>
<tr>
<th></th>
<th>Jamuna</th>
<th>Seema</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5×6</td>
<td>1.5</td>
<td>0.5×6</td>
</tr>
</tbody>
</table>

Jamuna makes Rs.1.5 and Seema Rs.1
According to given condition. Jamuna combines the lemons and sells at rate of 1 for 5 lemons.
Rs.1 for 5 lemons so Rs.2.4 for 12 lemons.
In first care combined revenue is 2.5 and in second care is 2.4.
So when there are 6 lemons difference is Rs.0.1
But actual difference is 3.5 Rs.
:\ Number of lemons is 210 for cash of them for both there are 420 lemons.
Revenue generated by Jamuna alone
\[
\frac{0.5 \times 210}{2} = 52.5 \text{ Rs.}
\]
Combined revenue generated is \[
\frac{1 \times 420}{5} = 84 \text{ for both}
\]
So 42 Rs. for each of them
Thus money lost by Jamuna is 52.5 – 42 = 10.5 Rs.
Hence, [a].

48. Let the quantity of orange juice and lemonade in cups be 10 units each.
Capacity of tea spoon be 5 units.

<table>
<thead>
<tr>
<th>Cup I</th>
<th>Cup II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orange</td>
<td>Lemonade</td>
</tr>
<tr>
<td>10</td>
<td>0</td>
</tr>
<tr>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>5 + \frac{5}{3}</td>
<td>20 \frac{2}{3}</td>
</tr>
</tbody>
</table>

It is found that after both the steps the quantity of lemonade in orange juice is same on quantity of orange juice in lemonade. Hence, [c].

49. Neither of the assumptions are implicit in the given statement. The statement mentions that education and small family norm may lead to progress. This doesn’t imply that they are directly related to progress. Hence, [d].

50. From the figure words are INMODEST INDECENT
M, S and D, N are missing.
Hence, [d].

51. The main argument contains an observation and then a conclusion drawn from that. Similarly, (c) contains an observation (During warm weather my dog suffers more fleas than during cool weather.) and a conclusion (Therefore, fleas must thrive in a warm environment). Note: in the main argument a conclusion is followed by an observation; in [c] it is reverse. Hence, [c].

52. From given conditions

\[ y \rightarrow \text{yellow} \]
\[ n.y \rightarrow \text{non yellow} \]
Thus there are 5 yellows birds and 2 nonyellow birds.
Hence, [b].
53. In I, ‘lake’ is the odd one out, as it is a body of still water and the others are bodies of flowing water. In II, only ‘weighty’ and ‘heavy’ describe weight; the other three pairs can be used for dimensions only. Hence, [a].

54. Given initial position

```
B
A
```

from given conditions final position

```
A
B
C
D
```

B and C are diagonally opposite.
Hence, [d].

55. Given Penn Fe finished before Night marvel and after wish boner W > P > N. Now, if H is not tied with S then W is tied with P but from previous W > P

Hence, [c].

56. Given 6th child is diametrically opp to 16th

∴ 1st child will be diametrically opp to 11th

b there will be 9 children between them. On both the side.

∴ Total number of children = 9 × 2 + 2 = 20

Hence, [b].

57. From the given figure, operation taken place as follows

(8 + 5) × 3 = 13 × 3 = 39
(4 + 7) × 4 = 11 × 4 = 44
(9 + 3) × 5 = 12 × 5 = 60

∴ (5 + 4) × 8 = 9 × 8 = 72

Hence, [b].

58. From the figure it can be observed that cylinders have a large hole at the bottom and small hole at the bottom and small hole at the top in on initial position. Hence the weight distribution is uneven, so when they roll on the ground, the heavier part will be at the bottom. Hence, [c].

59. Given A and D are unmarried ladies

E is male and is husband
B is brother of C
B is male and C is female
EC are couple
B is neither chess nor tennis player
∴ B is badminton player
C cant be chess or badminton player
∴ C is tennis player
So E is chess player  
A, D, C are ladies 
Hence, [d].

60. C is tennis player  
Hence, [b].

61. C is wife of E  
Hence, [d].

62. From the given information we have the following family tree;

```
O
/|
N / P
 /|
M
```

Option (d) is definitely true  
Option (b) and option (c) could be true  
Option (a) is definitely false  
∴ The best possible answer is option (a)  
Hence, [a].

