Q.1) 14
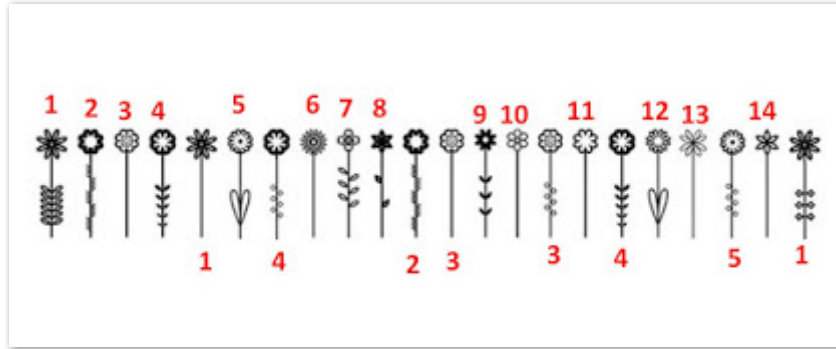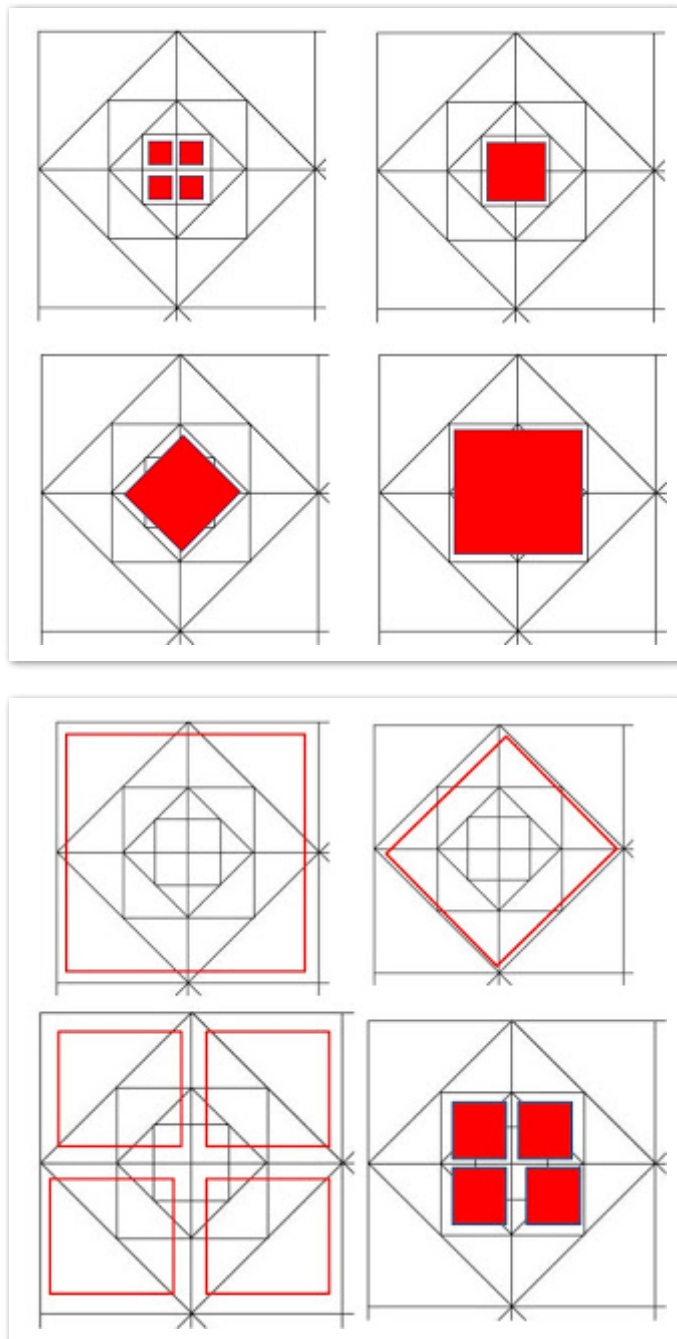Below picture shows the count

