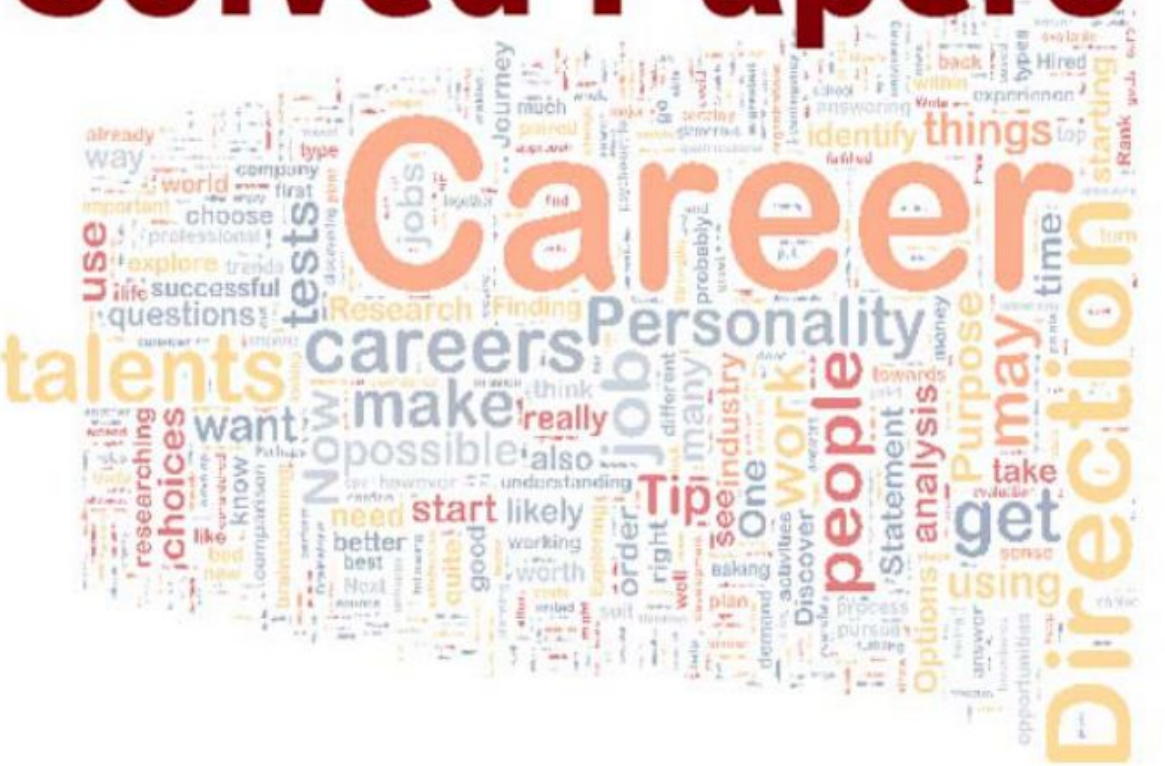
2016

GATE

General Aptitude

Solved Papers



Aptitude Practice Questions

1 Mark Questions

1. The question below consists of a pair of related words followed by four pairs of words. Select the pair that best expresses the relation in the original pair.
   INTIMATE : CLOSE

   (a) evanescent : permanency
   (b) articulate : speech
   (c) enclose : parentheses
   (d) obsessed : attracted

2. In the following question, a word is given in bold which precedes four more words. Pick the word from the four options which most nearly opposite in meaning to the bold word.
   POLEMICAL

   (a) lavish (b) imitative (c) conciliatory (d) attractive

3. Which of the following options is the closest in meaning to the word below:
   DELETERIOUS

   (a) delaying (b) glorious (c) harmful (d) graduating

4. In the following question one word-part is given with example, followed by four options. Choose the most appropriate word which best describes the usage of the given word-part in a word.
   dis- (Ex. disperse)

   (a) free, book (b) not, apart (c) before (d) obsession

5. Find the unit's digit in the product 24647^{117} and 45631^{24647}

   (a) 9 (b) 7 (c) 3 (d) 1

2 Mark Questions:

6. The recent news that local hospitals have had to reroute seriously ill patients because the community's critical-care beds are full is worrisome. Earlier this week, four of the six local hospitals ran out of space for the critically ill and had to turn people away. Federal law requires hospitals to treat anyone who walks in. As a result of having to treat large numbers of uninsured patients, the emergency rooms often become an economic drain on their hospitals. Doctors now want to set up their own free standing ambulatory surgical facilities and diagnostic centers. Critics contend this would leave hospitals with less revenue and the same number of indigents to treat.
   A bill was recently introduced to phase out the need for a "certificate of public

need" for non-hospital based facilities, provided those facilities met stringent regulations and requirements. This would have made it easier to set up alternative facilities to help indigent patients. The finance committee balked at the hefty price and killed the bill, another casualty of a failed legislative session.

Unfortunately, the problem of access to medical care for those of limited means is not going to go away anytime soon and, despite the well-intended regulations, too-full hospitals compromise everyone's welfare. Healthy competition with small neighborhood surgical and diagnostic centers may be what is necessary to help dampen rising medical costs. But under no circumstances should the hospitals be forced to care for everybody without health insurance while competitors operate free of the burden of caring for those unable to pay.

According to the passage, which of the following is cited as a factor which has contributed to the overburdening of hospitals?

I. Failure to pass legislation which would have mitigated the problem
II. Limited access to medical care for the poor
III. Federal law

(a) I only
(b) III only
(c) I and II
(d) I, II, and III

7. Ram and Hari started from A and B, towards B and A at 6.00 am and 7.00 am respectively. They meet each other at 9.00 am and continued towards their respective destinations. Ram reaching B turns back and catches up with Hari before Hari reaches A at 11.00 am. At what time will Hari reach A.

(a) 7.00 pm (b) 4.00 pm (c) 5.00 pm (d) 6.00 pm

8. A person has the capability of thinking 100 lines of code in five minutes and can type 100 lines of code in 10 minutes. He takes a break for five minutes after every ten minutes. How many lines of codes will he complete typing after an hour?

(a) 100 (b) 250 (c) 350 (d) 600

9. A solid, four-inch cube of wood is coated with blue paint on all six sides. Then the cube is cut into smaller one-inch cubes. These new one-inch cubes will have either three blue sides, two blue sides, one blue side, or no blue sides. How many of two side colored will there be?

(a) 24 (b) 8 (c) 16 (d) 12

10. One of twelve pool balls is a bit lighter or heavier (you do not know) than the others. At least how many times do you have to use an old balance-type pair of scales to identify this ball?

(a) 1 (b) 3 (c) 7 (d) 12

1. **(d) obsessed: attracted**
   Intimate: close (nearly same use)
   Evanescent (vanish): permanency (opposite meaning)
   Articulate (clear and distinct /capable of speech): speech
   Enclose: parenthesis (parenthesis encloses)
   Obsessed: attracted (nearly same use)

2. **(c) conciliatory**
   Polemical means controversial argument or against some opinion.
   Lavish- expended or limitless
   Imitative-derivative, not original
   Conciliatory-compromising
   Attractive- adorable
   Hence most opposite meaning word is conciliatory

3. **(c) harmful**
   Deleterious means harmful.

4. **(b) not, apart**
   Disperse means scatter or not together. Hence the answer is apart.

5. **(b) 7**
   Unit's digit in the product = unit's digit of $7^{117} \times 1^{24641} = 7^{117} \times 1 = 7^{117}$
   7^{4n} gives unit digit 1 as $117 = 116 + 1 = 29 \times 4 + 1$
   Thus 7^{116} gives unit digit 1 and 7^{117} gives unit digit $1 \times 7 = 7$
   Thus the required unit digit is 7

6. **(d) I, II and III**
   Federal law requires hospitals to treat anyone who walks in.

