



(Test Ref.: AIMCAT1216)

INSTRUCTIONS

1. Read the instructions given at the beginning/end of a section or group of questions very carefully.
2. The total time for the test is **135 minutes**. You may apportion this time among various sections as you wish.
3. **Pattern of the test and marking scheme**

Section	Questions	Number of questions	Marks per question	Negative marks
Verbal Ability	1 – 20	20	3	1
Logic & Data Interpretation	21 – 40	20	3	1
Quantitative Ability	41 – 60	20	3	1
Total	–	60	–	–

4. You are expected to show your competence in all the three sections.
5. Each wrong answer will attract a penalty of one mark.
6. There are no negative marks for unattempted questions.
7. You can navigate to any question of your choice.
8. During the test, you can mark questions for review and return to them at a convenient time.
9. An answer once marked can be changed any number of times before submitting the test. However the last marked answer will be considered as the final answer.
10. Do not carry calculators, slide rules or any other calculating devices. Do not carry any other papers with you except your HALL TICKET. Rough papers for calculations will be provided.

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INSTRUCTIONS

1. Read the instructions given at the beginning/end of each section or at the beginning of a group of questions very carefully.
 2. This test has three sections with 60 questions – 20, 20, and 20 respectively in the first, second and third sections. The **TOTAL TIME** available for the paper is **135 minutes**. The student may apportion this time among various sections as he/she wishes. However, the student is expected to show his/her competence in all the three sections.
 3. All questions carry three marks each. Each wrong answer will attract a penalty of one mark.

SECTION – I

DIRECTIONS for questions 1 to 3: The sentences given in each of the following questions, when properly sequenced, form a coherent paragraph. Each sentence is labelled with a letter. From among the four choices given below each question, choose the most logical order of sentences that constructs a coherent paragraph.

DIRECTIONS for questions 4 to 6: Read the following passage and answer the questions that follow it.

When Charles Darwin published his magnum opus *On the Origin of Species*, he gave a convincing account of how, over immense periods of time, life has evolved from simple microbes to the richness and complexity of the biosphere we see today. But he pointedly left out an account of how life got going in the first place. 'One might as well speculate about the origin of matter', he quipped. Two centuries later we are still largely in the dark about how life started.

There are really three puzzles rolled into one here – the when, where and how of biogenesis. The when part, at least, is becoming clearer. After some academic skirmishes over the past decade, most biologists agree that the Pilbara hills of Western Australia contain traces of life dating back nearly 3.5 billion years. Now a focus of intense international research, the ancient rocks jut from arid hillsides in a wild and desolate terrain about four hours' drive through the bush from the coastal town of Port Headland. The evidence for life gathered so far includes fossilized microbial mats called stromatolites and tiny features embedded in rock, thought by many researchers to be microfossils. Recently, evidence has been found in the same region for an entire fossilized ecosystem.

Could life have existed at an even earlier epoch? The problem in answering this question is the paucity of very old rocks. There are some in Greenland that have been dated to 3.85 billion years ago, which are subtly altered in a manner consistent with biological activity, but non biological processes could also be responsible. Rocks even older than this are known, but so far none has been found to contain any trace of ancient life. Obviously the Pilbara organisms didn't just pop into existence ready-made; there would have been a period of evolution preceding their appearance. All we can say with confidence is that life had established itself on Earth sometime between 3.5 and 4 billion years ago. This may be compared with the age of the planet itself, about 4.5 billion years.

