**Cat 2011 Mock Test Paper 4**

**Directions for next four questions:** The passage given below is followed by a set of questions. Choose the best answer to each question.

**PASSAGE – I**

“LIKE elaborately plumed birds…we preen and strut and display our t-values.” That was Edward Leamer’s uncharitable description of his profession in 1983. Mr Leamer, an economist at the University of California in Los Angeles, was frustrated by empirical economists’ emphasis on measures of correlation over underlying questions of cause and effect, such as whether people who spend more years in school go on to earn more in later life. Hardly anyone, he wrote gloomily, “takes anyone else’s data analyses seriously”. To make his point, Mr Leamer showed how different (but apparently reasonable) choices about which variables to include in an analysis of the effect of capital punishment on murder rates could lead to the conclusion that the death penalty led to more murders, fewer murders, or had no effect at all.  
  
In the years since, economists have focused much more explicitly on improving the analysis of cause and effect, giving rise to what Guido Imbens of Harvard University calls “the causal literature”. The techniques at the heart of this literature—in particular, the use of so-called “instrumental variables”—have yielded insights into everything from the link between abortion and crime to the economic return from education. But these methods are themselves now coming under attack.  
  
Instrumental variables have become popular in part because they allow economists to deal with one of the main obstacles to the accurate estimation of causal effects—the impossibility of controlling for every last influence. Mr Leamer’s work on capital punishment demonstrated that the choice of controls matters hugely. Putting too many variables into a model ends up degrading the results. Worst of all, some relevant variables may simply not be observable. For example, the time someone stays in school is probably influenced by his innate scholastic ability, but this is very hard to measure. Leaving such variables out can easily lead econometricians astray. What is more, the direction of causation is not always clear. Working out whether deploying more policemen reduces crime, for example, is confused by the fact that more policemen are allocated to areas with higher crime rates.  
  
Instrumental variables are helpful in all these situations. Often derived from a quirk in the environment or in public policy, they affect the outcome only through their influence on the input variable while at the same time being uncorrelated with what is left out . The job of instrumental variables is to ensure that the omission of factors from an analysis—does not end up producing inaccurate results.  
  
In an influential early example of this sort of study, Joshua Angrist of the Massachusetts Institute of Technology (MIT) and Alan Krueger of Princeton University used America’s education laws to create an instrumental variable based on years of schooling. These laws mean that children born earlier in the year are older when they start school than those born later in the year, which means they have received less schooling by the time they reach the legal leaving-age. Since a child’s birth date is unrelated to intrinsic ability, it is a good instrument for teasing out schooling’s true effect on wages. Over time, uses of such instrumental variables have become a standard part of economists’ set of tools. Freakonomics, the 2005 bestseller by Steven Levitt and Stephen Dubner, provides a popular treatment of many of the techniques. Mr Levitt’s analysis of crime during American election cycles, when police numbers rise for reasons unconnected to crime rates, is a celebrated example of an instrumental variable.  
  
What does Edward Leamer imply by the comment in the first line of the passage?

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|  | Birds are hollow creatures who do not care about their fellow birds. |
|  | Every economist tries his best to promote his work. |
|  | The economists who markets his ideas the most wins in the end like a well plumed bird. |
|  | Economists are conceited creatures who display a behaviour similar to plumed birds in the sense that they put down other economists for promoting themselves. |

In the schooling example talked about in various parts of the passage, which of the following options correctly represents ‘the input variable’, ‘the outcome’ and ‘the left-out variable’ in order, from left to right ?

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|  | Scholastic ability, Earnings, Time spent in school. |
|  | Earnings, Scholastic ability, Time spent in school. |
|  | Time spent in school, Earnings, Scholastic ability. |
|  | Time spent in school, Scholastic ability, Earnings |

Which of the following would be a suitable title for the passage?

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|  | The role of instrumental variables in “causal literature.” |
|  | Why the “causal literature” has become popular in economics. |
|  | Instrumental variables and their influence on economics. |
|  | Instrumental variables- the answer to unobservable factors. |

Which of the following can be inferred from the passage?

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|  | The techniques of “causal literature” have helped economists to overcome many an obstacle and have received a unanimous acceptance from all. |
|  | Instrumental variables affect the input variable as well as the uncorrelated factors which are left out. |
|  | The instrumental variable created by Joshua and Alan makes it reasonably clear that the years of schooling do not affect the wages earned after schooling. |
|  | None of the above. |

**DIRECTION for question 5:** There are two blanks in the following sentence. From the pair of words given, choose the one that fills the blanks most appropriately. The first word in the pair should fill the first blank.  
  
The present time seems …............. to bad ideas. In the process of throwing off the shackles of tradition, we have ended up being quite …............. incipient theories and untested solutions.