63. Water takes longer time to heat up as compared to land. So the air above the land gets heated up quickly, it becomes lighter and rises up. So wind now flows from sea towards land, hence direction D. Hence, [d].

64. From diagram, uneducated urban hardworking and honest people are indicated by 4. Hence, [d].

65. From diagram, nonurban educated people who are neither hard working, nor honest are indicated by 7. Hence, [b].

**GENERAL AWARENESS**

66. A. M. Turing was a British mathematician. Hence, [b].

67. Option [b] gives the most accurate description of Bt Cotton. Hence, [b].

68. US-based tour operator AMX Company has filed a trademark patent for the tagline ‘Discover Incredible India’. Hence, [c].

69. FIIIs hold the highest number of shares of ICICI Bank. Hence, [b].

70. Indian Standard Time is calculated on the longitude of 82.5 degrees which passes through Mirzapur, Uttar Pradesh. Hence, [a].

71. The ‘Black Box’ is usually orange in colour. Hence, [d].

72. Michael Phelps, who is a swimmer, is the only sports personality among the given options who is associated with a water sport. Hence, [b].

73. Sariska and Ranthambore are tiger reserves. Hence, [c].

74. In 2008, Nepal became a democratic republic. Hence, [b].
75. Due to change in gravity, the weight of the rock will change. Hence, [b].
76. Milk, cheese and eggs are good sources of vitamins A and D. Hence, [b].
77. In August 2008, India’s longest runway was commissioned in New Delhi. Hence, [b].
78. The first ever public hearing in India, almost like a referendum, to decide the fate of an SEZ was held at Pen, Maharashtra, in September 2008. Hence, [c].
79. Al-Ahram is an Egyptian newspaper. Hence. [b].
80. In 2008, Japanese pharmaceutical company Daiichi Sankyo acquired a controlling stake in Ranbaxy. Hence, [d].
81. Pampers, Tide and Pantene are products of Proctor and Gamble, while Dove is a product of Unilever. Hence, [b].
82. In the internet sphere, ‘Opera’ is a web browser. Hence, [d].
83. Ronu Majumdar plays the flute. Hence, [d].
84. During market hours, SENSEX calculation is carried out on real time basis. Hence, [c].
85. Moser Baer is the second largest manufacturer of CDs, DVDs and other optical media. Hence, [d].
86. Right to property is a legal right and not a fundamental right. Hence, [c].
87. The term Net Shot is associated with badminton. Hence, [a].
88. Dry Ice is the common name for the solid form of carbon dioxide. Hence, [a].
89. The rail-based mass rapid transit system in Mumbai has been awarded to a consortium of companies led by Reliance Infrastructure. Hence, [a].
90. A high measure of bilirubin affects the liver. Hence, [b].
91. Raghu Rai is one of the most celebrated photo journalists in India. Hence, [b].
92. Inflation implies rise in general price index. Hence, [b].
93. The 123 in ‘123 Agreement’ stands for Section 123 of the US Atomic Energy Act. Hence, [d].
94. In the United States of America, the President is elected by the electoral college. Hence, [b].
95. The GATT Uruguay Round resulted in the formation of World Trade Organization (WTO). Hence, [c].
96. Siebel is now owned by Oracle. Hence, [d].
97. Taal was the first Indian film to be insured by a general insurance company. Hence, [b].
98. India’s first coalition government, at the national level, was formed under the leadership of Morarji Desai. Hence, [c].
99. WiMax stands for ‘Worldwide Interoperability for Microwave Access’. Hence, [b].
100. El Nino is a warm ocean current. Hence, [b].
101. A) From the figure it can be observed that line BC, which is parallel to x axis shows the break down of production line 2 and duration of break down can be measured.
B) Since production line 2 experiences teething problems, the rate of production is not constant; hence loss of production cannot be quantified. As we can see the slope of line AB is different from slope of line CD. Hence, [b].

102. In this problem it has been stated that a number of consecutive pages are missing. So option (1) is ruled out. Again from 291 to 322 there are total 32 numbers. The summation is given by
\[ \frac{n}{2} [a + l] \]
where
\[ n = \text{total number of terms} \]
\[ a = \text{initial term} \]
\[ l = \text{final term} \]
Since number are in AP, this formula can be applied
\[ \frac{32}{2} [291 + 322] = 9808 \]
322 has to be included
Hence, [c].