Q.2) 79
The following four figures illustrates in which I have inscribed boxes for your easy understanding. Note that in the first two pictures, I showed squares obtained in different orientations, for 1/4th of the square. So, we have to take four times of the count that we get from the first two images.
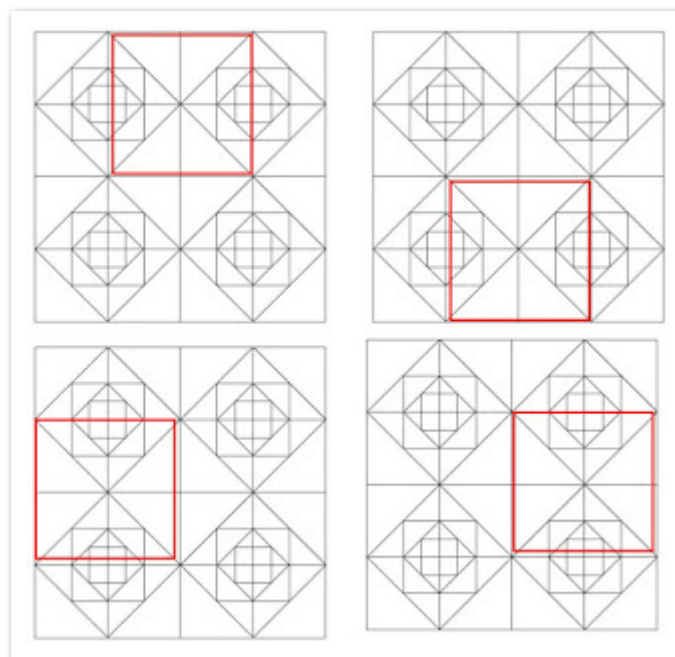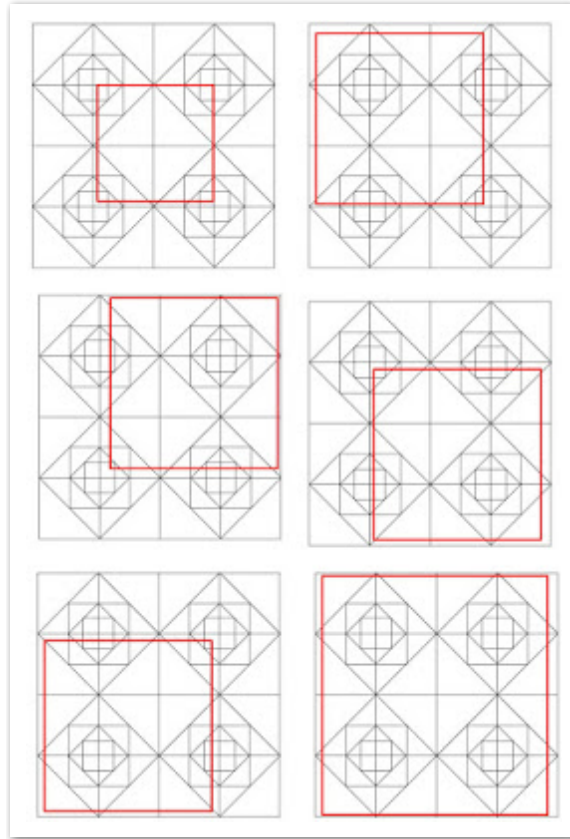
No. of squares in Image (a) = 4+1+1+1 = 7
No. of squares considering four such squares in the actual image = 7*4 = 28

No. of squares in Image (b) = 1+1+4+4 = 10
No. of squares considering four such squares in the actual image = 10*4 = 40

Third and fourth image considers the whole pattern given in the question, so we don't have to multiply by 4.

No. of squares in Image (c) = 1+1+1+1+1+1 = 6

No. of squares in Image (d) = 1+1+1+1= 4

Now, the whole image itself forms a square
So, total no. of squares = 28+40+6+4+1 = 79

Q.3) 13
Below picture shows the situation. Say the person started at S. Then following the directions given in the question, the person will follow the path given by S-A-B-C-D-E-F, where F is the final destination. As can be clearly seen, the person is actually along the same line of start. Now the straight line distance is given by 3+2+8 = 13 km
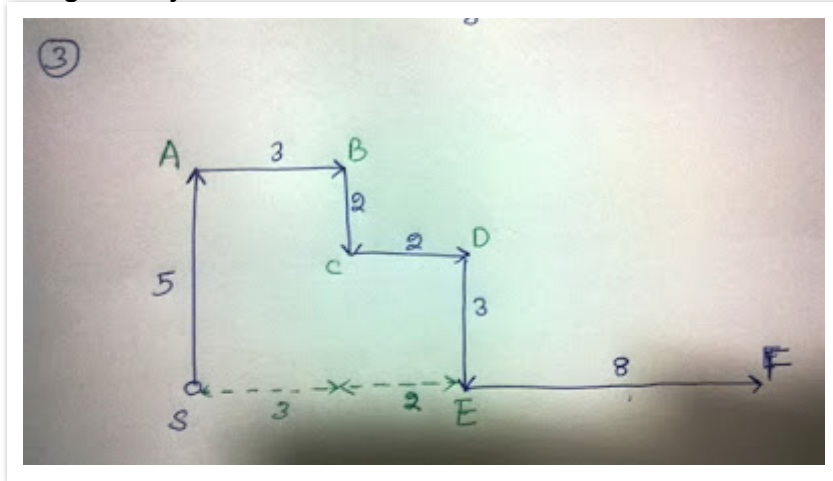
Q.4) 8
I've highlighted the mistakes for your benefit

It is a cluster of sacred symbls, woven into some sort of ordered whole, which makes up a religous system. For those who are comitted to it, such a religious system seems to medeate geniune knowledge, knowledge of the esential conditions in terms of wich life must, of necesity be lived.