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|  | hospitable….vulnerable to |
|  | hostile….tolerant of |
|  | prone….wary of |
|  | impervious….exposed to |

**DIRECTION for Question 6:** This question presents a sentence, part of which or all of which is underlined. Beneath the sentence you will find four ways of phrasing the underlined part. The first of these repeats the original; the other three are different. If you think the original is best, choose the first answer; otherwise choose one of the others. This question tests correctness and effectiveness of expression. In choosing your answer, follow the requirements of standard written English; that is, pay attention to grammar, choice of words, and sentence construction. Choose the answer that produces the most effective sentence; this answer should be clear and exact, without awkwardness, ambiguity, redundancy, or grammatical error.  
  
Companies, which use sophisticated machinery and produce high quality products, understand the needs of their customers.

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|  | Companies, which use sophisticated machinery and produce high quality products, understand the needs |
|  | Companies that use sophisticated machinery and produce high quality products understands the needs |
|  | Companies using sophisticated machinery and produce high quality products understand the needs |
|  | Companies that use sophisticated machinery and produce high quality products understand the needs |

**DIRECTION for Question 7:** In the question, there are five sentences. Each sentence has a pair of words that are italicised and highlighted. From the italicised and highlighted words, select the most appropriate words (A or B) to form correct sentences. The sentences are followed by options that indicate the words, which may be selected to correctly complete the set of sentences. From the options given, choose the most appropriate one.  
  
She refused to be ***phased (A) / fazed (B)*** by their insulting remarks. The palace was bombarded with ***canon (A) / cannon (B)*** fires by the enemy. According to the law, all citizens must be given ***equitable (A) / equable (B)*** treatment. As soon as the king died, lawlessness ***reigned (A) / reined (B)*** over the city. Such ***inflammable (A) / inflammatory (B)*** remarks could lead to a communal discord.

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|  | BBAAB |
|  | ABAAB |
|  | BBBAB |
|  | BAAAA |

**DIRECTION for question 8:** There are two blanks in the following sentence. From the pair of words given, choose the one that fills the blanks most appropriately. The first word in the pair should fill the first blank.  
  
In the next few years, the sophisticated satellites orbiting the Earth will generate enough data to determine whether the continents are moving at all or not, ............ the inchoate …......... among geographers about the truthfulness of the theory of continental drift.

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|  | portending….rumors |
|  | forestalling….rift |
|  | settling….disturbances |
|  | resolving….schism |

**DIRECTION for Question 9:** The following question has a paragraph from which the last sentence that completes the paragraph has been deleted. From the given options, choose the sentence that completes the paragraph in the most appropriate way.  
  
The question is whether the mind can function as its own cause, without having first experienced a determining impulse. Not the activity of the mind but only the nature and the origin of this activity are subject to question. In order to understand this clearly, we start out from the assumption that the mind is one of the tools of the animal organism in the struggle for existence. From the beginnings of its functioning in the simplest animals in which it first appears, the mind encounters two factors: on the one hand, the body of the organism, which produces the mental functions, a body with certain innate needs and capacities. Let us call it the “ego.” On the other hand, there is its environment: the “non-ego,” which is the negation of the organism. ...............................

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|  | The more it understands its own needs and capacities as well as the differences and relationships among the objects in the environment, the better it solves them. |
|  | It is this awareness of the environment that contains the seed of its own negation, which is particularly striking. |
|  | It is this environment that poses the perplexing problems the mind has to solve. |
|  | It is the resolution of the antagonism between ego and environment that triggers adaptation |

**Directions for next three questions:** The passage given below is followed by a set of questions. Choose the best answer to each question.

**PASSAGE – II**

George Orwell wrote Animal Farm, “. . . to discredit the Soviet system by showing its inhumanity and its back-sliding from ideals [he] valued . . .” Orwell noted that “ there exists in England almost no literature of disillusionment with the Soviet Union.’ Instead, that country is viewed either with ignorant disapproval’ or with uncritical admiration.’” The basic synopsis is this: Old Major, an old boar in Manor Farm, tells the other animals of his dream of “animalism”: “ . . . Only get rid of Man, and the produce of our labour would be our own. Almost overnight we would become rich and free.’” The other animals take this utopian idea to heart, and one day actually do revolt and drive the humans out.  
  
Two pigs emerge as leaders: Napoleon and Snowball. They constantly argued, but one day, due to a difference over plans to build a windmill, Napoleon exiled Snowball. Almost immediately, Napoleon established a totalitarian government. Soon, the pigs began to get special favours, until finally, they were indistinguishable from humans to the other animals. Immediately the reader can begin to draw parallels between the book’s characters and the government in 1917-44 Russia. For example, Old Major, who invented the idea of “animalism,” is seen as representing Karl Marx, the creator of communism. Snowball represents Trotsky, a Russian leader after the revolution. He was driven out by Napoleon, who represents Stalin, the most powerful figure in the country. Napoleon then proceeded to remove the freedoms of the animals, and established a dictatorship, under the public veil of “animalism.” Pigs represent the ruling class because of their stereotype: dirty animals with insatiable appetites. Boxer, the overworked, incredibly strong, dumb horse represents the common worker in Russia. The two surrounding farms represent two of the countries on the global stage with Russia at the time, Germany and England.  
  