103. 2, 3, 13, 37, 86, 167, 288
Taking common difference between consecutive terms we get,
\[ 3 - 2 = 1 \]
\[ 13 - 3 = 10 \]
\[ 37 - 13 = 24 \]
\[ 86 - 37 = 49 \]
\[ 167 - 86 = 81 \]
\[ 288 - 167 = 121 \]
It can be observed the common differences are square of consecutive odd numbers but the second difference should be 9 instead of 10 and third difference should be 25 instead of 24. Therefore in the series third term should be 12 and not 13.
\[ \therefore 13 \text{ is wrong term.} \]
Hence, [b].

104. Let the speed of two sea travelers. \( x \) km/hr and \( y \) km/hr. Distance travelled in half an hour by both is \( \frac{x}{2} \) km and \( \frac{y}{2} \) km.
It can be illustrated as follows.
From above condition
\[
\left(\frac{x}{2}\right)^2 + \left(\frac{y}{2}\right)^2 = 17^2
\]
\[
\frac{x^2}{4} + \frac{y^2}{4} = 289
\]
\[
x^2 + y^2 = 1156 \quad \ldots \quad (1)
\]
According to second condition,
\[
\frac{3}{4}x - \frac{3}{4}y = 10.5
\]
Since one trawler has computed 10.5 km more than the other.
\[
x - y = 14 \quad \ldots \quad (2)
\]
Squaring both sides
\[
x^2 + y^2 - 2xy = 196
\]
from (1)
\[
1156 - 2xy = 196
\]
\[
xy = 480
\]
from (2)
\[
x(x - 14) = 480
\]
\[
x^2 - 14x - 480 = 0
\]
\[
(x + 16) (x - 30) = 0
\]
\[
\therefore x = 30 \text{ or } x = -16
\]
Since speed cant be negative
\[
x = 30 \text{ km/hr and } y = 16 \text{ km/hr (from (2))}
\]
Hence, [a].

105. Comparing the number of adults in hotels for different months

<table>
<thead>
<tr>
<th></th>
<th>Feb</th>
<th>Jul</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>V</td>
<td>96</td>
<td>114</td>
<td>18</td>
</tr>
<tr>
<td>W</td>
<td>39</td>
<td>55</td>
<td>16</td>
</tr>
<tr>
<td>X</td>
<td>131</td>
<td>139</td>
<td>8</td>
</tr>
<tr>
<td>Y</td>
<td>64</td>
<td>96</td>
<td>32</td>
</tr>
<tr>
<td>Z</td>
<td>167</td>
<td>193</td>
<td>26</td>
</tr>
</tbody>
</table>

Hence, [c].

106. The first statement gives the information that the numbers are in AP with common difference of 3. This alone
does not give information of 57th number. The second statement says that 10th number of series is 29 but
the type of series or common difference has been stated. Combining both the statements, 57th number in series
can be found out. Hence, [d].

107. Given that cost of levelling and furfing a square field Rs.160 percentage is Rs.2624.40

\[
\therefore \text{Total area} = \frac{2624.40}{160} = 16.4025 \text{ hectare}
\]
1 hectare = 10,000 square metres
\[
\therefore 16.4025 \text{ hectare} = 164025 \text{ m}^2
\]
Area of square field = 164025 m^2
\[
\therefore \text{Side} = 405 \text{ m}
\]
Perimeter of square field = $4 \times \text{side} = 4 \times 405 \text{ m}$
Price of railing = Rs.0.25 metres
\[ \therefore \text{Cost of entire railing} = 0.25 \times 4 \times 405 = \text{Rs.405} \]
Hence, [d].

108. Given the length of shadow decreases by 60 m when the sun roys inclination increase from $30^\circ$ to $60^\circ$
Diagramatically it can be illustrated as follows

Let length of final shadow be ‘x’ and height of tower be ‘y’
$\Delta ACB$ is 30-60-90 triangle
\[ y = \sqrt{3} x \quad \ldots (1) \]
Again $\Delta ADB$ is 30-60-90 triangle
\[ y = \frac{60+x}{\sqrt{3}} \quad \ldots (2) \]
From (1) and (2)
\[ \sqrt{3} x = \frac{60+x}{\sqrt{3}} \]
\[ \therefore x = 30 \]
Now $y = \sqrt{3} \times 30$ from (1)
\[ \therefore y = 51.96 \text{ m} \]
Hence, [b].