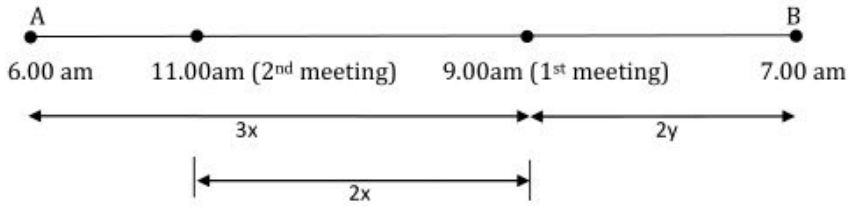
   The finance committee balked at the hefty price and killed the bill, another casualty of a failed legislative session.

   Unfortunately, the problem of access to medical care for those of limited means is not going to go away anytime soon and, despite the well-intended regulations, too-full hospitals compromise everyone's welfare

   The above three statements from the passage clearly indicate that, all the three options are one of the factors which has contributed to the overburdening of hospitals.

7. **(d) 6.00pm**
   Let speed of Ram is "x" and that of Hari is "y". After 3hrs of Ram started from A (6.00 am) and after 2hrs Hari started from B (7.00 am), both meet at 9.00 am. So during their meet distance travelled by Ram is 3x and by Hari is 2y. Again they

meet at 11.00 am, 2hrs from 9.00 am. During this 2 hr distance travelled by Ram is 2x.



And distance travelled by Hari is 2y. As Ram has reached B and again turns back towards A and then they both meet at 11.00am, the distance covered in terms of y is 2y(from 1st meeting to B) +2y(from B to 1st meeting point)+2y(from 1st meeting point to 2nd meeting point)= 6y.

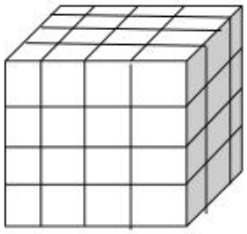
Thus 2x=6y => x=3y

Thus total distance between A and B is 3x+2y=11y

Hari has already covered 4y distance. For covering remaining 7y distance, he needs 7 hrs. So the time is 11.00 am +7hrs= 6pm.

8. **(b) 250**
Starting from zero time (time=0min.), the person thinks for first 5min. (time=5min.) then types 50 lines of code in next 5 min.(time=10min.), then take brake for 5 min.(time=15min.), then again types the remaining 50 lines (of 10 min. typing) for next 5min.(time=20min.). The procedure goes. In first 20 min. he writes 100 lines. Then he thinks for 5 min. (time=25 min.). Again takes break for next 5 min. (as its already 10 min. to take break) (time=30min.), then types for 10 min. (time=40min.). Now he has completed 200 lines of codes in 40 min.. We have 20 min. remaining. Then he takes break for 5 min. (time=45min.) thinks for 5 min. (time=50min.) and got time to type for next 5 min.(time=55min.) as last 5min. is for break time(time=60min.). Thus he can write maximum 250 lines.

9. **(a) 24**



There are 8 corners cubes are of three sided coloured. Central 4 cubes in all the six faces are 1 sided coloured cubes. Remaining visible border cubes are two side

coloured cubes. Hence, 8 cubes from front side +8 cubes from back side + 4 from left side + 4 cubes from right side = 24 cubes (all two side colored cubes are covered in these 24 cubes including top and bottom faces)

10. **(b) 3**

Let's mark the balls using numbers from 1 to 12 and these special symbols:
x? means I know nothing about ball number x;
xL means that this ball is maybe lighter than the others;
xH means that this ball is maybe heavier than the others;
x. means this ball is "normal".

At first, lay on the left pan balls 1? 2? 3? 4? and on the right pan balls 5? 6? 7? 8?. If there is equilibrium, then the wrong ball is among balls 9-12. Put 1. 2. 3. on the left and 9? 10? 11? on the right pan. If there is equilibrium, then the wrong ball is number 12 and comparing it with another ball it can find out if it is heavier or lighter. If the left pan is heavier, 12 is normal and 9L 10L 11L. weigh 9L and 10L. If they are the same weight, then ball 11 is lighter than all other balls. If they are not the same weight, then the lighter ball is the one up. If the right pan is heavier, then 9H 10H and 11H and the procedure is similar to the former text.

If the left pan is heavier, then 1H 2H 3H 4H, 5L 6L 7L 8L and 9. 10. 11. 12. Now lay on the left pan 1H 2H 3H 5L and on the right pan 4H 9. 10. 11. If there is equilibrium, then the suspicious balls are 6L 7L and 8L. Identifying the wrong one is similar to the former case of 9L 10L 11L. If the left pan is lighter, then the wrong ball can be 5L or 4H. Compare for instance 1. and 4H. If they weigh the same, then ball 5 is lighter than all the others. Otherwise ball 4 is heavier. If the left pan is heavier, then all balls are normal except for 1H 2H and 3H. Identifying the wrong ball among 3 balls was described earlier.

In all possible way at least 3 times we have to weigh to find out which one is odd one.

Aptitude Practice Questions

1 Mark Questions

1. In the following question, a word is given in bold which precedes four more words. Pick the word from the four options which most nearly opposite in meaning to the bold word.
DISTEND

   (A) diminish (B) prevent (C) begin (D) swell

2. Which of the following options is the closest in meaning to the word below:
FRUGALITY

   (A) foolishness (B) extremity (C) enthusiasm (D) economy

3. The question below consists of a pair of related words followed by four pairs of words. Select the pair that best expresses the relation in the original pair.
BUOYANT : SUBMERGED

   (A) obloquy : discredit
   (B) stealth : furtive
   (C) stoic : perturbed
   (D) disaffected : rebel

4. Choose the most appropriate word from the options given below to complete the following sentence:
Female sparrows and immatures are _____, while the typical adult male sparrow is _____ by its markings: a black bib, a gray cap, and white lines trailing down from the mouth.

   (A) somewhat nondescript, easily recognized

   (B) difficult to spot, better camouflaged

   (C) considered to be endangered, characterized

   (D) comparatively small, made more conspicuous

5. In a family 7 children don't eat spinach, 6 don't eat carrot, 5 don't eat beans, 4 don't eat spinach & carrots, 3 don't eat carrot & beans, 2 don't eat beans & spinach. One doesn't eat all 3. Find the no. of children.

   (A) 19 (B) 9 (C) 10 (D) 11

1. **(A) dimish**
   distend means to expand or stretch or swell. Hence the opposite meaning is diminish.

2. **(D) economy**
   frugal means saving, not wasteful.

3. **(C) stoic: perturbed**
   Buoyant: submerged (two different form of presence of body in water)
   Obloquy: discredit (same meaning)
   Stoic (unaffected by pleasure or pain or impassive): perturbed (to disturb greatly, make uneasy or anxious (both are two types of negative emotion)
   Stealth: furtive (same meaning, stolen)
   Disaffected: rebel (same meaning, disloyal)

4. **(A) somewhat nondescript, easily recognized**
   Common sense tells you that the markings described in the sentence — black bib, gray cap, and white lines trailing down from the mouth — would make a bird distinctive and readily identifiable. In the sentence, the connecting word *while* neatly sets up contrasting ideas as between what precedes it and what follows it. The word *nondescript* and the phrase *easily recognized* make for just the sort of contrast that lends coherence to the sentence as a whole.

