



# ACE

## Engineering Academy

TEST ID: 509

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ESE- 2020 (Prelims) - Offline Test Series

Test- 18

GENERAL STUDIES AND ENGINEERING APTITUDE

### SUBJECT: ENGINEERING APTITUDE COVERING LOGICAL REASONING AND ANALYTICAL ABILITY SOLUTIONS

01. Ans: (a)

Sol: Number 7 occurs more often – (1, 6), (2, 5), (3, 4), (4, 2) (5, 2), (6, 1)...6 times.

Whereas number 9 occurs 4 times (3, 6) (4, 5) (5, 4), (6, 3), number 10 occurs 3 times (4, 6), (5, 5), (6, 4) and number 11 occurs 2 times (5, 6), (6, 5). So the most probable friend to win the chocolate is Rahul.

02. Ans: (c)

Sol:  $J + L + N = K + M = 50$ .

L can take only one value which is 11 ( $2^3+3$ ) (30 is not possible because only there is only 20 for the remaining two and one of them will have less than 10 and that is not possible).

J also can take only one value which is 27.

$J + L + N = 50$ .

Therefore,  $N = 50 - L - J = 50 - 11 - 27$   
 $= 12$

03. Ans (c)

Sol: Required length of wire = 2000 m.

Length of cable on the bank of the river = 900 m.

Length of cable on the below water = 1100 m.

Cost of cable below water =  $900 * 5 = 4500$

Cost of cable on the bank of river =  $(2000 - 900) * 4 = 4400$

Total cost =  $4500 + 4400 = 8900$ .

04. Ans: (d)

Sol:  $x + 2y + 4z = 22$  ..... 1

$5x + 4y + 2z = 32$  ..... 2

Adding eqn (1) and (2),

we get  $6x + 6y + 6z = 54$ .

$\Rightarrow 3x + 3y + 3z = 27$ .

05. Ans (b)

Sol: The total expenses are  $\$60 + \$80 = \$140$  and the total earnings are  $\$70 + \$90 = \$160$ .

The overall profit =  $\$160 - \$140 = \$20$



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**06. Ans: (d)**

**Sol:** If they are both doing a positive work then they would have completed the work in less than 10 days, but still they are consuming 20 days together. This is possible only when one of them is doing a negative work. If Hanuman is doing the negative work then the bridge won't get completed. So, the only other person to do the negative work should be Ravana. Thus Ravana's contribution in constructing the bridge is Destructing it.

**07. Ans: (a)**

**Sol:** For  $21^5$  unit digit will be 1.

For  $34^7$  it will be 4,

For  $46^8$ , it will be 6 and for  $77^8$ , it will be 1

So, the total unit digit will be what  $1*4*6*1$  has, i.e., 4.

**08. Ans: (d)**

**Sol:** Jake starts at 12.00 and covers 6 km/h.

Paul starts at 1.30 and covers 8 km/h.

Relative speed between Jake & Paul is 2 kmph, where Paul starting Jake is 9 km ahead of Paul.



From 13.30 hours Paul takes 4.30 hrs to meet Jake.

Again he needs 1.30 hrs to lead Jake by 3 km.

Totally he takes 6 hrs.

So  $13.30 + 6 = 19.30$  hrs.

**09. Ans: (b)**

**Sol:** Weight of 1<sup>st</sup> box = 200.

Weight of 3<sup>rd</sup> box = 125% of 200

$$= \left(\frac{125}{100}\right) * 200 = 250$$

Weight of 2<sup>nd</sup> box = 120% of 250

$$= \left(\frac{120}{100}\right) * 250 = 300$$

Weight of 4<sup>th</sup> box = 350

= 70% of Weight of 5<sup>th</sup> box

$$\text{So, Weight of 5<sup>th</sup> box} = \left(\frac{10}{7}\right) * 350 = 500$$

Average of 4 highest weighted boxes

$$= \frac{(500 + 350 + 300 + 250)}{4} = 1400$$

Average of 4 lightest boxes

$$= \frac{(350 + 300 + 250 + 200)}{4} = 275$$

Therefore difference =  $350 - 275 = 75$ .

**10. Ans: (c)**

**Sol:** Distance between House and T junction

$$= 20 \times 2 = 40.$$

i.e., B reached T at 11 am.