109. From given table
For C: 15% viewers watch more than one movie a week 15% viewers = 2400
\[ \Rightarrow 85\% \text{ viewers} = 13600 \]
Since 85% viewers watch less than one movie a week. Hence, [b].

110. From table, city E has 24,000 viewers since 25% of viewers correspond to 8000 75% of viewers correspond to 24000. Hence, [a].
111. From table,

<table>
<thead>
<tr>
<th></th>
<th>I</th>
<th>II</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>3600</td>
<td>2400</td>
<td>6000</td>
</tr>
<tr>
<td>B</td>
<td>750</td>
<td>3000</td>
<td>3750</td>
</tr>
<tr>
<td>C</td>
<td>13600</td>
<td>2400</td>
<td>16000</td>
</tr>
<tr>
<td>D</td>
<td>3300</td>
<td>2700</td>
<td>6000</td>
</tr>
<tr>
<td>E</td>
<td>24000</td>
<td>8000</td>
<td>32000</td>
</tr>
<tr>
<td>Total</td>
<td>45250</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

.: A and D have second lowest number of movie watches. Hence, [b].

112. From above table. Total number of viewers who watch than one movie per week is 45250. Hence, [d].

113. Given sequence a, b, b, c, c, c, d, d, d, d......

It can be observed that a is written once, b is written twice. c is written thrice and so on.......

This is a triangular number sequence general form of triangular sequence = \( \frac{n(n+1)}{2} \)

So \( \frac{n(n+1)}{2} = 288 \) ... (1)

Here the value of n is to be found out alphabet.

\( n + 1 \) can be approximated as a

\( n^2 = \sqrt{576} \quad n \approx 24 \)

Put \( n = 24 \) in (i)

\( \frac{24 \times 25}{2} = 300 \)

This states that 300th term correspond to 24th alphabet and 30th term will be 25th alphabet. Since 24th alphabet i.e., x will appear 24 times. So 288th term will be x. Hence, [d].

114. \( p^2 + 5 < 5p + 14 \)

\( p^2 - 5p - q < 0 \)

For \( p^2 - 5p - q = 0, \)

\( p = \frac{5 \pm \sqrt{25 + 36}}{2} \)

\( \therefore p = \frac{5 \pm \sqrt{61}}{2} \)

\( \therefore p^2 - 5p - q < 0 \) when \( p \) is between \( \frac{5 - \sqrt{61}}{2} \) and \( \frac{5 + \sqrt{61}}{2} \).

From given options, \( p \leq 6 \) and \( p > -1 \) satisfies the requirement. Hence, [a].

115. Sweetness of glucose = 0.74
Sweetness of lactose = 0.16
Sweetness of martose = 0.32
To find the ratio

\[
\begin{align*}
\text{Glucose} & \quad 0.32 \\
\text{Lactose} & \quad 0.32 \\
\text{Martose} & \quad 0.32 \\
\frac{0.16}{8} & : \frac{0.42}{21}
\end{align*}
\]

Hence, [a].

116. A cube is painted blue (given)
Let side of cube = 2 cm
It is cut into two rectangular solids
Dimensions of rectangular solid
\(l = 2, b = 2, h = 1 \) (\( \because \) cube is cut into two equal pieces)
Total surface area of rectangular solid
\[= 2(lb + bh + hl)\]
\[= 2(4 + 2 + 2) = 16\]
Surface area of non-painted portion = \(2 \times 2 = 4\)
\(\therefore\) Percentage of surface area not painted
\[= \frac{4}{16} \times 100\]
\[= 25\%\]
Hence, [a].

117. Given that are 10 stations on a railway line.
Therefore total number of routes can be given by
\[\binom{10}{2} = \frac{10 \times 9}{2} = 45\]
Now the tickets taken can be either single or return.
So there are 2 tickets possible for a single route.
\(\therefore\) Number of different tickets = \(45 \times 2 = 90\)
Hence, [b].