Orwell begins his book by criticizing the capitalists and ruling elite, who are represented in Animal Farm by Mr. Jones, the farmer. He is shown as a negligent drunk, who constantly starved his animals. “His character is already established as self-indulgent and uncaring.” Orwell shows us how, “if only animals became aware of their strength, we should have no power over them, and that men exploit animals in much the same way as the rich exploit the proletariat.” What was established in Russia after the Bolshevik Revolution was not true communism (“animalism”), which Orwell approved of, where the people owned all the factories and land. Rather, “state communism” was established, where a central government owned them. Orwell thought that such a political system, “state communism,” was open to exploitation by its leaders. Napoleon, after gaining complete control, did anything he wished – reserved the best for the pigs, and treated the animals cruelly. The animals could not do anything, unless they again realized their strength in numbers against their own kind. Unfortunately, they were too stupid to realize this and accepted the “status quo.”  
  
All of the following would be in line with Orwell’s views except?

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|  | Literature which expresses disillusionment about the Soviet Union is non-existent. |
|  | The Soviet Union is viewed with extreme emotions by the British, who either disapprove of it without knowledge or totally admire it. |
|  | The rich are able to exploit the proletariat mainly because the proletariat is not aware of its own strength. |
|  | The capitalists are generally people who are involved in gratifying their self and have no empathy towards others. |

Which of the following tones is not displayed by the author in the passage ?

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|  | Objective |
|  | Narrative |
|  | Descriptive |
|  | Critica |

According to the passage, the following four themes appear in the book ‘ The Animal Farm’. Select the option which represents the correct sequence in which they occur in the book.  
  
A. The revolting class acquiring a resemblance to the driven out class.  
  
B. Establishment of a new ideology and exploiting the ideology.  
  
C. The ruling elite exploiting those under them.  
  
D. One leader driving out the other.

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|  | ACBD |
|  | CBDA |
|  | CDBA |
|  | BACD |

**DIRECTION for Question 13:** The following question consists of two words that have a certain relationship with each other followed by alternatives. Select the alternative that has the same relationship as depicted in the original pair of words.  
  
Secular: Mundane

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|  | preposterous : prudent |
|  | transient : fugacious |
|  | recalcitrant : authoritative |
|  | patent : closed |

**DIRECTION for Question 14:** Read the argument and answer the question that follows.  
  
The Government of India has imposed a heavy duty on petrol to discourage the consumption of the same. The money accrued through the duty is used to subsidize the price charged for the fertilizers distributed to poor farmers. So, greater the success achieved in meeting the first objective, the lesser will be the success achieved in meeting the second objective.  
  
The conclusion drawn above is most suitable in which of the following situations?

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|  | A public library has imposed a heavy fine to force the borrowers to return the book promptly, when due. The money accrued from the fines is used to send the reminders to those borrowers who did not return books on time. |
|  | A zoological garden has imposed an additional visitor’s tax over the normal entry fees to improve facilities at the zoo. The money accrued will be used to improve the facilities for the upkeep of the animals and to improve the recreational facilities at t |
|  | The Delhi Metro Railway Corporation has imposed a user surcharge to prompt commuters to use other means of transport. The money collected from the taxes will be used to expand the metro services in other areas. |
|  | The Government has imposed a heavy fine to dissuade people from littering in public places. The money accrued from fines is used to pay overtime to the employees to clean the litter. |

**DIRECTION for Question 15:** The following question has a paragraph from which the last sentence has been deleted. From the given options, choose the sentence that completes the paragraph in the most appropriate way.  
  
While the excellence and superlative quality of our traditional designs are undeniable, design cannot be said to have a large role to play in our everyday lives today. Being conservative by nature, we do not seem to care much for the aesthetics of contemporary design — too bleak and spare for our questionable tastes moulded largely by Bollywood and kitsch, and often bordering on the bizarre. When the rich build houses, they prefer the excesses of neo-classical architecture to the luxury of ‘less is more.’

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|  | Hence, our everyday lives are cluttered with cheap imitations and shallow designs. |
|  | Thus, traditional designs will always find little or no acceptance in our everyday lives. |
|  | For, the grand or what is perceived as grand is regarded as a symbol of power meant to impress and perhaps even intimidate. |
|  | Undoubtedly, popular designs are largely accepted no matter how bizarre they may really be. |

**DIRECTION for Question 16:** In the question, four different ways of presenting an idea are given. Choose the one that conforms most closely to Standard English Usage.

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|  | Research is generally a tedious and frustrating process because there are just too much things that are said about one particular subject and the researcher will be finding the ones relevant to his research. |
|  | The process of research is generally tedious and frustrating because there is just too many things that are said about one particular subject and the researcher must be finding the ones relevant to his research. |
|  | The process of research is generally tedious and frustrating because there are just too many things that are said about one particular subject and the researcher must find the ones relevant to his research. |
|  | Generally research is a tedious and frustrating process because there are just too many things that are said about one particular subject and the researcher must find the ones relevant to his research. |

**DIRECTION for question 17:** There are two blanks in the following sentence. From the pair of words given, choose the one that fills the blanks most appropriately. The first word in the pair should fill the first blank.  
  