B continued to right after 11 am and travelled upto 2 pm.

So, distance covered by him =  $3 \times 40 = 120$

A reached T at 12 noon and travelled upto 2.

So, distance travelled by him =  $2 \times 20 = 40$

So, total distance between them =  $120 + 40$

$$= 160 \text{ km}$$

**11. Ans: (c)**

**Sol:** Perfect squares = 1, 4, 9, 16, 25, 36...

Each multiplied by a factor of 10:

10, 40, 90, 160, 250, 360...

The sum of the 4 integers is contained in the list above.

The sum of consecutive odd integers is a multiple of 4.

Of the values in the list above, only the following are multiples of 4: 40, 160, 360.

If the sum = 40, then the average =  $\frac{40}{4}$

$$= 10.$$

If the sum = 160, then the average =  $\frac{160}{4}$

$$= 40.$$

If the sum = 360, then the average =  $\frac{360}{4}$

$$= 90.$$

The numbers in the answer choices are too great to yield an average value of 10 and too small to yield an average value of 90.



Thus, the needed average is 40, implying that the correct answer is C:

**Alternate Method:**

*Options Check*

$$37 + 39 + 41 + 43 = 160.$$

$$\frac{160}{10} = 16, \text{ a perfect square.}$$

The correct answer is (c).

**12. Ans: (d)**

**Sol:** Assume that there are 100 people in the audience.

20 people heard 60 minutes of the talk, for a total of  $20 \times 60 = 1200$  minutes heard.

10 people heard 0 minutes.

$$\frac{70}{2} = 35 \text{ people heard 20 minutes of the}$$

talk, for a total of  $35 \times 20 = 700$  minutes.

35 people heard 40 minutes of the talk, for a total of 1400 minutes.

Altogether, there were  $1200 + 0 + 700 + 1400 = 3300$  minutes heard among 100 people.

Thus, the average is  $3300/100 = 33$  minutes, and the answer is (d).

**13. Ans: (c)**

**Sol:** Let us calculate total 2's in the units place.

$$(122, 132, 142 \dots 192),$$

$$(201, 212, 222, \dots 292),$$

$$(302, 312, \dots 372) = 8 + 10 + 8 = 26$$

Total 2's in tenth's place,

$$(120, 121, 122, \dots, 129)$$

$$+ (220, 221, \dots, 229) + (320, 321, \dots, 329)$$

$$= 30$$

Total 2's in hundred's place

$$= (200, 201, \dots 299) = 100.$$

Total 2's between 112 and 375

$$= 26 + 30 + 100 = 156$$

**14. Ans: (c)**

**Sol:** 200 runs can be scored by scoring only fours or through a combination of fours and sixes.

Possibilities are

$$50 \times 4, 47 \times 4 + 2 \times 6, 44 \times 4 + 4 \times 6 \dots\dots\dots$$

A total of 17 ways

**15. Ans: (b)**

**Sol:**  $148 - 4 = 144, 246 - 6 = 240, 623 - 11 = 612$

$$\text{HCF}(144, 240, 612) = 12$$

HCF of above numbers is 12.

Hence greatest number is also 12.

**16. Ans: (c)**

**Sol:** By framing equations, we get

$$30L + 3Q = 1167$$

$$30L + 6Q = 1284$$

Eliminate Q by multiplying the first equation by 2 and subtracting second equation from the first.

Then, we get  $30L = 1050$ .



Cost of 10 kgs of apples = 10 L

$$= \frac{1050}{3} = 350.$$

**17. Ans: (c)**

**Sol:** Total kilometers travelled by 4 tyre  
=  $40000 \times 4 = 1,60,000.$

This has to be share by 5 tyres. So, each tyre  
capacity =  $\frac{1,60,000}{5} = 32,000.$

**18. Ans: (d)**

**Sol:** Let the three digit number be abc.

$$\text{Then } a + b + c = 17 \quad \dots (1)$$

$$a^2 + b^2 + c^2 = 109 \quad \dots (2)$$

$$abc - cba = 495$$

$$100a + 10b + c - 495 = 100c + 10b + a \quad \dots (3)$$

From (3), we get  $a - c = 5$

So, the possibilities for (a, c, b) are  
(6, 1, 10), (7, 2, 8), (8, 3, 6), (9, 4, 4)

From the above, (8, 3, 6) satisfies the  
condition.