118. Probability of A getting a six i.e., \(P(A) = \frac{1}{6}\) and \(P(A') = \frac{5}{6}\)
Similarly probability of B getting six \(P(B) = \frac{1}{6}\)
\[P(B') = \frac{5}{6}\]
A can win the stake if A gets a six and B does not get a six. It can be represented as
\[= P(A) + P(\overline{A})P(B) + P(A)P(\overline{B}) + P(\overline{A})P(B)P(\overline{A})P(A)
\]
\[= \frac{1}{6} + \left(\frac{5}{6}\right)\left(\frac{5}{6}\right)\left(\frac{1}{6}\right) + \left(\frac{5}{6}\right)\left(\frac{5}{6}\right)\left(\frac{5}{6}\right)\left(\frac{1}{6}\right)\]

\[
\frac{1}{6} = \left( \frac{5}{6} \right)^2 \left( \frac{1}{6} \right) + \left( \frac{5}{6} \right)^4 \left( \frac{1}{6} \right)
\]

\[
= \frac{1}{6} \left( 1 + \left( \frac{5}{6} \right)^2 + \left( \frac{5}{6} \right)^4 \right)
\]

\[
= \frac{1}{6} \cdot \frac{1}{1 - \left( \frac{5}{6} \right)^2} = \frac{1}{6} \cdot \frac{1 - \frac{25}{36}}{\frac{11}{36}} = \frac{6}{11}
\]

\[
\therefore \quad \text{P(A winning)} = \frac{6}{11}
\]

\[
\text{P(B winning)} = \frac{5}{11}
\]

\[
\therefore \quad \text{Expectation of A} = 6
\]

\[
\text{Expectation of B} = 5
\]

Hence, [b].

119. Given the few value of A and B is Rs.10 for stock A.

- 5% of 10 = 0.5
- 30% income tax on return = 0.3 \times 0.5 = 0.15
- Return = 0.5 - 0.15 = 0.35
- Return on investment = \frac{0.35}{0.75} \times 100 = 0.47
- For stock B
- 4% of 10 = 0.4
- Return on investment = \frac{0.4}{0.90} \times 100 = 0.44%

A given better return hence, option (2).
Hence, [b].

120. Given that there are 4 stacks to be made from 11 orange, 9 white, 13 black and 7 yellow chips.

To maximize white chips in one stock, put 1 chip in each of 3 stocks and 6 chips can be put into the fourth stock. Hence, [d].

121. For small burners 14.4 kg is used for 104 hours
For large burner 14.4 kg is used for 80 hours

Usage per hour for small burner = \frac{14.4}{104}

Usage per hour for large burner = \frac{14.4}{80}

Excen usage per hour of small burner over larger burner in percentage = \( \frac{\frac{14.4}{80} - \frac{14.4}{104}}{\frac{14.4}{80}} \times 100 \)

\[ = \frac{\frac{1}{80} - \frac{1}{104}}{\frac{1}{80}} \times 100 \]

\[ = 23.07\% \]

Hence, [d].

122. In the above question statement I is needed for determining the value of fraction statement II or III can be dispensed with. Hence, [b].

123. Co-efficient of variation can be used to study all the above options. Hence, [d].

124. Let the speed of cyclist be \( c \) km/min and wind be \( w \) km/min by given condition

\[ \frac{1}{c + w} = 3 \ldots (1) \text{ (} \therefore \text{ Moving with the wind)} \]

Also \[ \frac{1}{c - w} = 4 \text{ (} \therefore \text{ Moving against the wind)} \]

Combining both equation

\[ 3c + 3w = 4c - 4w \]

\[ 7w = c \]

putting in equation (1)

\[ \frac{1}{7w + w} = 3 \]

\[ w = \frac{1}{24} \]

Again putting in equation (1)

\[ \frac{1}{c + \frac{1}{24}} = 3 \]

\[ l = 3c + \frac{1}{8} \]

\[ 3c = \frac{7}{8} \]

\[ c = \frac{7}{24} \text{ km/min} \]

Time to drive 1 km without wind,

\[ t = \frac{1}{c} = \frac{24}{7} = 3 \frac{3}{7} \text{ min} \]

Hence, [b].
125. Ratio of investment of A, B and C = $\frac{1}{2} : \frac{1}{3} : \frac{1}{6}$

Ratio of time for which investment was done = $\frac{1}{3} : \frac{1}{4} : 1$

$\therefore$ Ratio of overall investment of A, B, C = $\frac{1}{6} : \frac{1}{12} : \frac{1}{6} = 2 : 1 : 2$

Since the investment is done in this ratio, profits should also be distributed in some ratio. Hence, [c].