As to where life began, that is much more problematic. The Pilbara hills provide the earliest clear traces of life on Earth, but there is no reason to suppose life actually started there. Darwin himself mused about a 'warm little pond' full of chemicals leached from the surroundings rocks and energized by sunlight. Various other types of 'primordial soup' have been suggested, ranging from drying lagoons through suspended water droplets to the entire ocean. Other researches favour the vicinity of the scalding fluids spewing from deep ocean volcanic vents. My one favourite locale, for what it's worth, is far beneath the seabed (may be as deep as a kilometer or two) in the pores of rocks infused by slow currents of hot convecting fluid. In truth, the setting is pure guess work. It is not clear that life even began on Earth; a good case can be made that it started on Mars, for example. Earth and Mars have for billions of years traded rocks blasted into space by comet and asteroid bombardment, and the surface of Mars is pockmarked with impact craters. Much of the ejected material goes into orbit around the sun, and a small fraction of that eventually hits earth, perhaps after a million years or more in space. Over the course of geological history, trillions of tons of Martian material have rained down on our planet. It is but a small step to imagine Martian microbes hitching a ride on some of this debris. Embedded deep within a rock, protected from the harsh conditions of space, a hardy microbe could easily survive the interplanetary journey, especially if it was in a spore - like dormant state. Experiments have confirmed that microbes inside rocks can withstand space conditions, as well as blast-off and subsequent high speed entry into Earth's atmosphere.

DIRECTIONS for questions 7 to 9: In each of the following questions, the word in capitals is used in four different ways, numbered 1 to 4. Choose the option in which the usage of the word is INCORRECT or INAPPROPRIATE.

- 7. REVISED**

 - (1) I have revised my opinion of him ever since he apologised.
 - (2) A revised edition of the text book is available in all retail outlets.
 - (3) In the wake of the recent strikes, the ruling party has revised its petrol pricing policy.
 - (4) 'Gone With the Wind', the 1940s stunning Hollywood success, is now being revised by Bollywood.

8. CHRONICLE

 - (1) In history books events are usually narrated in chronicle order.
 - (2) Hiuen Tsang provided a chronicle of the life and times of Harshavardhan.
 - (3) The cartoon series chronicles the bitter-sweet relationship between Tom and Jerry.
 - (4) History is not just a chronicle of man's follies, as a critic once put it.

9. HANG

 - (1) I will hang up if you start complaining.
 - (2) The woman tried to hang herself when her theft was discovered.
 - (3) A child will hang to every word uttered by the parents
 - (4) During the monsoons, the branches of the willows hang low over the statues.

DIRECTIONS for questions 10 to 12: Read the following passage and answer the questions that follow it.

Since the 'Scramble for Africa' among European powers for establishing colonies in Africa in the 19th century, the continent has come a long way. On its journey, it has passed through a cycle of exploitation, stagnation, hope, setback and subsequent explosion of new expectations. The past decade seems to have witnessed the second 'scramble', the competition among 'old' powers — the U.S. and the EU — and 'new' powers — China, India, Russia and Brazil, not to speak of ASEAN, Turkey and Iran — to re-engage Africa. Will the coming decade see African countries moving on the road to faster development?

What is required is a realistic evaluation of how Africa has performed in the years since Ghana became the first country to attain Independence in 1957. The late 50s and early 60s represented a special moment in African history as country after country overthrew the colonial yoke. This was the age of hope and of giants such as Nkrumah, Kenyatta, Ben Bella, Senghor, Lumumba and Nyerere. Soon, however, hopes were belied as parts of the continent were engulfed in conflicts. Africa had been caught in the vortex of post-colonial tensions. Neo-colonialism and cold war-related compulsions ensured that both democracy and development suffered enormously. According to one calculation, Africa went through 70 coups and 13 presidential assassinations between 1960s and late 1980s.

The past two decades have regenerated optimism. The end of apartheid and emergence of a democratic South Africa was a big boost. In 1994, there were only eight democracies; today the number is 35. Economic performance has been improving. Between 1995 and 2005, GDP growth rate increased, averaging 5 per cent in 2005. Projections for 2011-12 indicate that growth would be between 4 and 5 per cent. However, these figures can hardly conceal the stark reality of poverty and its brutal consequences in Sub-Saharan Africa.

The old colonial mindset seems to be alive and kicking, about Africa's role in the world. Recently a senior French minister called Africa "our El Dorado", a legendary city of gold. France reportedly wants to ensure broader influence in Africa, seen as "a frontier for profit-making." Many American, EU and Chinese companies seem to share this perspective.

Will Indian companies be different? Will they give to Africa as much as they receive from it, if not more? This is perhaps what Ratan Tata had in mind when he recently recalled that South Africa had been a victim of "exploitative and extractive enterprise". He suggested that India and South Africa could have "a different relationship", one based on mutual benefit and genuine partnership. His advice applies to all Indian companies operating in Africa, not just in South Africa.