5. **(C) 10**
   If S is set of children who eat spinach, B is set of children who eat bean and C is the set of children, who eat carrot then,

   $n(S') = 7, n(C') = 6, n(B') = 5$
   Again $n(S' \cap C') = 4,\ n(C' \cap B') = 3,\ n(B' \cap S') = 2$ and $n(S' \cap C' \cap B') = 1,$
   Thus, Total number of children=

   $$n(S' \cup C' \cup B') = n(S') + n(C') + n(B') - \{n(S' \cap C') + n(C' \cap B') + n(B' \cap S')\} + n(S' \cap C' \cap B')$$

   $$= 7 + 6 + 5 - (4 + 3 + 2) + 1 = 10$$

6. **(A) Honeybees, unlike many other varieties of bees, are able to live through the winter by clustering together in a dense ball for body warmth.**
   Main ideas are, unlike other bees, honey bees form cluster in winter to gain body warmth for survival. The numbers, how they eat, how they move are secondary ideas according to the passage.

7. **(A) 46**
   Escalator is moving with its usual speed, addition to which the person steps down. Now let us calculate the speed of escalator in terms of number of steps elapsed at bottom. Let in 1 sec number of steps elapsed is x. In 30 sec, number of steps elapsed is 30x and in 18 sec is 18x. Addition to this the man has stepped down in order to reach earlier compared to normal case. Thus total number of steps elapsed in both the case is same as speed of escalator is constant. Hence according to question, $26 + 30x = 34 + 18x \Rightarrow x = 2/3$ steps

   Thus required number of steps $= 26 + 30x = 46$ steps.

8. **(D) 5:8**
   In 1 lt of mixture, amount of milk in vessel A=2/5 and in vessel B=9/16
   To make ½ lt milk in vessel C, we need from vessel A, ½-2/5 =1/10 lt
   And from vessel B, 9/16- 1/2 =1/16 lt.
   Thus the ratio= 1/16 :1/10 =5:8

9. **(C) 15 hours**
   Let 1st pipe fills the tank in x hrs, 2nd pipe in y hrs and 3rd in z hrs.
   Then in 1 hr 1st pipe fills $(1/x)$th of tank, 2nd pipe fills $(1/y)$th of tank and 3rd pipe fills $(1/z)$th of the tank.
   As time taken by 1st and 2nd pipe simultaneously to fill the tank = time taken by 3rd pipe to fill the tank. Hence in 1 hr the portion of tank filled by 1st and 2nd pipe simultaneously is equal that by 3rd pipe.
   Thus $1/x + 1/y = 1/z$.
   Again, $x = y + 5$ and $z = y - 4$.
   From above 3 equations, we get $y^2 - 8y - 20 = 0$. Solving this, $y = 10$ or -2.
   Hence $y = 10$hrs, $x = 15$hrs

10. **(C) 6**
    unit's digit in the product of $37562^{156!}$ and $67847^{675!}$ = unit's digit in the product of $2^{156!}$ and $7^{675!}$

    The unit digit for any power of 2 is one of the numbers, 2, 4, 8, 6. If n is a positive number then unit digit of $2^{4n} = 6$, $2^{4n+1} = 2$, $2^{4n+2} = 4$, $2^{4n+3} = 8$.
    $156! = 4 \times (1 \times 2 \times 3 \times 5 \times \ldots \times 156)$. Hence unit digit of $2^{156!} = 6$.

    Similarly $675! = 4 \times (1 \times 2 \times 3 \times 5 \times \ldots \times 675)$. 7^{4n} gives unit digit 1. Try it.

    Thus the the unit's digit in the product of $37562^{156!}$ and $67847^{675!}$ is $6 \times 1 = 6$

2 Mark Question

6. Honeybees, unlike many other varieties of bees (such as bumblebees and wasps), are able to live through the winter. The 30,000 to 40,000 bees within a honeybee hive could not, individually, move about in cold winter temperatures. But when "clustering together in a dense ball," the bees generate heat by constantly moving their body parts. The cluster also moves slowly about the hive, eating honey stored in the combs. This nutrition, in addition to the heat generated by the cluster, enables the honeybee to survive the cold winter months.

   From the four options find the statement which best describes the above passage.

   (A) Honeybees, unlike many other varieties of bees, are able to live through the winter by clustering together in a dense ball for body warmth.

   (B) Honeybees survive cold winter months by eating honey stored in the combs and generating heat.

   (C) 30,000 to 40,000 honeybees with in a hive survive by forming cluster together.

   (D) Honeybees unlike other bees, form clusters containing 30,000 to 40,000 bees in winter for survival which moves slowly and eat stored honey.

7. Mr. Das decided to walk down the escalator of a mall. He found that if he walks down 26 steps, he requires 30seconds to reach the bottom. However, if he steps down 34 stair she would only require 18 seconds to get to the bottom. If the time is measured from the moment the top step begins to descend to the time he steps off the last step at the bottom, find out the height of the stair way insteps?

   (A) 46 (B) 35 (C) 56 (D) 55

8. Milk and water in two vessels A and B are in ratio 2:5 and 9:7 respectively. In what ratio the liquids in both the vessels are mixed to obtain a new mixture in vessel C containing half milk and half water?

   (A) 3:10 (B) 7:10 (C) 7:8 (D) 5:8

9. A tank is filled by three pipes with uniform flow. The first two pipes operating simultaneously fill the tank in the same time during which the tank is filled by the third pipe alone. The second pipe fills the tank 5 hour faster than the first pipe and 4 hour slower than the third pipe. The time required by the first pipe is

   (A) 6 hours (C) 15 hours

   (B) 10 hours (D) 30 hours

10. Find the unit's digit in the product of $37562^{156!}$ and $67847^{675!}$

(A) 4
(B) 0
(C) 6
(D) None of these

Aptitude Practice Questions

1 Mark Questions

1. The question below consists of a pair of related words followed by four pairs of words. Select the pair that best expresses the relation in the original pair.
   EMBARRASS: MORTIFY

   (A) synopsis : conciseness
   (C) exhaustive : careful
   (B) indulge : mollycoddle
   (D) bigot : tolerance

2. Which of the following options is the closest in meaning to the word below:
   WINSOME

   (A) victorious
   (C) permanent
   (B) gracious
   (D) pained

3. In the following question one word-part is given with example, followed by four options. Choose the most appropriate word which best describes the meaning of the given word-part in a word.
   sen (Ex. senile)

   (A) call (B) old (C) light (D) alone

4. Choosethe most appropriate word from the options given below to complete the following sentence:
   Since the Sensex is falling down, the traders are _____ about the huge losses they may incur.
   (A) perturbed
   (C) unconcerned
   (B) calm
   (D) apathetic

5. If there are 51 rupees consisting of coins of 1 rupees, 50 paisa and 25 paisa. Number of 50 paisa coin is double that of number of 1 rupee coin and four times that of 25 paisa, and then what is the number of 50 paisa coins in the collection.

   (A) 48 (B) 51 (C) 12 (D) 24

7. A drinks machine offers three selections - Tea, Coffee or Random but the machine
has been wired up wrongly so that each button does not give what it claims. If each
drink costs 5 rupees, how much minimum money do you have to put into the
machine to work out which button gives which selection?

(A) 5 rupees
(B) 10 rupees
(C) 25 rupees
(D) Infinity

8. A woman with four children bought a sack of peanuts. To the oldest child, a boy she
gave one peanut and 1/4th of what remained, and to each of the other children she
did the same. The second child was a girl, the third a boy and the last a girl. It was
found that the boys had received 100 more peanuts than the girls. What was the
initial number of peanuts?