Most of the fifteenth and sixteenth century Mughal gardens were not necessarily intended to look …........... These gardens were designed to conjure the profound melancholy ensuing from a sense of the …........... of natural beauty and human glory.

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|  | blitheful….immutability |
|  | beautiful….persistence |
|  | blissful….simplicity |
|  | cheerful….fleetingness |

**DIRECTION for Question 18:** Read the argument and answer the question that follows.  
  
Professor: Students in the graduate courses do not write as well as they used to do in the past. Most of the papers submitted to me by my students have been badly written. These papers also carry lot of grammatical errors.   
  
Which one of the following is the most serious weakness in the argument made by the professor?

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|  | The professor is generalizing about all graduate students on the basis of the submissions of his students. |
|  | There is no proof that the professor is a competent judge of English language. |
|  | The argument does not define the criterion for judging a good paper. |
|  | The argument does not take into account that the professor is a bad teache |

**DIRECTION for Question 19:** The following question consists of two words that have a certain relationship with each other followed by alternatives. Select the alternative that has the same relationship as depicted in the original pair of words.  
  
Formation: Soldiers

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|  | club : members |
|  | array : numbers |
|  | forest : trees |
|  | matrix : columns |

**DIRECTION for Question 20:** Fill in the blank of the following sentence using one from the idioms provided in the four alternatives.  
  
With a coastline of over 3,000km and a fishing fleet of more than 1,000 vessels, it’s ironic that Vietnam has to import powdered fish from Peru. In a country with huge agricultural potential, this import is like “…..........”.

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|  | carrying coals to Newcastle |
|  | to take a running jump |
|  | raking over the coals |
|  | a running battle |

**DIRECTION for Question 21:** The following question has a paragraph from which the last sentence that completes the paragraph has been deleted. From the given options, choose the sentence that completes the paragraph in the most appropriate way.   
  
How true it is that our children do not belong to us ! We try desperately to give them our thoughts, and yet they have their own thoughts. As parents, we can house our children’s bodies, but not their souls. When they reach an age of independence, they are finding their way, and they are torn between needing our help, and needing to be on their own. I remember that feeling clearly. There was such an excitement about being alive, and I was sure that no one else knew the things that I knew, or felt the things that I felt. I was learning that parents weren’t always right about everything, and some rules seemed worth breaking. I guess we all go through at least a little rebellion. *\_\_\_\_\_\_\_*.

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|  | And when this is realized there is also a brief maudlinness accompanied with frequent twinges of self-abasement in our attitudes, which our parents can easily identify. |
|  | And as our children’s souls live in the house of tomorrow-a place we cannot visit, not even in our dreams, even mistakes are part of our journey. |
|  | And as parents, we are the bow that sends the living arrows into the future, but it is the Archer (who guides us) that directs the swiftness and the distance of the arrows, to His directed destination. |
|  | And we certainly develop our own thoughts as it is a part of finding ourselves and our capabilities. |

**Directions for next three questions:** The passage given below is followed by a set of questions. Choose the best answer to each question.

**PASSAGE – III**

Haffner, like Delboeuf, has attempted to explain the act of dreaming by the alteration which an abnormally introduced condition must have upon the otherwise correct functioning of the intact psychic apparatus; but he describes this condition in somewhat different terms. He states that the first distinguishing mark of dreams is the abolition of time and space, i.e., the emancipation of the representation from the individual’s position in the spatial and temporal order. Associated with this is the second fundamental character of dreams, the mistaking of the hallucinations, imaginations, and fantasy-combinations for objective perceptions. “The sumtotal of the higher psychic functions, particularly the formation of concepts, judgments, and conclusions on the one hand, and free self-determination on the other hand, combine with the sensory fantasy-images, and at all times have these as a substratum”. These activities too, therefore, participate in the erratic nature of the dream-representations. We say they participate, for our faculties of judgment and will are in themselves unaltered during sleep. As far as their activity is concerned, we are just as shrewd and just as free as in the waking state.  
  