Q.5) 22
Considering the left most solid image as in the front. I'm giving the surface count like I do usually.
Front - 6
Right side - 3
Back side -4
Left side - 3
Top - 4
Bottom - 2
You can check on **how to count the surfaces in this post**

Q.6) 14
PC is the diagonal of a rectangle of size 2X4X4. For those who are not familiar on how to find the diagonal of the solid. Here is a easy way which needs just the Pythagoras theorem.
Consider the rectangular box base surface denoted by A'B'C'D'. Noe, a line joining P and C', will be diagonal (hypotenuse) to PB' and B'C'. Applying Pythagoras theorem, you get square root

(20) as shown in the below image. Now PC is the diagonal (hypotenuse) of sides PC' and CC'. This is shown in in image. The length of which will be 6.
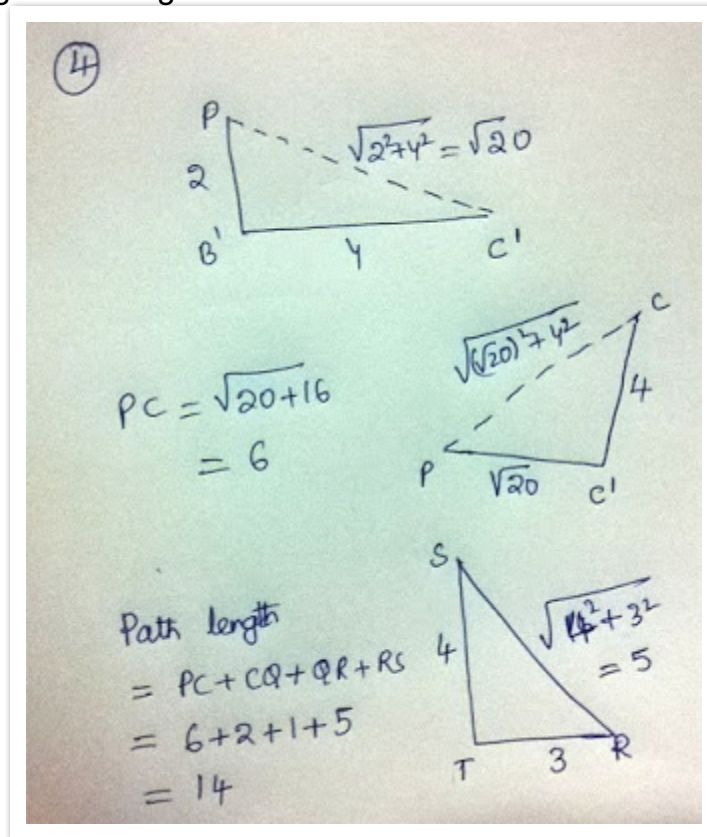

Similarly considering the pyramid ARDS, we want RS. which is the diagonal (hypotenuse) of the sides TR and TS. So, RS = square root (TR square + TS square)

RS = 5

Now, the length of the ant travel will be L = PC+CQ+QR+RS = 6+2+1+5 = 14

Q.7) 30

Below picture (a) part shows what the question mea. They basically want to cut a tunnel at the center on all faces. Sorry for my poor illustration in the (a) image. Anyway image (b) gives you an idea of how it look once it is cut. Now the number of faces are counted as usual.
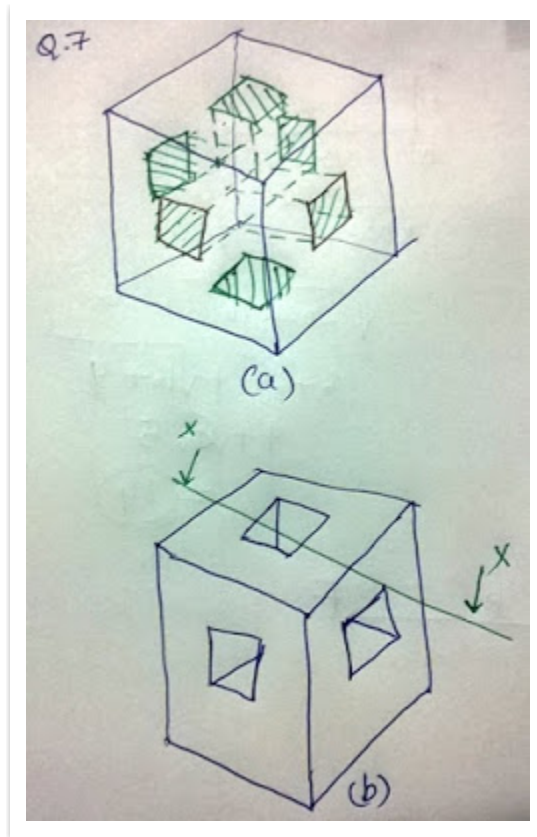
No. of surfaces from
Front - 1 (front)+ 4 (inside as shown in below fig.) = 5
Right = 5
Back = 5
left = 5
Top = 5
Bottom = 5

It should be noted that since the object is symmetry, same no. of surfaces can be counted , i.e
no. of surfaces = 5*6 = 30

Below image shows the cross section (cut view at X-X) of inside part of the cube for your
understanding as well as help you with the visualization. Please don't get confused by counting
for the surfaces in the image C. Remember it's a cut section, not an actual section. In cut section
you would visualize more no. of surfaces than the actual no. of surfaces in the real solid.
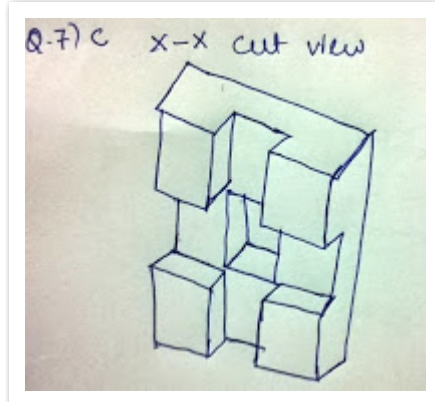
You can check here on how to count the no. of surfaces - **how to count the surfaces in this
post**