(A) 701 (B) 1021 (C) 1121 (D) 1001

9. Given a number with 1998 digits which is divisible by 9. Let x be the sum of its digits and y be the sum of digits of x and z be the sum of digits of y. Find z

(A) 9

(B) 27

(C) 1998

(D) None of these

10. If f(x) denotes the number of prime number not greater than x, then what is the value of f(f(100))

(A) 11

(B) 7

(C) 9

(D) 8

Aptitude Practice Solutions

1. **(B) indulge: mollycoddle**
   Embarrass: to place in doubt, self-conscious; mortify means to destroy strength (nearly same use)
   Indulge: to give free rein or to treat with excessive consideration; mollycoddle means to treat with excessive indulgence (nearly same use)
   Exhaustive: through or to consider all elements and careful means totally taking care (not related words)
   Synopsis: condensed statement and conciseness means free from all elaboration. (nearly opposite use)
   Bigot: a treating with hatred or intolerance; tolerance (opposite meaning)
   Hence answer is (B)

2. **(B) gracious**
   winsome means sweet, innocent, charming . Hence closest meaning is gracious (pleasant, kind)

3. **(B) old**
   Senile means deterioration, decline, old aged etc. Hence answer is (b)

4. **(A) perturbed**
   The word Since supports the two clauses of the sentence. Since the sensex is falling down so it is obvious that the traders will be worried. The missing blank would be similar to the word concerned or worried. Perturbed (meaning worried) is the answer.

5. **(A) 48**
   Let number of 1 rupee coin is x, 50 paisa coin is y, and 25 paisa coin is z. Then,
   $x + y/2 + z/4 = 51.$
   Again $y = 2x$ and $y = 4z$ or $x = y/2$ and $z = y/4$

   Thus, $\frac{y}{2} + \frac{y}{2} + \frac{y}{16} = 51 \Rightarrow y = 48\,, x = 24, z = 12$

6. **(D) can occur independently of human activity**
   In the first paragraph, the author states that "some hypoxic areas ... occur naturally"

7. **(A) 5 rupees**
   Each button does not give what it claims. So tea button may give coffee or random (either tea or coffee) and coffee bottom may give tea or random (either tea or coffee). The random bottom should give either coffee or tea. If we start with this random button with one 5 rupees coin, then it will work for either tea button providing tea or for coffee button providing coffee.

If random button works for tea, then tea button must be for coffee or random. As already random button is for tea, coffee button cannot be tea, and hence random. Thus random = tea, coffee = random, tea = coffee.
Similarly, if random button gives coffee while we put 5 rupees coin, then random = coffee, tea = random, coffee = tea

Thus by 1st chance only we can found out which button works for which selection with minimum money of 5 rupees only.

8. **(B) 1021**
Let to the first child(son-1) she gave "a" number of peanuts, to the 2nd child (girl-1) "b" number of peanuts, to the 3rd child(son-2) "c" numbers of peanuts and to the 4th child (son-2) "d" numbers of peanuts and the remaining numbers of peanuts is "e".
Thus total number of peanuts = $a + b + c + d + e$
According to question,

$a = 1 + ((a + b + c + d + e - 1) * (1/4))$
$b = 1 + ((b + c + d + e - 1) * (1/4)) \Rightarrow a - b = a/4$ or, $b = 3a/4$
$c = 1 + ((c + d + e - 1) * (1/4)) \Rightarrow b - c = b/4$ or, $c = 3b/4 = 9a/16$
$d = 1 + ((d + e - 1) * (1/4)) \Rightarrow c - d = c/4$ or, $d = 3c/4 = 27a/64$
again, $a + c - 100 = b + d$

$a + 9a/16 - 100 = 3a/4 + 27a/64$ or, $a = 256,\ b = 192,\ c = 144,\ d = 108$

$d = 1 + ((d + e - 1) * (1/4)) \Rightarrow e = 321$

Total number of peanuts = 1021

9. **(A) 9**
Sum of the digits of a number with any number of digits, which is divisible by 9 is 9. Try yourself with few and find out. Thus x=9. And hence y=9 and z=9.

10. **(C) 9**
$x = 100, f(x) =$ number of prime numbers less than x

Primes less than 20 =	2, 3, 5, 7, 11, 13, 17, 19,
Primes between 20 and 40 =	23, 29, 31, 37,
Primes between 40 and 60 =	41, 43, 47, 53, 59,
Primes between 60 and 80 =	61, 67, 71, 73, 79,
Primes between 80 and 100 =	83, 89, 97

$f(100) = 25$
Thus, $f(f(100)) = f(25) = 9$

1 Mark Questions

1. The question below consists of a pair of related words followed by four pairs of words. Select the pair that best expresses the relation in the original pair.
   QUISLING : BETRAY

   (A) taunt : provoke
   (C) juggernaut : crush
   (B) inception : termination
   (D) obstinate : preserve

2. In the following question, a word is given in bold which precedes four more words. Pick the word from the four options which most nearly opposite in meaning to the bold word.
   RECALCITRANT

   (A) feckless (B) yielding (C) somber (D) polished

3. In the following question one word-part is given with example, followed by four options. Choose the most appropriate word which best describes the meaning of the given word-part in a word.
   nov (Ex. novice)

   (A) Other (B) Draw, pull (C) Sharp (D) New

4. Choose the most appropriate word from the options given below to complete the following sentence:
   He is _____speaker, his discourses are always informative and inspirational.
   (A) an eloquent
   (C) a novice
   (B) an amateur
   (D)an inarticulate

5. A speaks truth 70% of the time; B speaks truth 80% of the time. What is the probability that both are contradicting each other?

   (A) 0.37 (B) 0.38 (C) 0.44 (D) 0.56

2 Mark Questions

6. Find the best correction for the underlined sentence from the four options given below.

   Under a provision of the Constitution that was never applied, Congress has been required to call a convention for considering possible amendments to the document when formally asked to do it by the legislatures of two-thirds of the states.

   (A) has never been applied, Congress is required to call a convention to consider possible amendments to the document when formally asked to do so

   (B) was never applied, there has been a requirement that Congress call a convention for consideration of possible amendments to the document when asked to do it formally

   (C) has never been applied, whereby Congress is required to call a convention to consider possible amendments to the document when formally asked to do so

   (D) was never applied, Congress has been required to call a convention for considering possible amendments to the document when formally asked to do it

7. One afternoon a person left home at 2:45pm according to the watch at home. He reached office at 3:10pm according to the watch at office. He stayed there for 25mins and moved towards home at a speed twice than previous and reached home at 4pm according to the watch at home. Find out by which how much time office watch is either fast or late compared to watch at home?

   (A) 5min fast (B) 5min late (C) 15min late (D) 10min late

8. 7 liter milk was taken from a container and water of same amount was added to the container. This procedure was repeated for three more times. The ratio of quantity of milk to water in the container was obtained to be 81/47 at the end. What was the quantity of milk in the container originally?

   (A) 14lt (B) 28lt (C) 35lt (D) 42lt

9. A, B and C start running at the same time and from the same point around a circular track of 70m radius. A and B run clockwise and C counter clockwise. If A meets C every 88 seconds and B meets C every 110 seconds, then after how much seconds does A meets B?

   (A) 22 (C) 440

   (B) 198 (D) 220

10. Twelve straight lines are drawn in a plane such that no two of them are parallel and no three of them are concurrent. A circle is now drawn in the same plane such that all the points of intersection of all the lines lie inside the circle. What is the number of non-overlapping regions into which the circle is divided?