Amidst a rising crescendo of excitement before the World Cup began, South African President Jacob Zuma proclaimed grandly: "Africa has arrived." Maybe, but realists are unlikely to agree.

Mother Africa would have "arrived" when democracy, peace and progress, touching all her children, prevail on a lasting basis.

- 10.** Which of the following statements regarding the 'scramble for Africa' would the writer probably NOT agree with?
 - (1) The path to Africa in the second 'scramble' is paved with good intentions.
 - (2) Europeans powers competed with each other to establish colonies in Africa in the 19th century.
 - (3) Emerging economies are keen on prospective economic ties with African states.
 - (4) France has apparently not got over its old colonial mindset with respect to Africa.

- 11.** Which of the following statements regarding Africa cannot be inferred from the passage?
 - (1) In many countries, it seems that the military is the only group that can maintain order.
 - (2) When a country became independent for the first time, it was often expected to align with either the United States or the Soviet Union.
 - (3) A few African States have been able to sustain democratic governments on a permanent basis.
 - (4) Post-colonial Africa vindicated the hopes of its political luminaries.

- 12.** The writer suggests that India can engage Africa to promote inclusive globalization by
 - (1) urging African governments to give greater priority to India.
 - (2) helping Africa secure its salvation from poverty, disease, conflict and corruption.
 - (3) letting Africans know that they themselves could define their future.
 - (4) working on an economic partnership based on sustained cooperation and shared enrichment.

DIRECTIONS for questions 13 and 14: The following question has a paragraph from which the last sentence has been deleted. From the given options, choose the one that completes the paragraph in the most appropriate way.

- 13.** The tax saving for senior citizens may look significant for many, however it will be illusory. For one thing, one must have an income stream that is large enough to qualify for savings. Even more contrived is the logic that senior citizens can plan their taxes better by investing in tax-saving instruments. Such instruments are essentially long-dated and even if senior citizens have enough income they would be ill advised to lock their money in these. The Finance Minister is absolutely right when he says that senior citizens deserve special attention.
 - (1) The Finance Minister has created a new category 'Very senior citizens' 80 years and above, who will qualify for a higher exemption limit.
 - (2) Today's senior citizens depend on limited fixed incomes and did not have many opportunities to save and plan for their retirement during their working years.
 - (3) Government support to them ought to go well beyond tax reliefs and address the concerns of the aged in a holistic manner.
 - (4) It is an administrative decision to reduce the qualifying age for senior citizens from 65 years to 60.

- 14.** India was recently in the news for the wrong reasons. The serious threat posed by the newly discovered microbe, NDM -1, resistant to many antibiotics, triggered alarm and panic. The country

faces two conflicting challenges. The urban rich with their easy access to medical treatment often receive inappropriate antibiotic therapy. On the other hand the rural poor, with their lack of basic medical facilities, find it difficult to obtain such medication. The official reactions to both these problems and their implications were denials.

- (1) The actions of the rich result in microbial resistance, while the poor suffer preventable deaths.

DIRECTIONS for questions 15 to 17: Read the following passage and answer the questions that follow it.

The current row over climate change sounds all too familiar. Germany, host of this year's G8 summit, is trying to get the world to agree on what to do when the Kyoto protocol on curbing greenhouse gases runs out in 2012. America, which dislikes the tough targets that the Europeans want the world to sign up to, is proposing separate negotiations between the world's big emitters. Environmentalists accuse it of trying to sidetrack the issue. The line-up is much like the one that led to America's withdrawal from the Kyoto agreement in 2001.

Yet to conclude from this that nothing has changed would be wrong. Attitudes have shifted sharply, most importantly among business people.

Until recently, business tended to take a dim view of the idea that the climate was changing. The notion implied that industry had damaged the planet, and should therefore pay for the consequences. Since companies couldn't see the damage they were supposed to have done, they preferred, by and large, to argue that it wasn't happening.