Q.8) 15.588

There are several ways of solving this problem. Here is one simple way.
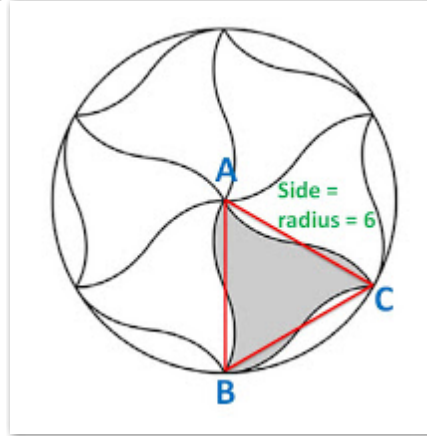
As shown in the above image, inscribe a triangle such that one corner of the triangle is at the center (denoted by 'A' in the image) and the other two corners touching the circle and touching the corners of the pattern where the flower like pattern is touching the circle (at B and C). Now the required area is six times the area (since there are six such flower petal shaped patterns) of this equilateral triangle of side = radius (6) . So,
Area = area of equilateral triangle = (square root(3) /4) X (square of side) = sqrt(3)/4*s^2
where s = 6
So, area = (1.732/4)*6*6 = 1.732*9 = 15.588

Below picture is added as a support for why triangles are enough to find the area. Shaded in yellow and green are the projections to be added and subtracted. They are of same area. So, if yellow area is getting added, then green (of same area is getting subtracted). The same is true for all the curves in the pattern. So, just a triangle of side = radius (which will form equilateral triangle of angle 60 degree at the center) will be sufficient to get the area. Hope you understood this.
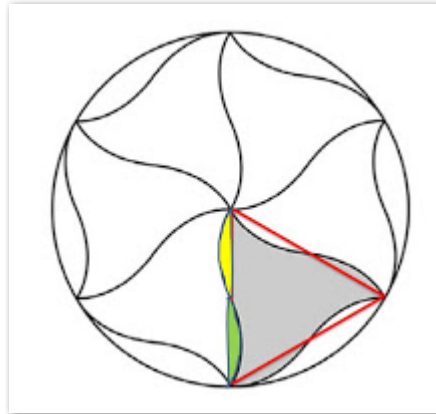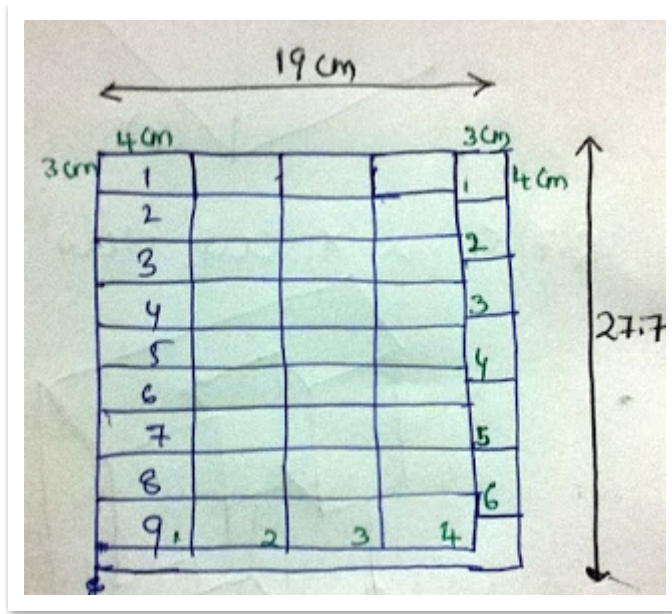

Q.9) 42
Dimensions of A4 sheet is 21.0 X 29.7 cm
If we have to exclude one centimeter margin, then we are left with (21-1-1) X (29.7 -1-1) cm
= 19 X 27.7cm
Below image shows the best arrangement as according to me.

As can be seen, in the first row, lay four passport photos such that it's size are 3X4cm as shown in the picture below. So, in the first row we can put 4 no. of photos. Now in the remaining 3cm (4*4 = 16cm) out of 19cm, we can lay a photo such that it is now 4X3 cm as shown in the right of the image below.