A man cannot violate the laws of thought; that is, even in a dream he cannot judge things to be identical which present themselves to him as opposites. He can desire in a dream only that which he regards as a good (sub ratione boni). But in this application of the laws of thought and will the human intellect is led astray in dreams by confusing one notion with another. Thus it happens that in dreams we formulate and commit the greatest of contradictions, while, on the other hand, we display the shrewdest judgment and arrive at the most logical conclusions, and are able to make the most virtuous and sacred resolutions. “The lack of orientation is the whole secret of our flights of fantasy in dreams, and the lack of critical reflection and agreement with other minds is the main source of the reckless extravagances of our judgments, hopes and wishes in dreams”  
  
If the turning-away from the outer world is accepted as the decisive cause of the most conspicuous characteristics of our dreams, it will be worth our while to consider certain subtle observations of Burdach’s, which will throw some light on the relation of the sleeping psyche to the outer world, and at the same time serve to prevent our over-estimating the importance of the above deductions. “Sleep,” says Burdach, “results only under the condition that the mind is not excited by sensory stimuli… yet it is not so much a lack of sensory stimuli that conditions sleep as a lack of interest in them; some sensory impressions are even ecessary in so far as they serve to calm the mind; thus the miller can fall asleep only when he hears the clatter of his mill, and he who finds it necessary, as a matter of precaution, to burn a light at night, cannot fall asleep in the dark”  
  
Which of the following can be inferred to be a cause of dreams ?

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|  | The turning-away from the outer world. |
|  | Excitation of the sleeping mind by sensory stimuli. |
|  | Dissonance experienced with others. |
|  | None of the above. |

The mistaking of the hallucinations in a dream for objective perceptions is associated with which of the following?  
  
A. Emancipation of representation from the individual’s position in the spatial and temporal order.  
  
B. Our faculties of judgment and will being unaltered during sleep.  
  
C. The fact that man can desire in a dream only that which he feels would be good for him.

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|  | Only B |
|  | A and B |
|  | B and C |
|  | A and C |

The author develops the passage by

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|  | Showing how Haffner’s explanation regarding dreams is different from that of Delboeuf and then moving on to give more clarity on Haffner’s explanation. |
|  | Throwing light on Haffner’s explanation as regards dreams and then attempting to moderate it. |
|  | First discussing the explanations for dreams given by Haffner and then attempting to move on to Burdach’s explanations for more clarity and moderation on the initial discussion. |
|  | Discussing Haffner’s explanation for dreams and then moving on to Burdach’s observations for moderation on the initial discussion after assuming one of the fundamental assumptions of Burdach to be true. |

**DIRECTION for Question 25:** Fill in the blank of the following sentence using one from the idioms provided in the four alternatives.  
  
Eat carrots for better eyesight, but also know that its excess consumption can turn your skin an orange hue. Some …............... are just silly superstitions, but some may just have a nugget of truth.

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|  | old heave-hos |
|  | open sesames |
|  | old flames |
|  | old wives’ tales |

A sequence ‘S’ is formed from the set of first ‘N’ natural numbers by deleting all the perfect squares and all the perfect cubes. If the elements are arranged in an ascending order then, what is the  240^{th} term of the sequence ‘S’?

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|  | 259 |
|  | 260 |
|  | 261 |
|  | 26 |

What is the remainder when  13^{66} – 23 is divided by 183?

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|  | 0 |
|  | 161 |
|  | 22 |
|  | 162 |

The sum of the coefficients of the polynomial  (x - 1)^7\ (x - 2)^2  (x - 4)\ is 

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|  | 0 |
|  | 16 |
|  | -16 |
|  | None of these |

Given that a, b, c, and d are positive integers such that  b^{3/2} = a, and  d^{5/4} = c. If b – d = 9, then find the value of (a – c).

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|  | 92 |
|  | 94 |
|  | 95 |
|  | 93 |

Consider the set G of all integers between 100 and 9999 (including the extremes). Call two integers a and b in G to be in the same category if the digits appearing in a and b are the same. For example, if a = 101, b = 100, c = 1000 and d = 120, then a, b and c are in the same category but c and d are not. Find the number of different categories that can be formed out of G.

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|  | 384 |
|  | 385 |
|  | 174 |
|  | 175 |

The numbers (7 – a), (7 – b), (7 – c), (7 – d) and (7 – e) are all distinct integers whose product is equal to 28. What is the sum (a + b + c + d + e)?

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|  | 13 |
|  | 7 |
|  | 28 |
|  | Data Inconsisten |

In a factory three types of products A, B and C are manufactured. All workers employed in the factory are equally efficient. In one hour, 100 workers can produce 80 A’s, 160 B’s, 120 C’s. In two hours, 75 workers can produce 125 A’s, 140 B’s and 180 C’s. In three hours, 150 workers can produce 150 A’s, ‘X’ B’s and 540 C’s. What is the value of ‘X’?

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|  | 4920 |
|  | 79 |
|  | 110 |
|  | 4500 |

A box contains 25 red balls and 20 blue balls. An unbiased die is rolled, if the result is an even number, then 3 red balls and 1 blue ball are taken out from the box without replacement and if the result is an odd number, then 2 blue balls and 1 red ball are taken out from the box without replacement. If the die is rolled 4 times, then what is the probability that the total number of red balls, which are taken out, is more than the number of blue balls, which are taken out ?