**19. Ans: (c)**

**Sol:** The percentage increases from 1995 to 2000  
for various products are:

$$\begin{aligned} \text{Lipsticks} &= \frac{48.17 - 20.15}{20.15} \times 100\% \\ &= 139.06\%. \end{aligned}$$

$$\text{Nail enamels} = \frac{37.76 - 5.93}{5.93} \times 100\%$$

$$= 536.76\%.$$

$$\begin{aligned} \text{Talcum powders} &= \frac{29.14 - 14.97}{14.97} \times 100\% \\ &= 94.66\%. \end{aligned}$$

$$\begin{aligned} \text{Shampoos} &= \frac{12.21 - 7.88}{7.88} \times 100\% = 54.95\% \\ &\approx 55\%. \end{aligned}$$

$$\begin{aligned} \text{Conditioners} &= \frac{10.19 - 5.01}{5.01} \times 100\% \\ &= 103.39\%. \end{aligned}$$

**20. Ans: (a)**

**Sol:** Required percentage

$$\begin{aligned} &= [(7.88 - 5.01) / 7.88 * 100] \% = 36.42\% \\ &= 36\% \end{aligned}$$

**21. Ans: (c)**

**Sol:** PROCESSOR  $\Rightarrow P = 16$  and D4

$$\Rightarrow 4 \times 4 = 16 = P$$

$$R = 18 \text{ and } F3 \Rightarrow 6 \times 3 = 18 = R$$

$$O = 15 \text{ and } C5 \Rightarrow 3 \times 5 = 15 = O \text{ and}$$

so on.

Hence, PROFESSOR is coded as

D4F3C5C1E1S1S1E3C6.

QUADRANT is coded as

Q1C7A1B2F3A1B7E4.

**22. Ans: (a)**

$$\text{Sol: } 14 \times 15 = 14 + 15 = 29 \text{ and } 29 - 4 = 25$$

$$26 \times 42 = 26 + 42 = 68 \text{ and } 68 - 4 = 64.$$

$$\begin{aligned} \text{Similarly, } 73 \times 31 &= (73 + 31) - 4 = 104 - 4 \\ &= 100. \end{aligned}$$

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**23. Ans: (d)**

**Sol:** Statement (a) + statement (b) gives conclusion "All hotels are belts".

[ ... A + A = A ].

Conversion of "All hotels are belts" gives conclusion I. Hence, conclusion I follows.

Again conversion of statement (a) gives conclusion II. Hence conclusion II follows.

Again conclusion III follows from conversion of statement (c). Hence conclusion III follow.

**24. Ans: (c)**

**Sol:** Interval between each pair of numbers becomes the succeeding term in series.

**25. Ans: (c)**

**Sol:** If you study the pattern carefully you will find that every seventh letter is taken alphabetically.

After U the letters VWXYZA are omitted and B is taken.

After B, CDEFGH are omitted and I is taken.

After I, JKLMNO are omitted and P is taken to follow the same pattern naturally.

After P, QRSTUV should be omitted and W will be the next letter in the series.

**26. Ans: (c)**

**Sol:** The unit's digit of powers of numbers with units digit 5 has cycle (5).

For any number it has remainder 0.

Units digit of  $975^{497} = 5$ .

The units digit of powers of numbers with units digit 7 has cycle (7, 9, 3, 1).

$986/4$  has remainder 2

Units digit of  $857^{986} = 9$

The units digit of powers of numbers with units digit 6 has cycle (6)

For any number it has remainder 6

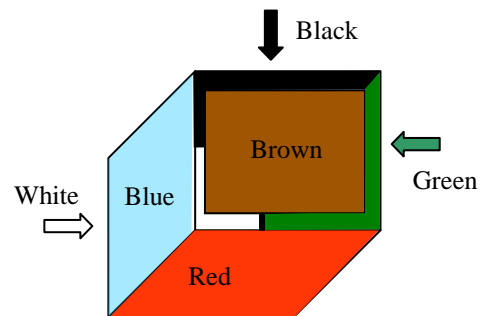
Units digit of  $656^{878} = 6$

For expression, units digit =  $5 + 9 + 6 = 20$

Therefore, the units place is 0.