(A) 25

(B) 67

(C) 79

(D) 83

Aptitude Practice Solutions

1. **(C) juggernaut: crush**
   Quisling (betrayer, who betray): betray
   Taunt (to provoke): provoke
   Juggernaut (over powerful, destructive object, who destroy): crush (to destroy)
   Inception (commencement, beginning): termination (opposite meaning)
   Obstinate (firmly or stubbornly adhering to one's purpose, opinion): preserve (to keep)
   Hence close relation to given word is (C) juggernaut: crush

2. **(B) yielding**
   Recalcitrant- hard to deal, not obedient
   Yielding - flexible, hence the opposite word.

3. **(D) New**
   Novice means a person new to some work or circumstances.

4. **(A) an eloquent**

   The second clause describes the discourses of a person as informative and inspirational, which gives us a clue that the missing blank should relate to informative and inspirational discourses. An eloquent speaker is the one whose discourses are informative and inspirational. Hence (A) is the answer.

5. **(B) 0.38**
   $P(A_{Truth}) = 0.7, P(B_{Truth}) = 0.8 \Rightarrow P(A_{Lie}) = 0.3, P(B_{lie}) = 0.2$
   Condition for contradiction: If A true then B lie or if A lie B true.
   Thus answer is $0.7 \times 0.2 + 0.8 \times 0.3 = 0.38$

6. **(A) has never been applied, Congress is required to call a convention to consider possible amendments to the document when formally asked to do so**
   Corrections are
   was never applied=>has never applied
   has been required=> is required
   for considering=> to consider

7. **(B) 5min. late**
   Total travel time including rest time according to watch at home = from 2:35 pm to 4:00pm. =1hr 25 min
   Total travel time excluding rest time = 1hr 25 min - 25 min = 1hr = 60min
   The speed during return to home was twice as that while going from home and hence the time taken by the person to go office from home was twice that of going home from office.

   Thus ratio of time for going to office and coming from office = 2: 1 and total time taken only for travelling = 60 min. $\Rightarrow 3x = 60$ min and $2x = 40$min.

He took 40 min to go to office. Thus the time while he reached at office must be 2:35+40 min=3:15. But the time at office watch was 3:10. Hence the office watch was 5 min late.

8. **(B) 28 ltr.**

Let original milk in container is $x\ lt$.

After 4^{th} operation quantity of milk present in the container $= x(1-7/x)^4$ lt. According to the question, the ratio of quantity of milk to water after 4^{th} operation is 81: 47.

Thus, ratio of milk after 4^{th} operation to the original milk amount $= (x(1-7/x)^4)/x = 81/(81+47) \Rightarrow (1-7/x)^4 = (3/4)^4 \Rightarrow x = 28lt$

9. **(C) 440**

Considering relative speed, as A meets C every 88 seconds, then if C is at a constant point then A covers the circular track in each 88 seconds. Same for B also which covers the distance in 110 seconds.

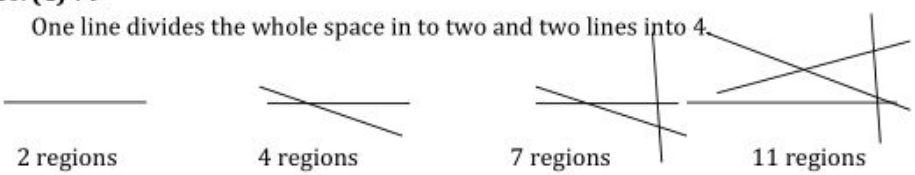
With respect to C, speed of A, $2*\pi*r/88$ and that of B, $2*\pi*r/110$. Relative speed of A and B is $(2*\pi*r/88 - 2*\pi*r/110) = 2*\pi*r/t$

Where t is the time after which A meets B.

Thus $(1/88) - (1/110) = 1/t \Rightarrow t = 440$

10. **(C) 79**

One line divides the whole space in to two and two lines into 4.



2 regions 4 regions 7 regions 11 regions

If no two lines are parallel and no three are concurrent, then 3^{rd} line can cut the existing lines at most two places or three extra spaces are added. Thus 3 lines divide the whole space in to $4+3=7$. One more line can intersect at most 3 points and will provide additional 4 spaces. The n^{th} line can increase the region by k if and only if it divides k of the old regions and it divides k regions if and only if it intersects the existing lines at atmost $k-1$ points.

1 line = 2 region

2 lines = 2 + 2 = 4 regions = 1 + 1

3 lines = 2 + 2 + 3 = 7 regions = 1 + 1 + 2

4 lines = 2 + 2 + 3 + 4 = 11 regions = 1 + 1 + 2 + 3

n lines=2+2+3+4+.....+n regions=1+1+2+.....+n-1+n regions=S_n+1

Where S_n is sum of n natural numbers

$n = 12 \Rightarrow$ number of non-overlapping regions inside the circle (as all intersects are inside the circle, the total regions are inside the circle)=1+S_{12}=1+78=79

Aptitude Practice Questions

1 Mark Questions

1. The _____ requirements by client for approval of new design, do not _____ designers when it comes to research & development because of the profit potential.

   (A) toilsome....provoke
   (C) complex....encourage
   (B) onerous....dissuade
   (D) vague....support

2. In the following question one word-part is given with example, followed by four options. Choose the most appropriate word which best describes the meaning of the given word-part in a word.
   Drome (Ex. syndrome)

   (A) hard (B) lasting (C) break (D) step

3. In the following question, a word is given in bold which precedes four more words. Pick the word from the four options which most nearly opposite in meaning to the bold word.
   ULTERIOR

   (A) uncompromising
   (C) corrugated
   (B) sparking
   (D) stated

4. In the following question, a word is given in bold which precedes four more words. Pick the word from the four options which most nearly similar in meaning to the bold word.
   INTRACTABLE

   (A) culpable (B) unruly (C) flexible (D) efficient

5. Three pipes A,B and C can fill a tank from empty to full in 30 minutes, 20 minutes and 10 minutes respectively. When the tank is empty, all the three pipes are opened. A, B and C discharge chemical solutions P, Q and R respectively. What is the proportion of solution R in the liquid in the tank after 3 minutes?

   (A) 5/11 (B) 6/11 (C) 7/11 (D) 8/11

Aptitude Practice Questions

2 Mark Questions

6. It had promised to be a real treat for the cinemagoers. However, when the film released, one was disappointed to see a hackneyed plot and wooden faced actors. It was dubbed the worst film of the decade: no the century. In the above sentence extract, hackneyed may refer to all of the following except:

   (A) clichéd (B) weak (C) trite (D) banal

7. How many zeros are there at the end of the number obtained from 999!

   (A) 246 (B) 247 (C) 248 (D) 249

8. Five players prashant, prabhu, prince, prem, piyush played five overs of cricket among themselves. Each of the five players bowled exactly one over and also batted exactly for one over.

   The runs conceded by the five bowlers in the respective overs bowled by them are 1, 2, 3, 4 and 5, not necessarily in the same order. Prashant bowled to prem and conceded 1 run and he scored 2 runs in prabhu's over. Prince neither scored 3runs nor conceded 3 runs. Prem did not bowled to Prince. Prabhu batted when Prince bowled, then he scored 5 runs.

   Which of the following statement cannot be true?

   (A) Piyush conceded 4 runs to Prince.

   (B) Prem neither bowled to Prince nor batted in Prince's over.

   (C) Piyush did not score 3 runs

   (D) None of the above

9. A certain amount of sum is invested at simple interest. If the sum becomes k times itself in 16 years and 2k times itself in 40 years, in how many years will it become 4k times of itself?