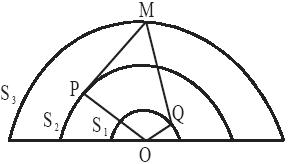
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|  |
|  | \cfrac{1}{2} |
|  | \cfrac{5}{8} |
|  | \cfrac{11}{16} |
|  | \cfrac{4}{7} |

There are two tanks  T_1 and  T_2 . Two pipes  P_1 and  P_2 are used to fill these tanks. When operating alone,  P_1 takes 12 hours more to fill  T_1 than to fill  T_2 , but  P_2 takes 24 hours more to fill  T_1 than to fill  T_2 . When operating together how many hours more, will they take to fill  T_1 than to fill  T_2 ?

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|  |
|  | 10 hrs |
|  | 8 hrs |
|  | 7 hrs |
|  | 9 hrs |

pq, pr, qp and pp are two-digit numbers, ‘pqr’ is a three-digit number and ‘prrp’ is a four-digit number (p, q, r are all numerals). If pq × pr = pqr, then the remainder when (qp × prrp) is divided by ‘pp’ is

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|  | 0 |
|  | 1 |
|  | 7 |
|  | None of these |

Three semicircles  S_1,\ S_2,\ S_3 with radii ‘r’units, ‘2r’ units and ‘4r’ units respectively are drawn with the same center(O) as shown in the figure given below. From a point M on  S_3 , two tangents MP and MQ are drawn such that MP is a tangent to  S_2 and MQ is a tangent to  S_1 . Find the area (in square units) of the quadrilateral OQMP.  
  


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|  |
|  | \cfrac{r^2\ (\sqrt{15} + 2 \sqrt3)}{2} |
|  | \cfrac{r^2\ (\sqrt{15}+ 4 \sqrt{3})}{2} |
|  | \cfrac{r^2\ (\sqrt{15} + 8 \sqrt3)}{2} |
|  | \cfrac{r^2\ (2 \sqrt{15} + \sqrt3)}{2} |

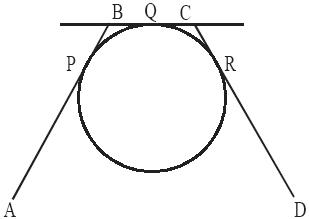
**Directions for next two questions:** Answer the questions on the basis of the information given below. The average marks obtained by the candidates who passed and those who failed in an examination are 60 and 25 respectively. The average marks obtained by all the candidates who appeared for the examination is more than 43 but not more than 49.  
  
The number of candidates who passed as a fraction of the total number of candidates who appeared for the examination could never be

|  |
| --- |
|  |
|  | \cfrac{3}{5} |
|  | \cfrac{4}{7} |
|  | \cfrac{18}{35} |
|  | \cfrac{24}{35} |

The minimum possible total marks obtained by all the candidates in the examination could be

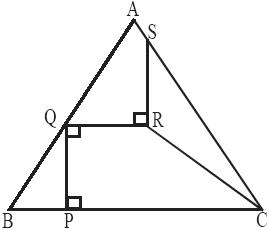
|  |
| --- |
|  |
|  | 150 |
|  | 85 |
|  | 110 |
|  | 145 |

In the figure given below, AB, BC and CD are tangents to the circle at the points P, Q and R respectively. If BC = 1 unit and the measures of the  \angle ABC and  \angle BCD are  120^\circ and  150^\circ espectively, then find the radius (in units) of the circle.



|  |
| --- |
|  |
|  | \cfrac{3 + \sqrt3}{4} |
|  | 1 + \cfrac{1}{\sqrt3} |
|  | \cfrac{\sqrt3}{2} |
|  | \cfrac{2}{\sqrt3} |

**Directions for next four questions:** Each question is followed by two statements, A and B. Answer each question using the following instructions:  
  
In the figure given below, ABC is an equilateral triangle and points P, Q, R and S are chosen such that  \angle QPC =  \angle PQR =  \angle QRS =  90^\circ . What is the length of CR? (all the dimensions are in cms.)  
  
**A:** 2 <  AB^2 + PQ^2 < 6 and lengths of AB and PQ are both integers.  
  
**B:** PQ = QR = RS = 1.



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|  |
|  | if the question cannot be answered even by using both statements together. |
|  | if the question can be answered by using both the statements together, but cannot be answered by using either statement alone. |
|  | if the question can be answered by using either statement alone. |
|  | if the question can be answered by one of the statements alone, but cannot be answered by using the other statement alone. |

It is given that the quadratic equation  X^2 – PX + Q = 0 has distinct and real roots, where P and Q are distinct integers. What is the value of (2P + 3Q)?  
  
**A:** Roots of the given equation are consecutive positive integers and (P, Q < 6).  
  
**B:** Roots of the given equation are consecutive non-zero integers and (P, Q <6).

|  |
| --- |
|  |
|  | if the question cannot be answered even by using both statements together. |
|  | if the question can be answered by using both the statements together, but cannot be answered by using either statement alone. |
|  | if the question can be answered by using either statement alone. |
|  | if the question can be answered by one of the statements alone, but cannot be answered by using the other statement alone. |

What is the remainder when a five-digit number PQRSR is divided by 125? (P, Q, S and R are distinct digits.)  
  