**27. Ans: (b)**

**Sol:**

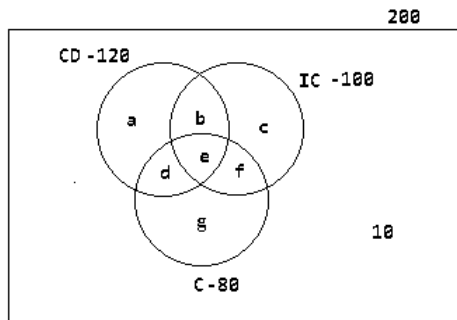


As black is opposite of face of red, and red is at the bottom.



28. Ans: (a)

Sol:



From the given information, it is clear that the required answer is  $b + d + f$ .

Given:

$$a + c + g = 100 \text{ -----(x)}$$

Summing up the number of people who consumed all three items:

$$a + 2b + c + 2d + 3e + 2f + g = 120 + 100 + 80$$

$$a + 2b + c + 2d + 3e + 2f + g = 300 \text{ -----(1)}$$

$$a + b + c + d + e + f + g = 200 - 10$$

$$a + b + c + d + e + f + g = 190 \text{ -----(2)}$$

Adding (x) to (1)

$$2a + 2b + 2c + 2d + 3e + 2f + 2g = 300 + 100$$

$$2a + 2b + 2c + 2d + 3e + 2f + 2g = 400 \text{ -----(3)}$$

Multiplying (2) by 2 and subtracting from (3)

$$e = 400 - 380$$

$$e = 20 \text{ -----(4)}$$

Substituting (x) and (4) in (2)

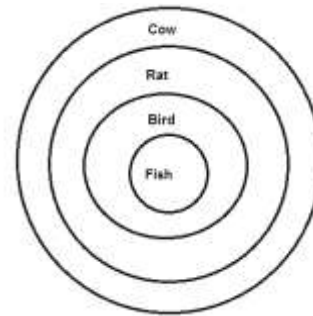
$$b + d + f + 100 + 20 = 190$$

$$b + d + f = 70$$

Hence, 70 people had exactly two out of the three items

29. Ans: (a)

Sol:



From statements (b) and (c), we can easily conclude that "All birds are cows" (Rule 4).

So, conclusion (I) is correct.

Similarly from statements (a) and (b), we can conclude that "All fishes are rats" (Rule 4).

Now from rule 1, we can conclude that "Some rats are fishes".

Hence, conclusion (II) is correct.

30. Ans: (a)

$$\text{Sol: Sum} = \text{Rs.} \left( \frac{50 \times 100}{2 \times 5} \right) = \text{Rs.} 500$$

$$\text{Amount} = \text{Rs.} \left[ 500 \times \left( 1 + \frac{5}{100} \right)^2 \right]$$

$$= \text{Rs.} \left( 500 \times \frac{21}{20} \times \frac{21}{20} \right) = \text{Rs.} 551.25$$

$$\therefore \text{C.I.} = \text{Rs.} (551.25 - 500) = \text{Rs.} 51.25.$$



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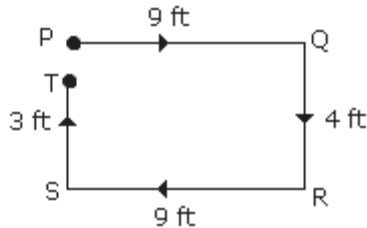
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**31. Ans: (c)**

**Sol:** From the conditions mentioned in the question, we can make following diagram,

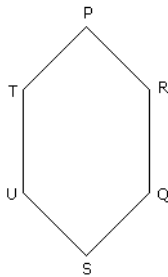


Required distance  $PT = 4 - 3 = 1$  feet

As we can see from the diagram, He is 1 feet from P.

**32. Ans: (d)**

**Sol:**



S is sitting opposite to P.

**33. Ans: (c)**

**Sol:** The number of people who drink only coffee is represented by the portion of the circle which is not overlapped by any other geometrical figure representing the other sets. Hence, there are a total of  $25 + 20 = 45$  people who drink only coffee.