   (A) 96 years (B) 88 years (C) 80 years (D) 64 years

10. The question given below contains six statements followed by four groups of three statements. Which of the group of statements are logically related?

    I. Some birds are fish
    II. Some birds lay eggs
    III. No mammal lays eggs
    IV. Some fish are mammals
    V. All fish lay eggs
    VI. Some mammals are birds

(A) I-II-V

(B) III-IV-V

(C) II-III-VI

(D) None of these

Aptitude Practice Solutions

1. **(B) onerous....dissuade**
   Because of the profit potential the designers will be highly encouraged i.e they will not be dissuaded. Looking through the options one can find out that word dissuade seems to be a good match for second blank. Now let's see if onerous (burdensome) could fit in. The burdensome requirements do not discourage designers due to profit potential.

2. **(D) step**
   syndrome is step by step symptoms for something to happen. Step also indicate increase or decrease in a particular degree. Hence most close in meaning.

3. **(D) stated**
   ULTERIOR means intentionally kept concealed. Hence most opposite word is stated.

4. **(B) unruly**
   Intractable means not easily governed or managed. Unruly is synonym of this. All other words are of opposite meaning.

5. **(B) 6/11**
   A fills the tank in 30min., B in 20min., C in 10min. In 1 min the portion of tank filled by three of them simultaneously is $(1/30 + 1/20 + 1/10)^{th}$ of the tank. Thus in 3 min, the portion of tank filled is $3 * (1/30 + 1/20 + 1/10) = 11/20$.
   Thus the proportion of solution R in the liquid $= 3/10)/(11/20) = 6/11$

6. **(B) weak**
   cliché, trite, banal are synonyms for hackneyed meaning, s an expression, idea, or element of an artistic work which has been overused to the point of losing its original meaning or effect or lacking originality or freshness. Weak does not fit to the meaning.

7. **(A) 246**
   Number of zeros at the end of $n!$ $= \left[\frac{n}{5}\right] + \left[\frac{n}{5^2}\right] + \left[\frac{n}{5^3}\right] + \cdots$
   $n! = 999! \Rightarrow [999/5] + [999/25] + [999/125] + [999/625] + [999/3125]$
   $= 199 + 39 + 7 + 1 = 246$

8. **(C) Piyush did not score 3 runs**
   Prashant conceded 1 run to Prem
   Prabhu conceded 2 run to Prashant
   Prince conceded 5 runs to Prabhu
   Piyush conceded 4 runs to Prince
   Prem conceded 3 runs to Piyush
   Hence option (C) is not true.

9. **(B) 88 years**

Total interest = (principal amount (p) × simple interest(r) × time(t))

The sum becomes k times itself in 16 years.

Thus interest in 16 yrs = k − 1 times principal (as sum

= principal amount + interest)

In 16 years, $(k-1) * p = p * r * 16 \Rightarrow k - 1 = r * 16$ ... (1)

Again in 40 years, $(2k-1) * p = p * r * 40 \Rightarrow 2k - 1 = r * 40$ ... (2)

Solving $r = 1/8$ and $k = 3$

Let in t years it becomes 4k times.

$(4k-1) * p = p * r * t \Rightarrow (4x3 - 1)\ 11 = t/8 \Rightarrow t = 88yrs$

10. **(A) I-II-V**

For option (a), I-II-V are logically related as if all fish lay eggs and some birds are fish, then some birds lay eggs ... logically related

For option (B), all fish lay eggs and no mammal lays eggs then some fish cannot be mammal...logically not related

For option (C) some birds lay eggs and no mammal lay eggs then some mammals cannot be bird...logically not related.

Hence answer is (A)

Aptitude Questions

1 Mark Questions (1-4):

1. Find the word opposite in meaning of "MAGNANIMOUS" from the choices given below:-
   (1) Small
   (2) Selfish
   (3) Naive
   (4) Generous

   Ans:- (2)

2. In a family there are two brothers, two sisters, two husbands, two brother-in-law and two sisters-in-law. What is the minimum possible number of people in the family?
   (1) 8
   (2) 6
   (3) 4
   (4) 3

   Ans :- (3)
   Let us assume that A and B are siblings, C and D are siblings. B is married to C while A is married to D.
   Hence with these four people all the above given conditions are satisfied.

3. On glancing through your morning newspaper you notice that four pages are missing. One of the missing pages is page 8. The back page of the paper is 28. What are the other three missing pages?
   (1) 9,21,22
   (2) 7,21,22
   (3) 7,23 24
   (4) 9,23,24

   Ans: - (2)

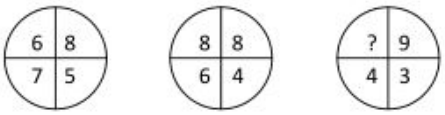
   Each paper in a newspaper has 4 pages in it the cover page for example we will have 1,2,28,27 likewise second page will be 3, 4, 26, 25, ...So the missing pages will be 7,8,22,21.

4. Let $f(x) = max(2x + 1, 3 - 4x)$, where x is any real no. then the minimum possible value of $f(x)$ is:
   (1) 1/2
   (2) 2/3
   (3) 4/3
   (4) 5/3

Ans: - (4)
As $f(x) = max(2x + 1, 3 - 4x)$
We know that $f(x)$would be minimum at the point of intersection of these curves.
i.e.$2x + 1 = 3 - 4x$
i.e.$6x = 2$
$\Rightarrow x = 1/3$
Hence, minimum value of $f(x)$ is $5/3$.

2 Marks Questions (5-9):

5. What number should replace the question mark?
   (1) 6
   (2) 7
   (3) 8
   (4) 9



   Ans: (1)
   $7 \times 8 = 56$
   $8 \times 6 = 48$
   $9 \times 4 = 36$

6. A train T_1 crosses a telephone pole in 10 seconds. What is the time (in seconds) taken by T_1 to cross another train T_2, 25% longer than T_1 and travelling in the opposite direction, on parallel tracks, at the same speed as T_1?
   (1) 31/2
   (2) 45/4
   (3) 10
   (4) 8

   Ans :(2)
   Let the length of train T_1 be x meters.
   Distance to be travelled by train T_1 to cross the pole = x meters
   Time taken = 10 seconds.
   Distance to be travelled by train T_1 to cross train T_2 of length $5x/4$ coming in opposite direction = $x + 5x/4 = 9x/4$
   Relative speed, when the trains are moving in opposite directions
   $= x/5\ [x/10 + x/10]$
   Required time = $9x/4 = x/5 = 45/4$ seconds.

Aptitude Questions

7. Let 'T' be the set of integers {3, 11,19, 27,..., 451, 459, 467} and 'S' be a subset of T such that the sum of no two elements of S is 470. The maximum possible number of elements in S is?

(1) 28
(2) 29
(3) 30
(4) 1

Ans: -(3)
Total no. of terms in T = 59 ... (n)
say$[t_n = a + (n - 1)d = 3 + (n - 1)8]$
Since, S is the subset of T we have following pairs of terms whose addition is equals to 470.

467	459	451	443	...	...	243	235
3	11	19	27	...	...	227	x

Total 29 terms
S = {maximum possible no. of elements such that sum of no two elements is 470}
$\Rightarrow (29 + 1) = 30$

8. The radii of three concentric circles are in the ratio 1:2:3. The ratio of the area between the two inner circles to that between the two outer circles is

(1) 5 : 3
(2) 4 : 5
(3) 5 : 4
(4) 3 : 5

Ans: - (4)
Let the radii of three concentric circles be R, 2R and 3R.

$$\text{So, required ratio} = \frac{\text{Area between the two inner circles}}{\text{Area between two outer circles}}$$

$$= \frac{[\pi(2R)^2 - \pi(R)^2]}{[\pi(3R)^2 - \pi(2R)^2]}$$

$$= 3:5$$

9. Choose the correct words for each blank that best suits the meaning of the given sentences:
"While the disease is in -------state it is almost impossible to determine its existence by -----."