The rows of 3X4 passport images, will contour till 9 rows which covers 3*9 = 27cm of the height of the page, leaving behind 0.7 cm unoccupied. But the passport aligned as 4X3 can only cover 4*6 = 24cm in the right column. leaving behind 27.7-24 = 3.7cm unoccupied. So,

Total no. of photos occupying the sheet = 9*(4 rows of 3X4) + 6 (rows of 4X3 arrangement) = 9*4+6 = 42

Q.10) 39

There is a bit confusion with this question. The actual possibility could be that we can fit 44 fishes in the given box. It's shown in the below image. The dimension 5.5 cm is misguiding. If its really 5.5cm till the fishes tail, then I believe in the second row, we can fit 4 fishes. With that shown, in the first row, we can fit 4 fishes in a depth of 3cm. Now, in the second row, a depth of 1.5cm is sufficient to fit them as shown in the image. continue this for every depth of 1.5, until the total depth counts to 18.5cm, which will be 11 rows, so my belief is 44 no. of fishes.
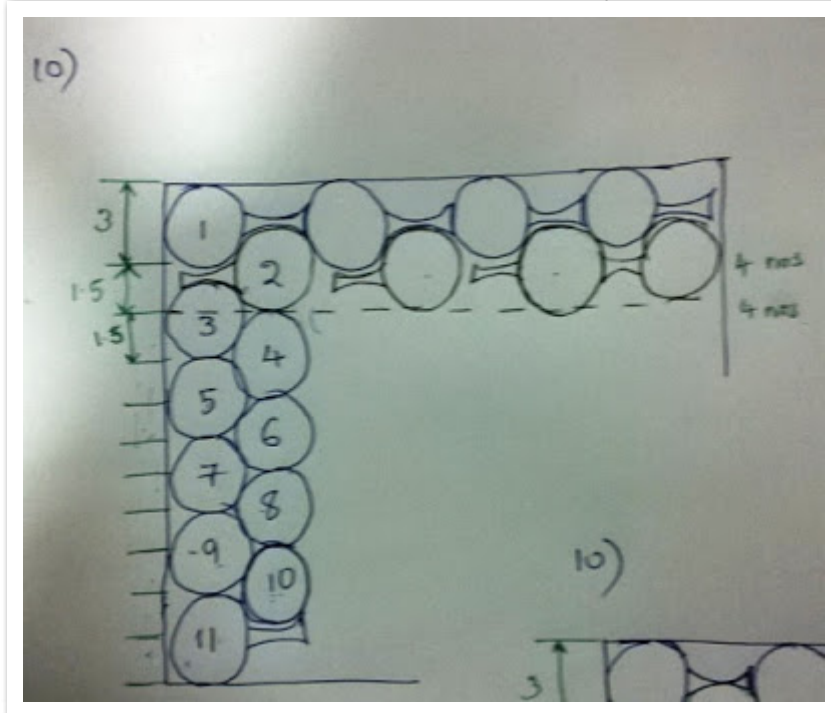
But based on the official answer key, it was considered 39, which mean in the second row, drawn in green in the below image, they have considered only three fishes. By counting in such way, they got 6 rows of 4 fishes and 5 rows of 3 fishes = 6*4 + 5*3 = 39

You may comment your views about the correct one. If you have time, you can draw it manually and check.

PART A: Section II MSQ

Q.11) A,C,D

I don't think explanation is required for this and next few questions. I'm just taking the answers from the key

For more Paragraph and verbal kind of question, you can check the **useful links in this resource page** under the same heading

Q.12) A,B,D

Rigging is the apparatus through which the force of the wind is used to propel sailboats and sailing ships forward. This includes masts, yards, sails, and cordage.

Q.13) A,C,D

Q.14) ALL

Q.15) A,B,D

Check the list of paintings made by rembrandt in wiki page -

C is the picture drawn by peter paul rubens, which depicts the portrait of helene fourment.
More related paintings of her can be seen here
Complete works of Peter Paul Rubens is given here

Q.16) A,C

For this question, the best thing that I follow is instead of checking for best match, I look for best un-match from the options. I start with small parts and will try to fit. If not, then I will move next bigger parts. This is just my way of doing, you can follow your own way of fitting parts.

Below picture shows the two possibilities for the given pattern. I've numbered the fitted parts for your benefit.
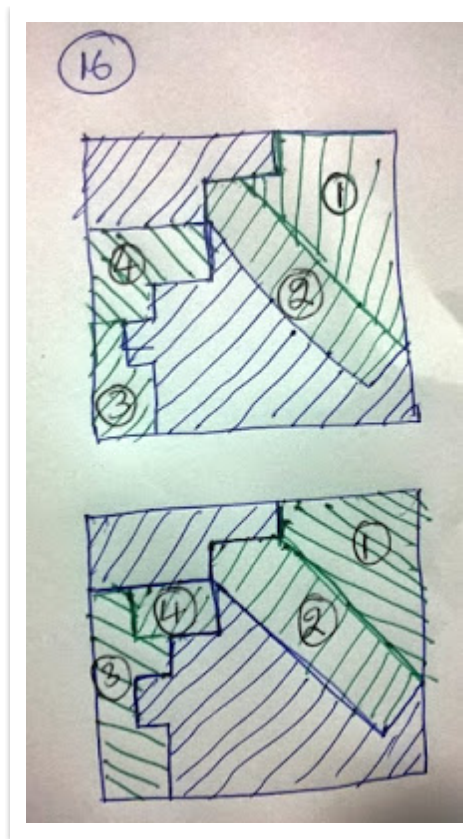
Q.17) A,C

To know how to solve similar kind of question, check this - **Tessellation and unfolding of solids**