Similarly, the number of people who drink only wine is represented by the portion of the rectangle which is not overlapped by other geometrical figures.

Hence, there are a total of  $20 + 40 = 60$  people who drink only wine.

Thus, the number of people who drink only coffee or only wine is  $45 + 60 = 105$ .

**34. Ans: (b)**

**Sol:** Let the total units of work to be completed is L.C.M of  $(15, 20, 30) = 60$  units.

Units of work completed by Abhay and Binod working together =  $60/15 = 4$  units per day.

Units of work completed by Binod and Charan working together =  $60/20 = 3$  units per day.

Units of work completed by Abhay and Charan working together =  $60/30 = 2$  units per day.

Total units of work completed by them in a day working together

$$= (\text{Abhay} + \text{Binod} + \text{Charan}) \\ = 9/2 \text{ units.}$$

Units of work completed by Abhay alone in one day =  $9/2 - 3 = 3/2$  units

Time taken to complete the whole work =  $60/(3/2) = 40$  days.



Units of work completed by Charan alone in one day =  $9/2 - 4 = 1/2$  units

Time taken to complete the whole work =  $60/(1/2) = 120$  days.

Therefore, required Ratio =  $40: 120 = 1 : 3$

**35. Ans: (d)**

**Sol:** Let us assume that Ankita, Bibha and Chandana gets  $2x$ ,  $3x$  and  $4x$  respectively.

But when distributed in the ratio  $5: 7: 6$ , they get  $5y$ ,  $7y$ ,  $6y$  respectively.

Therefore,  $7y - 3x = 137$  ----- (i)

The amount is same.

Hence,  $2x + 3x + 4x = 5y + 7y + 6y$

$\Rightarrow 9x = 18y$

Or  $x = 2y$  ----- (ii)

Substituting (ii) in (i), we get

$7y - 3(2y) = 137$  gives  $y = 137$ .

Therefore, Amount =  $18y = 18 * 137$   
= Rs.2466.

**36. Ans: (a)**

**Sol:** Let the total age of 5 men be  $X$ .

Then, the average age of 5 men before 5 years

=  $(X - \text{number of years} \times \text{number of men}) / (\text{number of men})$

=  $(X - 3*5) / 5 = (X - 15) / 5 = 55$

Then,  $X = 55 \times 5 + 15 = 290$ .

That is, presently the total age = 290.

After  $P$  years, the total age of the 5 men becomes  $X + 5*P = 290 + 5*P$ .

One man aged 50 joins with them.

Therefore the average becomes

$(\text{Total age of 5 original men after } P \text{ years} + \text{Age of new man}) / (\text{Total number of men})$

=  $(290 + 5P + 50) / (5+1) = 60$  or

$5P = 360 - 340 = 20$

So,  $P = 20/5 = 4$

Therefore, 4 years is our required answer.

**37. Ans: (b)**

**Sol:** In this problem, the worst case scenario will be as follows.

Step 1: He picks all of same colored balls of the largest group. The largest group is pink.

Therefore, he will be picking all 25 pink balls first.

Step 2: Then he picks all of same colored balls of the next largest group.

The second largest group is Orange. Therefore, he will be picking 15 orange balls.

Step 3: Now, if he starts picking the remaining balls which are white, he could very well stop at 2 balls as he would be having a pair of white ball anyway.

Therefore, total picks =  $25 + 15 + 2 = 42$ .



**Shortcut:**

If confused, for these kinds of problems you have to add higher values first + 2, leaving the least group. Here, least group is white.

Therefore, our answer will be 25 pink + 15 orange + 2 = 42

Hence, the answer is 42.

**38. Ans: (a)**

**Sol:** Let X and Y be the age of a boy and a girl respectively.

Given that 22 is the average age of all.

$$\text{Then } 4X/4 + 6Y/6 = 22$$

$$\text{i.e., } X + Y = 22 \dots 1$$

Also given that, 56 is the age of two boys and three girls.

$$\text{Then, } 2X + 3Y = 56 \dots 2$$

Solving the above equations, we get X=10, Y=12.

That is, the age of each boy is 10 and age of each girl is 12.

After 3 years, 1 among 4 boys leaves the group but replaced by a new 15 year old boy.