**A:** A =  \cfrac{(PQSR)}{4} and A when divided by 25 leaves a remainder 13.  
  
**B:**  R^S = S^R and when a two digit number QR is divided by 10, the remainder is greater than 3.

|  |
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|  |
|  | if the question cannot be answered even by using both statements together. |
|  | if the question can be answered by using both the statements together, but cannot be answered by using either statement alone. |
|  | if the question can be answered by using either statement alone. |
|  | if the question can be answered by one of the statements alone, but cannot be answered by using the other statement alone. |

Three friends A, G and S calculated their savings. It was found that the savings of A and G were in the ratio 1 : 2. What was the saving of A?  
  
**A:** If S lends one-third of his savings to A, and one-third of the remaining to G, he will be left with the same amount of savings as A will have after receiving one third of the savings of S.  
  
**B:** If S lends one-fourth of his savings to G and one-fourth of the remaining to A, then the savings left with him is Rs. 17,000 more than the initial savings of G.

|  |
| --- |
|  |
|  | if the question cannot be answered even by using both statements together. |
|  | if the question can be answered by using both the statements together, but cannot be answered by using either statement alone. |
|  | if the question can be answered by using either statement alone. |
|  | if the question can be answered by one of the statements alone, but cannot be answered by using the other statement alone |

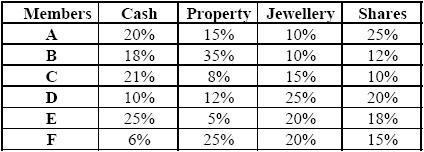
The altitudes PL, QM and RN of the scalene  \Delta PQR , intersect at a point O inside the triangle. If PO = 9 units, PL = 10 units, QO = 6 units, then what is the length of QM?

|  |
| --- |
|  |
|  | 8 units |
|  | 7.5 units |
|  | 10 units |
|  | 9 units |

If 2log_8X + 4log_{64}Y + 6log_{512}Z\ \ge2, then the minimum possible value of  (X^2Y + Y^2 Z + Z^2X) is

|  |
| --- |
|  |
|  | 12 |
|  | 192 |
|  | 24 |
|  | 512 |

**Directions for next four questions:** Read the information given below carefully and answer the following questions.  
  
In the year 2008, the total worth of the assets of the members (A, B, C, D, E and F) of a certain family was Rs.25 crores. ‘Cash’, ‘Property’, ‘Jewellery’ and ‘Shares’ were the four forms of assets held by the members of the family. The **table** given below provides information about the percentage break-up of each form of the assets held by the members as a percentage of the total worth of the respective forms of assets with the family in the year 2008.



In the year 2008, if the total worth ( in Rs. crores) of ‘Cash’, ‘Property’, ‘Jewellery’ and ‘Shares’ was in the ratio 3 : 4 : 2 : 1, then which member of the family possessed the second highest total worth ( in Rs. crores) of assets excluding ‘Cash’?

|  |
| --- |
|  |
|  | F |
|  | B |
|  | A |
|  | E |

n the year 2008, if the total worth ( in Rs. crores) of ‘Property’ and ‘Shares’ held by A was the same, then for how many members of the family, the worth ( in Rs. crores) of ‘Shares’ was less than that of ‘Property’?

|  |
| --- |
|  |
|  | 5 |
|  | 3 |
|  | 4 |
|  | 2 |

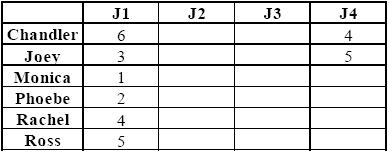
**Additional Information for next two questions:** In the year 2009, the total worth ( in Rs. crores) of ‘Property’ held by B decreases by 10%, but that of ‘Shares’ held by B increases by 8%. The total worth of all the other forms of assets held by B remains the same. Also, the total worth ( in Rs. crores) of all the forms of assets held by all the other members remains the same in the year 2009. The total worth of the assets with the members of the family increases by Rs. 20 lakhs in the year 2009.  
  
In the year 2008, for how many members of the family, the worth ( in Rs. crores) of ‘Shares’ was definitely more than that of the ‘Property’?

|  |
| --- |
|  |
|  | 6 |
|  | 3 |
|  | 5 |
|  | 4 |

If the total worth of ‘property’ was an integral multiple of Rs.1 crore in the year 2008, then difference in the total worth (in Rs.crore) of ‘Property’ and Shares (in 2008) was closest to

|  |
| --- |
|  |
|  | 22 |
|  | 22.5 |
|  | Data Inconsistent |
|  | None of these |

**Directions for next four questions:** Answer the questions on the basis of the information given below. The six lead characters of popular sitcom ‘Friends’ were rated by a panel of 4 judges. From every judge, each character received a distinct integral rating ranging from 1 to 6, depending on how much the character was liked by that judge, i.e. the character he liked most, was given a rating of 6 and the character he liked least was given a rating of 1 and so on. The six characters were named Chandler, Joey, Monica, Phoebe, Rachel and Ross. The judges were named J1, J2, J3 and J4.  
  