Q.18) B,C,D

Ligature - A thing used for typing or binding something tightly

Bokeh is the is the aesthetic quality of the blur produced in the out-of-focus parts of an image produced by a lens. More about Bokeh

Dodging and burning are terms used in photography for a technique used during the printing process to manipulate the exposure of a selected area(s) on a photographic print, deviating from the rest of the image's exposure. In a darkroom print from a film negative, dodging decreases the exposure for areas of the print that the photographer wishes to be lighter, while burning increases the exposure to areas of the print that should be darker
check more about - Dodging and burning

Contre-jour (French for "against daylight") is a photographic technique in which the camera is pointing directly toward a source of light.
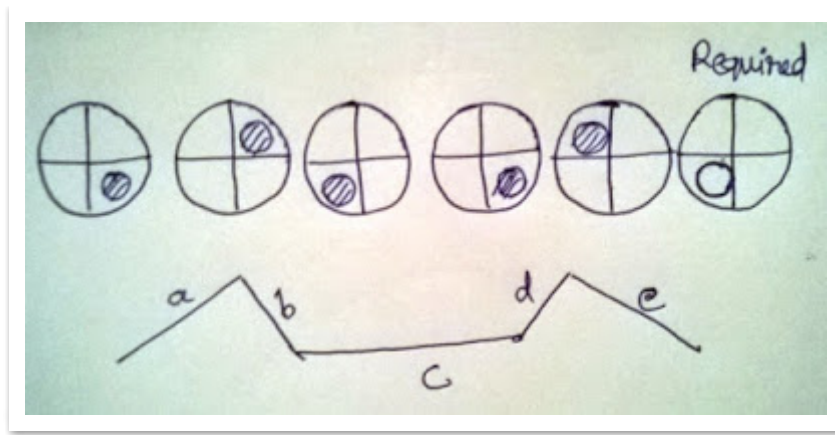
Q.19) C,D

Q.20) A,B,D

PART A: Section III MCQ

Q.21) C
First, let me discuss about the pattern followed by the white dot in the given sequence of images. Below image shows the pattern that I interpreted.

As marked in the image, length b and d are equal and are oriented in the same angle. C is the connecting length and so, lengths 'a' and 'e' should be equal. So, the small circle in the final pattern should be at the left bottom quarter of the circle as shown in the image.

Regarding the color, In the first two circles, color blue part of circles (bottom) are side by side. So, in the last pattern also, the color blue should be side to the color in the last image sequence (shown in the 5th circle) which will be at bottom left corner of the required circle. Option 'C' has that pattern. You may also check the same kind of pattern for other colors too (yellow, orange, red)

For more such question, refer to mechanical and mental ability question in Resource page - **useful links in this resource page**

Q.22) C

Q.23) D

This question is pretty straight forward. Symbols in the image that are individual are flipped upside down (mirror image) and is placed at the opposite side. Like for ex, the symbol with circle and triangle stitched together, which is in bottom of the square is shifted to top in the transformed image and is flipped. Symbols that are horizontal and is side by side with another symbol is following diff. pattern transformation which is not required for our case. Since, the required question has all objects vertically separated. Please be careful with the option C and D. In option C, the dark heptagon shape is not flipped.

Plenty of resources related to this kind of question are available in the resource page under the appropriate heading - **useful links in this resource page**

Q.24) C

Very good refernce related to Indian Sculpture in these two links
Indian sculpture - Visual arts cook
Sculpture in south india

Q.25) B

Q.26) A

The phenakisticope was the first widespread animation device that created a fluent illusion of motion. Below images shows several images depicting phenakisticope.

A zoetrope is one of several pre-film animation devices that produce the illusion of motion by displaying a sequence of drawings or photographs showing progressive phases of that motion. Below image shows an example.
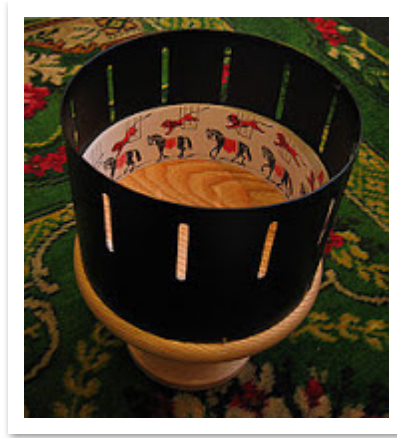
A Thaumatrope is an optical toy that was popular in the 19th century. A disk with a picture on each side is attached to two pieces of string. When the strings are twirled quickly between the fingers the two pictures appear to blend into one due to the persistence of vision. Below image shows an example.

The praxinoscope was an animation device, the successor to the zoetrope. It used a strip of pictures placed around the inner surface of a spinning cylinder.

Further interesting read - [History of Animation](#)
Image Sources -Wikipedia

Q.27) D

Daffry Duck - Warner Bros. character, directed by Chuck zones
Screwball "Screwy" Squirrel - Warner Bros. character, Created by Tex Avery
Road Runner - Looney Tunes Character, created by Chuck Jones and Michael

Jiminy Cricket is the original trailer for Pinocchio, Created by Ward Kimball, is the Walt Diney version of The Talking Cricket.
It's also a fictional character created by Carlo Collodi for his children's book The Adventures of Pinocchio, which Disney adapted into the animated film Pinocchio in 1940.