Sum of the ages of 3 left over boys + new boy

$$= \text{Ages of original 3 boys after 3 years}$$

$$+ \text{Age of new boy}$$

$$= 3(X+3) + 15 = 3 \times 13 + 15 = 54 \text{ years.}$$

$$\begin{aligned} \text{Their average age} &= \text{Total Age}/4 = 54/4 \\ &= 13.5 \text{ years.} \end{aligned}$$

13.5 years is our answer.

**39. Ans: (a)**

**Sol:** I. During Marriage

$$\text{Arunachalam's age} = 29 \text{ years}$$

$$\text{Wife's age} = 29 - 3.5 = 25.5 \text{ years}$$

II. 20 years afterwards

$$\text{Arunachalam's age} = 29 + 20 = 49 \text{ years}$$

$$\text{Wife's age} = 25.5 + 20 = 45.5 \text{ years}$$

$$\begin{aligned} \text{Let Son's age (20 years after marriage)} \\ &= S \end{aligned}$$

$$\begin{aligned} \text{It is given that, 20 years after the} \\ \text{wedding, Arunachalam's age} + \text{Wife's} \\ \text{age} + S = 110 \end{aligned}$$

$$\text{Or } 49 + 45.5 + S = 110$$

$$S = 15.5 \text{ years}$$

III. 40 years afterwards.

Since, we have found that the son was 15.5 years old 20 years after marriage, adding 20 to 15.5 will give age of Kamalraj after 40 years.

$$\text{Therefore, answer} = 15.5 + 20$$

$$= 35.5 \text{ years}$$

$$= 35 \frac{1}{2} \text{ years}$$

**40. Ans: (c)**

$$\text{Sol: } (1 \times 8 + 8) = 16, (16 \times 8) + 8 = 136,$$

$$(136 \times 8) + 8 = 1096, (1096 \times 8) + 8 = 8776$$



**41. Ans: (a)**

**Sol:**  $10500/2.5 = 4200$ ,

$$4200/2.5 = 1680,$$

$$1680/2.5 = 672,$$

$$672/2.5 = 268.8$$

**42. Ans: (b)**

**Sol:** Part 1: To find the speed of Tom

As given in the question, the total time taken by Tom = 1 hour and

The total distance = 120 meters = 0.12 km

Now, the speed of Tom = distance / time =  $0.12 / 1 = 0.12\text{km/hr}$

Part 2: To find the speed of Jerry

The total time taken by Jerry = 30 minutes + 1 hour =  $3/2$  hour

Distance = 0.12 km

Then, the speed of Jerry =  $0.12/(3/2) = 0.08\text{km/hr}$ .

Part 3: To find the ratio of the speed of Tom to that of Jerry

Based on part 1 and 2, ratio of the speed of Tom and Jerry =  $0.12:0.08 = 3: 2$ .

So,  $X = 3, Y = 2$ .

**43. Ans: (c)**

**Sol:** We have to find out when Rama Dilip will catch up with Dilip. Dilip reads at the rate of 40 pages per hour and Rama Dilip reads at the rate of 50 pages per hour.

Dilip starts 50 minutes ahead of his wife. Since 50 minutes is  $5/6$  of an hour, by the time Rama Dilip starts reading at 5.20 PM, Dilip has already read  $5/6 * 40 = 200/6$  pages. Please note that Rama Dilip is faster by 10 pages per hour as compared to her husband. Since, Dilip started with  $200/6$  pages ahead at 5.20 PM to catch up with Dilip it should take Rama Dilip  $200/6$  pages / 10 pages per hour. ie  $200/60$  hours or 3 hours 20 minutes. And of course the common time spent by both husband and wife chatting with guest is 30 minutes.

So, to catch up with Dilip, Rama Dilip requires 3 hours 20 minutes + 30 minutes or 3 hours 50 minutes.

Rama Dilip and Dilip will be reading the same page at 5.20 PM + 3 hours 50 minutes ie by 9.10 PM.