126. Given that the number lock consists of 3 rings marked with 10 different numbers.

$10 \times 10 \times 10$

Since each ring consists of 10 numbers, total number of combinations = $10^3 = 1000$

There is only one correct combination, hence in 999 cases lock cannot be opened. Hence, [d].

127. Let number of first clam tickets be ‘F’ and number of second clam tickets be ‘S’

By given conditions

$F + S = 18$

Also $10F + 3S = 110$

$\therefore$ Solving, $F = 8$, $S = 10$

Now $10S + 3F = 10 \times 10 + 3 \times 8$

= 124

Hence, [d].

128. Given that a clock losses 12 mins in 24 hours consider,

<table>
<thead>
<tr>
<th>Minutes elapsed</th>
<th>True time</th>
<th>Clock time</th>
</tr>
</thead>
<tbody>
<tr>
<td>24</td>
<td>$\frac{23}{5} = \frac{119}{5}$</td>
<td>$\frac{4}{5}$</td>
</tr>
<tr>
<td>$x$</td>
<td>$\frac{18}{3} = \frac{55}{3}$</td>
<td>$\frac{1}{3}$</td>
</tr>
</tbody>
</table>

From 7 : 25 pm on Monday to 1 : 45 pm on Tuesday time elapsed is 18 hours and 20 mins = $18 \frac{1}{3} = \frac{55}{3}$

$\therefore$ Actual time elapsed = $x = 24 \times \frac{55}{119} \times \frac{5}{3}$

$= 18.48$ hours

$\approx 18$ hours 28 minutes

Hence, [d].

129. A is 7th from left and B is 9th from right. This implies there are 8 more people to right of B. When they interchange position, A becomes 11th from left.

$\therefore$ Total number of people = $11 + 8 = 19$

Hence, [b].

130. For maximization of profits consider the options.

1) Sell product at 30% profit
2) This statement implies saving of 85 kg goods at price of 115.
3. Profit = 115 – 85 = 30
   ∴ Profit percent = \(\frac{30}{85} \times 100\%\)

3) When 700 gm is used instead of 1 kg
   1000 – 700 = 300 gm
   300 cm is remained and only 700 gm is sold
   ∴ Profit percent = \(\frac{300}{700} \times 100 = \frac{30}{70} \times 100\)

4) Now 30% impurities are mixed in grain. So 130 gm is sold along with impurity but 100 gm is sold actually.
   \(130 – 100 = \frac{30}{100} \times 100 = 30\%\)
   Thus in option (3) profit is maximized.
   Hence, [a].

131. From the above statement it can be observed that only statement 4 is true. Hence, [d].

132. Failure rate of signal devices is 16.
   25% more implies rate of 20.
   Capacitors have failure rate of 20
   Hence, [b].

133. Picture tubes and signal devices have lowest failure rate and hence lowest priority may be given for investing in any changes or additions in them.
   Hence, [c].

134. Failure rate of Integrated Circuits = \(\frac{30}{1000} = 3\%\)
   So out of 400, 12 may be faulty.
   Failure rate of capacitors = \(\frac{20}{1000} = 2\%\)
   So out of 240, 4.8 or 5 may be faulty.
   Failure rate of printed circuit = \(\frac{33}{1000} = 3.3\%\)
   So out of 120, 3.3 or 4 may be faulty.
   So 12 IC, 3 or 4 may be faulty.
   So 12 capacitor, 4 PCBs have to be kept ready as spares. Hence, [b].

135. Area of roof = 9 sq. m
   = 9 \(\times\) 100 \(\times\) 100 sq. cm
   Height of rainfall = 0.1 mm
   = 10^{-2} cm
   ∴ Volume of water = 9 \(\times\) 100 cm³
   Area of base of cylindrical container = 900 cm²
   Since volume of water will remain constant 9 \(\times\) 100 = 900 \(\times\) h
   Where h; be the height till which water riser
   ∴ h = 1 cm
   Hence, [d].