Further reading on Cartoon charecters -
IMDB - Cartoon character list
Empire online - 50 greatest Cartoon character list
MTV - animated character list

Q.28) D
For perspective related questions, the best way to check for is to
a. Find if the three lines under third perspective is meeting at the same point or not
b. Find if the two horizontal vanishing points lie on the same horizontal line; referred as "Horizon line".
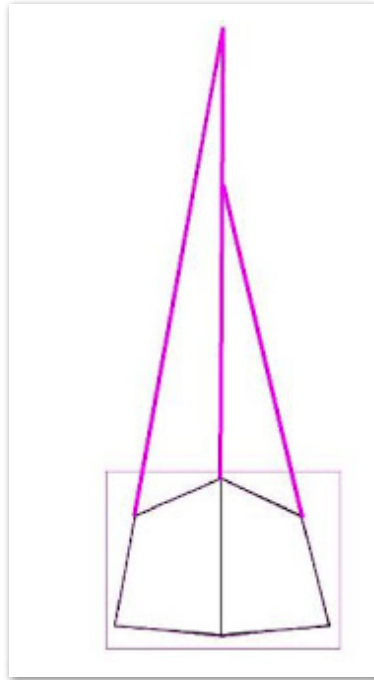
The first check itself gave me negative result as seen in the below image. Points are not coinciding. So it's not in perspective. If it were coinciding, then we could say it's in 3-point perspective.

Q.29) A
This is a simple physics question. Higher density liquids will settle down, while the lower density liquid will be on top of that; if both the liquids are not mixing. In the given first flask, oil is ontop of water and is separated. So, water weight (density) is more.Now, when additional water from flask 2 is poured into flask 1, all the water will get settled down coz of their weight and the lighter oil willbe pushed up. Since, the flask shape is changing(tapered) and had less diameter at top, so the oil will occupy greater height than in the actual bottom position.

Q.30) C
Plenty of resources related to Color is available here - **Font, Color and other related GA topics for CEED/UCEED**

Q.31) D

Following links provide you good information related to Poetry
Different types of poetry from yourdictionary
All Types of Poems from Familyfriendpoems
All Forms of Poems from Familyfriendpoems

Q.32) D

Check more about - **Materials and Manufacturing process**

Q.33) B

Since the height of the table is half of the human view point, the bottom two table legs will not be visible to that extent. Also, since we are standing in front of the table, we observe the case of one point perspective with vanishing lines converging at the center. In option C, table top is flat and so it's not in proper perspective. Option D, table top is not in proper perspective as the vanishing lines are extending out and is not converging at a point. As stated, the legs should be less visible and so, Option B should be correct.

Q.34) C

Probably the statement "depressed classes" would give us an hint that it must be from B.R.Ambedkhar

Q.35) A

For more geometry related problems, check this **UCEED resource page**

Q.36) A

More resources on - **Reading comprehension examples in this resource page**

Q.37) B

By observing the given fonts

Q.38) B

Q.39) B

Star symbol at the bottom right corner is at the same location. So, we assume it remains in the same position. The inverted triangle at the center is also at the same position. So, we have to mind the three symbols left. By observing the pattern, we can say that all the three symbols rotate in clockwise direction along the triangle shown in the image in every step/pattern. Following the clockwise pattern, we will get option B as the required pattern.
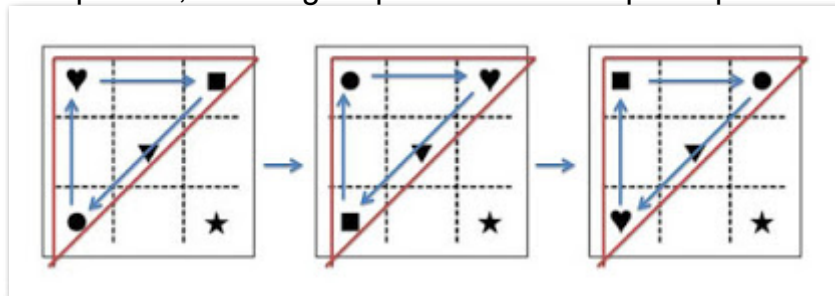
Q.40) A