**44. Ans: (b)**

**Sol:** Given  $110\%$  of CP =  $3100 + 1300 = 4400$ .

$$\Rightarrow 100\% \text{ of CP} = 4000.$$

I sell the TV for Rs. 3150 and the cycle for its original price, I lose 10% on the whole.

$$\Rightarrow \text{CP of Cycle} + 3150 = 90\% \text{ of CP}$$

$$\Rightarrow \text{CP of Cycle} = 3600 - 3150 = 450.$$

So, the TV cost =  $450 + \text{CP of TV} = 4000$

$$\Rightarrow \text{CP of TV} = 4000 - 450 = 3550.$$

# SSC-JE (Paper-II) MAINS 2018

## OFFLINE TEST SERIES

**Streams:** Civil | Electrical | Mechanical

### FULL LENGTH MOCK TEST-1

Exam Date: **01.12.2019**

Exam Timing: **6:00 pm to 8:00 pm**

### FULL LENGTH MOCK TEST-2

Exam Date: **15.12.2019**

Exam Timing: **6:00 pm to 8:00 pm**

- ✓ All tests will be conducted in **Question Paper Booklet** format.
- ✓ Test Series will be conducted at all our centres.

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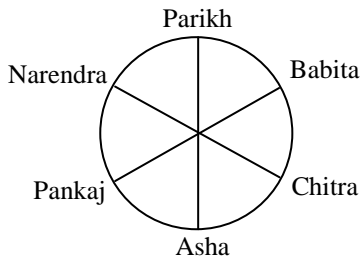
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45. Ans: (a)

Sol: The final order will be:



So, Parikh is to the immediate right of Babita.

46. Ans: (b)

Sol: Let C.P = Rs. 100. First S.p = Rs.120.

Now, S.P = Rs.120, commission = 10%

Marked price =  $(100/90)120 = \text{Rs. } 400/3$ .

Now, Marked price =  $400/3$ ,

commission = 15%.

S.P = 85% of  $400/3 = (85/100 * 400/3)$

= Rs.  $340/3$

Gain % =  $(340/3 - 100) = 40/3 = 13(1/3)\%$ .

47. Ans: (a)

Sol: The retailer got 25copies

At the rate of 24 copies (i.e.) =  $24 * 5$

= Rs.120

CP/copy =  $120/25 = \text{Rs } 4.8$

SP/copy = Rs 6

% of profit =  $(6-4.8)/4.8 * 100 = 25\%$ .

48. Ans: (b)

Sol: Let consider the amount deposited at 5% p.a. be Rs x.

Amount deposited at 6% p.a = Rs  $(5600 - x)$ .

$(x * 5/100) - [(5600 - x) * 6/100 * 1] = 60$

$\Rightarrow 0.05 x - 336 + 0.06x = 60$

$\Rightarrow 0.11x = 396$

First amount  $x = 3600$ .

Second amount =  $5600 - 3600 = 2000$ .

49. Ans: (c)

Sol: Since,  $(8 - 6) = (12 - 10) = (15 - 13)$

= 2, therefore

The required number

=  $(\text{LCM of } 8, 12, 15) - 2 = 120 - 2 = 118$ .

But by the given condition the number must be exactly divided by 23.

The number =  $(\text{multiple of } 120) - 2$

=  $(120 * 5) - 2 = 598$  (since  $598/23 = 6$ ).

50. Ans: (c)

Sol: Deep and john can do a piece of work in 12 days while John and Titu can do the same work in 16 days.

D + J - 12 days

J + T - 16 days

Deep starts the work for 5 days. He is then replaced by john who works for 7 days.

Titu is finishing the remaining work in 13 days.



Indirectly D + J work for 5 days.

J + T work for 2 days.

Remaining work done by Titu in 11 days alone.

48 units

D + J      -      12 days      4 u/d

Completed  $4 * 5 = 20$  units

J + T      -      16 days      3 u/d

Completed  $3 * 2 = 6$  units.

Remaining work =  $48 - 26 = 22$  units completed by Titu in 11 days alone.

So, Titu efficiency is  $22 \text{ u} / 11 \text{ d} = 2 \text{ u/d}$ .

Work done by Titu alone =  $2 * 13 = 26$  units

So, John efficiency is  $1 \text{ u/d}$ .

Work done by John alone =  $1 * 7 = 7$  units

So, Deep efficiency is  $3 \text{ u/d}$ .

Work done by Deep alone =  $3 * 5 = 15$  units

John's share in Rs. 9600 is:

$$\frac{7}{48} * 9600 = 1400$$