(1) A critical, examination
(2) An acute, analysis
(3) A latent, observation
(4) A suspended, estimation

Aptitude Questions

Ans: - (3)
Latent= hidden

Aptitude Questions-1

(Source: Online Exam Mock Test provided by IITM)

1)

Which of the following options is the closest in meaning to the word below: **Exhort**	
A.	urge
B.	condemn
C.	restrain
D.	scold

2)

The question below consists of a pair of related words followed by four pairs of words. Select the pair that best expresses the relation in the original pair. **Preamble : Constitution**	
A.	amendment : law
B.	prologue : play
C.	episode : serial
D.	plot : story

3)

Choose the most appropriate word from the options given below to complete the following sentence: **The committee wrote a _____ report, extolling only the strengths of the proposal.**	
A.	reasonable
B.	supportive
C.	biased
D.	fragmented

4)

Choose the most appropriate word from the options given below to complete the following sentence: **If the country has to achieve real prosperity, it is _____ that the fruits of progress reach all, and in equal measure.**	
A.	inevitable
B.	contingent
C.	oblivious
D.	imperative

5)

A person invests Rs.1000 at 10% annual compound interest for 2 years. At the end of two years the whole amount is invested at an annual simple interest of 12% for 5 years. The total value of the investment finally is:	
○	1776
○	1760
○	1920
○	1936

6)

The ban on smoking in designated public places can save a large number of people from the well known effects of environmental tobacco smoke. Passive smoking seriously impairs respiratory health. The ban rightly seeks to protect non-smokers from its ill effects. *Which of the following statements best sums up the meaning of the above passage:*	
○	Effects of environmental tobacco are well known.
○	The ban on smoking in public places protects the non smokers.
○	Passive smoking is bad for health.
○	The ban on smoking in public places excludes passive smoking.

7)

Given the sequence A, B, B, C, C, C, D, D, D, D, … etc., that is one A, two Bs, three Cs, four Ds, five Es and so on, the 240th letter in the sequence will be:	
A.	V
B.	U
C.	T
D.	W

8)

Consider the set of integers {1, 2, 3, …, 5000}. The number of integers that is divisible by neither 3 nor 4 is:	
A.	1668
B.	2084
C.	2500
D.	2916

9)

A positive integer **m** in base 10 when represented in base **2** has the representation **p** and in base 3 has the representation **q**. We get **p – q = 990** where the subtraction is done in base 10. Which of the following is necessarily true:	
A.	$m \geq 14$
B.	$9 \leq m \leq 13$
C.	$6 \leq m \leq 8$
D.	$m < 6$

10)

Given the following four functions $f_1(n) = n^{100}$, $f_2(n) = (1.2)^n$, $f_3(n) = 2^{n/2}$, $f_4(n) = 3^{n/3}$ which function will have the largest value for sufficiently large values of n (i.e. $n \to \infty$)?	
A.	f_4
B.	f_3
C.	f_2
D.	f_1

Explanations

1) A — Exhort means to urge or to advise.

2) B — Preamble is the introductory statement of the constitution and Prologue is the introductory part of a play, therefore B is the right answer option.

3) C — In the statement it is given "extolling only the strength of the proposal" which means "praising only the strength of the proposal". Since the word 'only' is used, we can conclude that the report was biased and hence option C is the answer

4) D — In the first part of the statement, "If the country has to achieve real prosperity", note the word 'If', which implies that the blank after 'it is' has to be filled with a word meaning 'required' or 'necessary' and the only word among the options with a similar meaning is 'Imperative'

5) D — The amount after 2 years = $1000\left(1+\frac{10}{100}\right)^2$ =Rs. 1210

The amount after next five years at SI = $1210 + \frac{1210*5*12}{100}$ = Rs.1936

6) B — In the paragraph, the author speaks about the effects of environmental tobacco some including the effect on passive smokers and mentions that the ban can reduce these effects. The options A, B and C can be concluded from the paragraph but only option B sums up the meaning of the entire paragraph.

7) C

The integers that are divisible by 3 are 3, 6, 9, 12, 15, 18….. 4998 i.e. a total of 1666 numbers
The integers that are divisible by 4 are 4, 8, 12, 16, 20,……., 5000 i.e. a total of 1250 numbers
The integers that are divisible by 3 and 4 are 12, 24, 36,……., 4992 i.e. a total of 416 numbers
The number of integers that are divisible by either 3 or 4
=1666+1250-416 = 2500
The number of integers that are divisible by neither 3 nor 4
= 5000-2500=2500

8) A

The given sequence is A, BB, CCC, DDDD.....
Clearly the first term has 1 letter, second 2 , third 3 and so on
i.e. the number of letters in the sequence are first n natural numbers
To find the 240th term it is enough to equate sum to n natural numbers to 240 and can find the approximate integer value of n.
$\therefore \frac{n(n+1)}{2} = 240$

$\Rightarrow n(n+1) = 480$

$\therefore n = 22app$

Hence the 240th letter is 22nd alphabet in English i.e. V

9) B

Let us plug-in the options to answer this question. Now we know that in binary system the digits are 0 and 1.
If we convert the numbers less than 8 into binary system we obtain only three digits i.e. we get the numbers in 100's.So the subtraction cannot be 990.Hence we can eliminate the Options C and D.
Now, 12 will satisfy the conditions given in the problem.

10. D

Given, $f_1(n)=n^{100}$,$f_2(n)=1.2^n$, $f_3(n)=2^{n/2}$ and $f_4(n) = 3^{n/3}$

i.e. $f_1(n)=n^{100}$,$f_2(n)=1.2^n$, $f_3(n)=(\sqrt{2})^n$ and $f_4(n) = (\sqrt[3]{3})^n$

i.e. $f_1(n)=n^{100}$,$f_2(n)=1.2^n$, $f_3(n)=(1.41)^n$ and $f_4(n) = (1.44)^n$

Now clearly f_2 and f_3 can be eliminated as they are less than f_4
Therefore it is enough to compare f_1 and f_4
For say n=1000

$f_1(1000)=1000^{100} = 10^{300}$ and $f_4(1000) = (3)^{1000/3}$

$= 3^{333.33}$

$= 9^{167}$

Clearly f_1 is greater than f_4

But if n=10000

$f_1(10000) = 10000^{100} = 10^{400}$ and $f_4(10000) = (3)^{10000/3}$

$= 3^{3333.33}$

$= 27^{1111.11}$

Clearly f_4 is greater than f_1

Hence we can say that as the value of n increases, f_4 will be greater than f_1

Aptitude Questions-2

(Source: Online Exam Mock Test provided by IITM)

1)

Which of the following options is the closest in meaning to the word below: **Ephemeral**	
A.	effeminate
B.	ghostlike
C.	soft
D.	short-lived

2)

The question below consists of a pair of related words followed by four pairs of words. Select the pair that best expresses the relation in the original pair. **Erudition : Scholar**	
A.	steadfast : mercurial
B.	competence : strict
C.	skill : craftsman
D.	nurse : doctor

3)

Choose the most appropriate word from the options given below to complete the following sentence: **The two child norm with _____ for the violators will have significant implications for our demographic profile.**	
A.	disincentives
B.	incitements
C.	restrictions
D.	restraints

4)

Choose the most appropriate word from the options given below to complete the following sentence: **There is no fixed relation between food and famine; famines can occur with or without substantial _____ in food output.**	
A.	aberration
B.	weakening
C.	decline
D.	deterioration

5)

Consider the function $f(x) = \max(7-x, x+3)$. In which range does f take its **minimum** value?	
A.	$-6 \leq x < -2$
B.	$-2 \leq x < 2$
C.	$2 \leq x < 6$
D.	$6 \leq x < 10$

6)

It has taken fifty six long and frustrating years to turn bronze into gold for India's Olympics aspirations. Beijing 2008 marks a defining moment in India's Olympic history. From Delhi to Beijing is a long journey but one that our Olympians have undertaken with courage. *Which of the following statements best sums up the meaning of the above passage:*	
A.	India's participation in Olympics has been frustrating.
B.	Beijing Olympics was a landmark in India's Olympic history.
C.	Our Olympians have undertaken a long journey to Beijing.
D.	India's bronze medal turned into gold at Beijing.