The simple procedure is to go in reverse direction from folding to unfolding as shown in the below image. But be careful with the marks indicated, they are just mirror reflection during each unfolding.
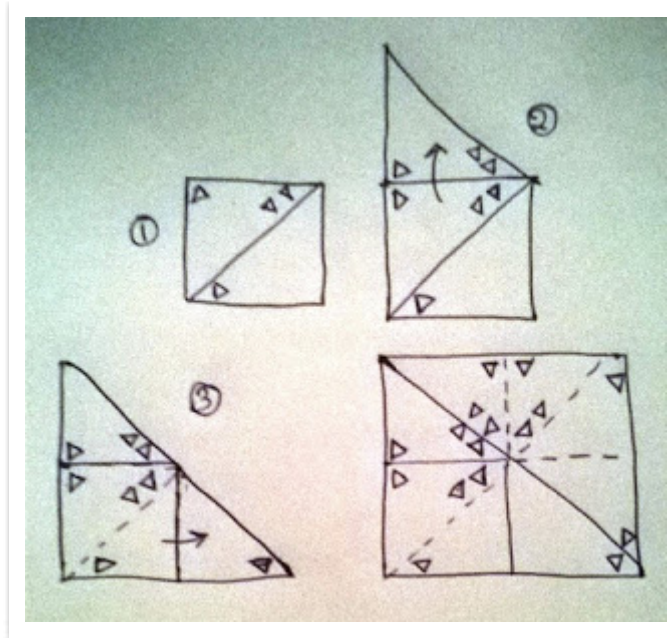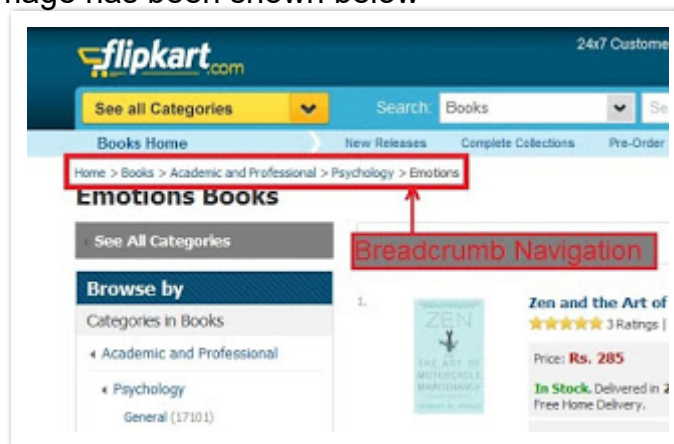
Q.41) D

Q.42) A

Q.43) B
Sequence diagram and Flow diagram are one of it's kind and depicts the flow of a process.
Example Breadcrumbs image has been shown below

source

Q.44) D
There are a total of 7 rows. The following list gives the row wise bricks count
row1 - 3*4 +1 = 13
row2 - 3*4 +1 = 13
row3 - 3*4 +1 = 13
row4 - 3*4 +1 = 13
row5 - 2*4 +1 = 9
row6 - 1*4 +1 = 5
row7 - 1

Q.45) C
More on **animation sequence study with many examples**

Q.46) D
More on **Indian Institutes logos**

Q.47) A

I answered similar kind of question in last year solution. The solution is simple. Building 2 is 5,tr taller than building 1 and building 3 is 5 meter taller than building 2. So, building 2 is mid way from the top of building 1 and building 3. So, in the perspective view, it will be at the intersection of the diagonals as shown in the image below in blue color.
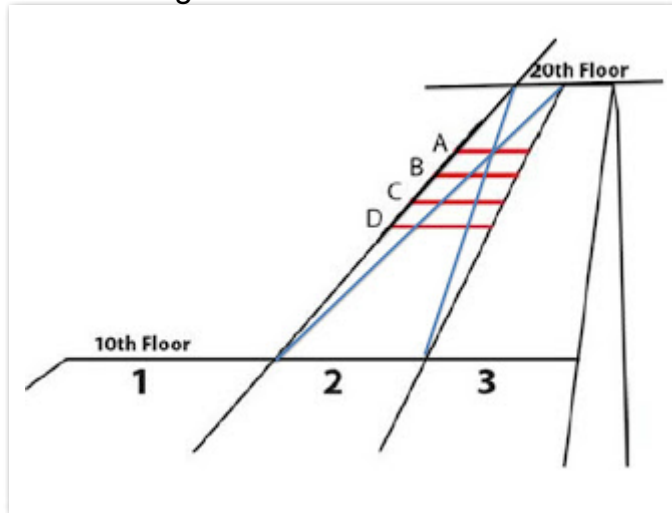
Q.48) B

By observation

Q.49) D

Below picture illustrates all the steps in sequence
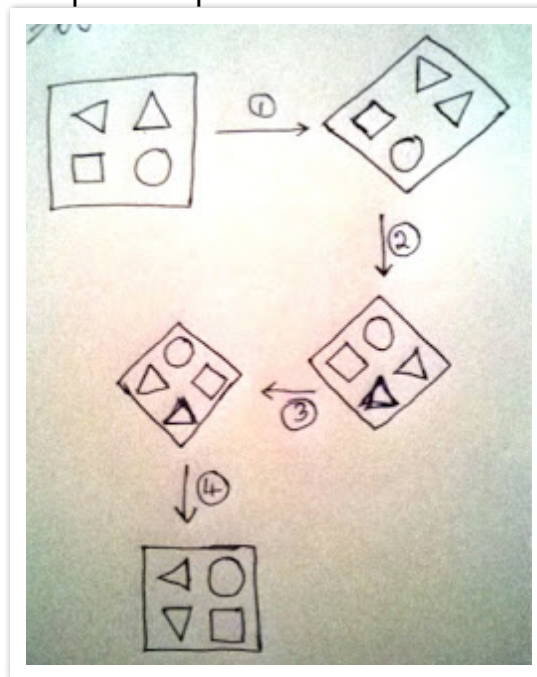
Q.50) A

Check on how to deal with tessellation kind of question - **Tessellation and unfolding of solids**