**Further information is given below:**  
  
1. Chandler received a different rating from each judge. This holds true for the other five characters as well.  
  
2. For each of Chandler, Monica and Rachel the ratings received from the four judges were in A.P.  
  
3. The sums of four ratings received by Chandler, Monica and Rachel were also in A.P., with a common difference of 4, not necessarily in that order.  
  
4. The sums of four ratings received by Joey, Phoebe and Ross were also in A.P., with a common difference of 1, not necessarily in that order.   
  
5. The ratings received by Chandler from J2, Monica from J4 and Rachel from J3 were the same.  
  
6. Monica received a higher rating from J3 as compared to what she received from J2.  
  
The following table provides partial information about the ratings received by the six characters from the four judges.



What was the maximum possible sum of the four ratings received by any of the six characters?

|  |
| --- |
|  |
|  | 14 |
|  | 16 |
|  | 17 |
|  | 18 |

What was the sum of the four ratings received by Ross?

|  |
| --- |
|  |
|  | 12 |
|  | 18 |
|  | 14 |
|  | None of these |

What was the rating received by Monica from J4?

|  |
| --- |
|  |
|  | 2 |
|  | 3 |
|  | 4 |
|  | None of thes |

What was the rating received by Joey from J2?

|  |
| --- |
|  |
|  | 1 |
|  | 3 |
|  | 6 |
|  | Cannot be determined |

**Directions for next three questions:** Answer the questions on the basis of the information given below. The following **table** provides partial details about the number of Tests (T) and ODIs (O) played by 6 players of the Indian cricket team against five nations viz. Australia (A), South Africa (S), England (E), Pakistan (P) and the West Indies (W) in the year 2008. Assume that the Indian cricket team played only against these nations in the year 2008, and also, they played no form of matches other than the Tests and the ODIs. The following **pie-chart** provides details about the percentage break-up of the matches played by the Indian cricket team against these nations in the year 2008.



The total number of matches played by the Indian cricket team in 2008 could not be less than

|  |
| --- |
|  |
|  | 200 |
|  | 240 |
|  | 190 |
|  | 230 |

Out of the matches played by the Indian cricket team against the West Indies in 2008, the number of matches not played by Yuvraj could at least be

|  |
| --- |
|  |
|  | 18 |
|  | 9 |
|  | 22 |
|  | 21 |

If Raina played all the “ODIs” and Sachin played all the “Tests” that the Indian cricket team played against England in 2008, then what could be the minimum number of tests played by the Indian cricket team against England in the year 2008?

|  |
| --- |
|  |
|  | 16 |
|  | 19 |
|  | 22 |
|  | 20 |

**Directions for next four questions:** Answer the questions on the basis of the information given below. Johnny was very fond of ice creams; however he was very selective about the flavour of the ice cream he ate. Each ice cream that Johnny ate was one or the other of the seven flavours ‘L’, ‘O’, ‘M’, ‘BS’, ‘C’, ‘BC’ and ‘S’. On each day starting from Sunday to Saturday of a particular week X, he ate three ice creams, each of a different flavour. Also, in this particular week he ate equal number of ice creams of each of the given flavours.  
  
**Additional Information Given:**  
  
I. Whenever he ate flavour L, he did not eat it on the next two days.  
  
II. He never ate ice creams having flavours ‘C’ and ‘BC’ on the same day, but always ate ice creams having flavours ‘S’ and ‘BC’ on the same days.  
  
III. There were exactly two non consecutive days in the week in which he ate ice creams having flavours ‘O’ and ‘M’ together.  
  
IV. He did not eat ice cream having flavour ‘L’ with the ice creams having one or the other of the three flavours ‘C’, ‘M’ and ‘BS’ on any day of the week.  
  
V. He ate all the three ice creams having flavour ‘BS’ before the day on which he ate the third ice cream having flavour ‘O’.  
  
On which of the following days of the week X, Johnny definitely ate an ice cream having flavour ‘O’?

|  |
| --- |
|  |
|  | Thursday |
|  | Monday |
|  | Tuesday |
|  | Friday |

On how many days of the week X, Johnny ate ice creams having flavours ‘S’ and ‘L’ together?

|  |
| --- |
|  |
|  | 1 |
|  | 3 |
|  | 2 |
|  | Cannot be determined |

For how many days of the week X, all the three flavours of the ice cream eaten by Johnny can be uniquely determined?

|  |
| --- |
|  |
|  | 4 |
|  | 2 |
|  | 5 |
|  | 3 |

If Johnny did not eat ice cream having flavour ‘O’ on Monday, then on which day of the week X he ate ice cream of flavour ‘O’ but not ‘M’?

|  |
| --- |
|  |
|  | Tuesday |
|  | Wednesday |
|  | Thursday |
|  | Friday |