7)

Consider the series $\frac{1}{2}+\frac{1}{3}-\frac{1}{4}+\frac{1}{8}+\frac{1}{9}-\frac{1}{16}+\frac{1}{32}+\frac{1}{27}-\frac{1}{64}+\ldots$. The sum of the infinite series above is:	
A.	∞
B.	$\frac{5}{6}$
C.	$\frac{1}{2}$
D.	0

8)

A gathering of 50 linguists discovered that 4 knew Kannada, Telugu and Tamil, 7 knew only Telugu and Tamil, 5 knew only Kannada and Tamil, 6 knew only Telugu and Kannada. If the number of linguists who knew Tamil is 24 and those who knew Kannada is also 24, how many linguists knew only Telugu?	
A.	9
B.	10
C.	11
D.	8

9)

A tank has 100 litres of water. At the end of every hour the following two operations are performed in sequence: i) water equal to m% of the current contents of the tank is added to the tank, ii) water equal to n% of the current contents of the tank is removed from the tank. At the end of 5 hours the tank contains exactly 100 litres of water. The relation between m and n is:	
A.	$m = n$
B.	$m > n$
C.	$m < n$
D.	None of the previous.

10)

A student is answering a multiple choice examination with 65 questions with a marking scheme as follows: i) 1 mark for each correct answer, ii) $-\frac{1}{4}$ for a wrong answer, iii) $-\frac{1}{8}$ for a question that has not been attempted. If the student gets 37 marks in the test then the least possible number of questions the student has **not** answered is:	
A.	6
B.	5
C.	7
D.	4

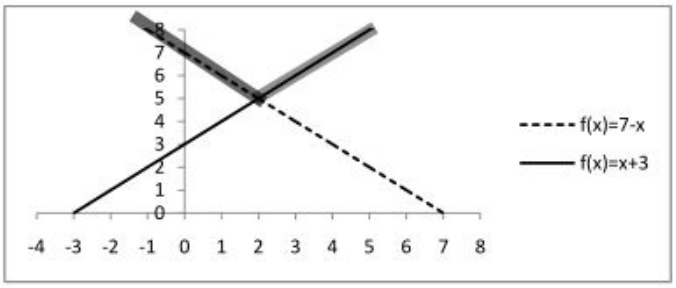
1. (D)
EPHEMERAL is derived from "Ephemeron" which is a mayfly (having life of only hours or a few days). Hence Ephemeral means short lived.

2. (C)
Erudition means knowledge acquired by study, research etc or scholarship
Scholar means a learned person
Same relation is found in skill: craftsman

3. (A)
Disincentives: something that prevents or discourages action
Incitement: to provoke and urge on
Restrictions: the act of restricting
Restrains: to prevent from doing, exhibiting, or expressing something

4. (C)
Decline best suits the sentence

5. (C)
By plotting the functions,



The portions of lines marked dark is f(x) = max $(7 - x, x + 3)$
For f(x) to have minimum value, according to graph, value of x must be the intersection point. Thus,

$$7 - x = x + 3$$

$$\Rightarrow x = 2$$

Thus $x = 2$ lies in between the range, $2 \leq x < 6$

6. (B)
"Beijing Olympics was a landmark in India's Olympic history" best describes the above passage.

7. (B)
The series can be rewritten as follows which is a GP (geometric progression) series.

$$\left(\frac{1}{2}+\frac{1}{2^3}+\frac{1}{2^5}+\cdots\right)-\left(\frac{1}{2^2}+\frac{1}{2^4}+\frac{1}{2^6}+\cdots\right)+\left(\frac{1}{3}+\frac{1}{3^2}+\frac{1}{3^3}+\cdots\right)$$

$$=\frac{1}{2}\left(\frac{1-\left(\frac{1}{2^2}\right)^n}{1-\frac{1}{2^2}}\right)-\frac{1}{2^2}\left(\frac{1-\left(\frac{1}{2^2}\right)^n}{1-\frac{1}{2^2}}\right)+\frac{1}{3}\left(\frac{1-\left(\frac{1}{3}\right)^n}{1-\frac{1}{3}}\right)$$

$$=\frac{2}{3}\left(1-\frac{1}{2^{2n}}\right)-\frac{1}{3}\left(1-\frac{1}{2^{2n}}\right)+\frac{1}{2}\left(1-\frac{1}{3^n}\right)$$

$$=\frac{2}{3}-\frac{1}{3}+\frac{1}{2}=\frac{5}{6} \qquad \text{(as } n\text{-> infinity, } \frac{1}{n}=0\text{)}$$

8. (C)
Let, K = set of linguists who know Kannada
Te = set of linguists who know Telugu
Ta = set of linguists who know Tamil
According to question,

$$n(K \cup Te \cup Ta) = 50$$
$$n(K \cap Te \cap Ta) = 4$$
$$n(Te \cap Ta) = 7 + 4 = 11$$
$$n(K \cap Ta) = 5 + 4 = 9$$
$$n(Te \cap K) = 6 + 4 = 10$$
$$n(Ta) = 24$$
$$n(K) = 24$$
$$n(Te) = x$$

Thus,

$$n(K \cup Te \cup Ta) = n(Ta) + n(K) + n(Te) - n(Te \cap Ta) - n(K \cap Ta) - n(Te \cap K) + n(K \cap Te \cap Ta)$$
$$\Rightarrow 50 = 24 + 24 + x - 11 - 9 - 10 + 4$$
$$\Rightarrow x = 28$$

The number of linguists who knew only Telugu $=28 - 7 - 4 - 6 = 11$

9. (B)
If we add $m\%$ to 100 litres of water we have $(100 + m)$ litres now and on removing $n\%$ we have $\{(100 + m) - n * (100 + m)/100\}$ litres of waters. In order to retain 100 liters of water n should be lesser than m because $m\%$ of 100 have to be equal to $n\%$ of $(100 + m)$ liters.

10. (A)

Let, number of questions attempted correct = r
number of questions attempted wrong= w
number of questions not attempted= u

Total number of questions = $r + w + u = 65$

$$\Rightarrow w = 65 - r - u$$

Again according to question, $r - (w/4) - (u/8) = 37$

$$\Rightarrow r - (65 - r - u)/4 - u/8 = 37$$

Solving this we get,

$$10r + u = 426$$

As 1 mark for each correct answer and $10r$ gives a number which is multiple of 10 and close to 426 (as u is least possible number). 420 and 430 both are close to 426 and multiple of 10. As u is added to 10 r, then 10 r must be 420. Thus,

$$u = 426 - 420 = 6$$

$$r = 42 \; and \; w = 17$$

By cross check,

$$42 - 17/4 - 6/8 = 37$$