No longer. These days businesspeople are falling over each other to prove their greenness. That's partly because the politics of climate change have moved so fast in America. Five bills in Congress would introduce federal controls. California now has binding targets to cut CO₂ emissions, and other states plan to follow. Many chief executives have come round to the view that federal controls would be better than a patchwork of state laws. And if federal regulations are coming, companies need to support them, in order to be involved in designing them. Hence the need to be seen to be green.

But companies are not driven purely by fear of regulation. Cleaner energy means new technologies, and new money to be made. Businesspeople concerned to position themselves well for a carbon-constrained future must do more than get themselves photographed with Al Gore: they need to invest in technologies that will produce cleaner energy.

Global investment in renewable power-generation, biofuels and low-carbon technologies rose from \$28 billion in 2004 to \$71 billion in 2006, according to New Energy Finance, a research company. Yet business's new enthusiasm for clean energy is a fragile green shoot in a dark landscape. Much could happen to crush it. A sustained fall in the oil price, for instance, would undermine investment in costlier, cleaner technologies. But the bigger risk is political. Businesses are investing in alternatives to fossil fuels because they assume that carbon emissions will be constrained in the future. If governments do not act to curb emissions, those investments will eventually wither.

The best way for governments to encourage investment in cleaner energy is to make the polluter pay by putting a price on CO₂ emissions. A carbon price can be established either through a tax or through a cap-and-trade system, such as the one Europe adopted after signing up to Kyoto. A carbon tax would be preferable, because companies would then be able to build a fixed price into their investment plans; but businesspeople and politicians are both strangely averse to the word "tax". A cap-and-trade system can be made to work, but the price has to settle at a level that affects commercial decisions. Europe's hasn't: the price has been too volatile, and, for much of its existence, too low, to shift investment patterns much.

Europe has tightened its system up, and the carbon price has risen to a level which could start to make a difference. But Europe, by itself, will not save the planet. It is America that matters, not just because it is the world's biggest polluter, but also because without its participation, the biggest polluters of the future—China and India—will not do anything.

The best news in the fight against climate change is that business is starting to invest in clean energy seriously. But these investments will flourish only if governments are prepared to put a price on carbon. The costs of doing that are not huge. The costs of not doing so might be.

15. The writer considers business' new enthusiasm for clean energy a 'fragile green shoot' because
 - (1) global investment in renewable power-generation and low-carbon technologies has not increased significantly.

- (2) The development of bacterial resistance to antibiotics is natural and occurs due to adaption to hostile environments.
- (3) The increase in antibiotic resistance in community acquired infection compounds the problem.
- (4) However, after the short lived indignation and outrage, it is back to business as usual, the old inertia with its deceptive calm.

16. Chief executives 'need to be seen to be green' because
 (1) they can get themselves photographed with Al Gore.
 (2) they want to participate in the formulation of regulations for controlling CO₂ emissions.
 (3) federal controls to cut CO₂ emissions are binding.
 (4) they are finally convinced that carbon-dioxide emissions must be controlled.

17. Which of the following statements is supported by the passage?
 (1) A cap-and-trade system has worked satisfactorily in Europe.
 (2) America will be the world's biggest polluter.
 (3) A carbon tax is a better way of establishing a carbon price than a cap-and-trade system.
 (4) Politicians cannot tax companies in energy-intensive industries.

DIRECTIONS for questions 18 to 20: In each question, there are five sentences or parts of sentences that form a paragraph. Identify the sentence(s) or part(s) of sentence(s) that is/are correct in terms of grammar and usage. Then, choose the **most appropriate** option.

18. A. Ignorance is usually fatal which is why people have been suffering for so long.
 B. Whether it was a cave dwelling ancestor eating a berry without knowing the difference between an edible or a poisonous one, or a kid crossing a busy intersection without looking both ways, in the end it was ignorance that cost them dearly.
 C. When the mind is left undeveloped and unable to grasp the true nature of things, it builds a model of the world.
 D. That is, at best, shaky and at worst, completely not in synchronization with reality.

- E. Yet, such ignorance is curable and can be dispelled with healthy doses of trial and error, experience and teaching.

- (1) A, B and D (2) C and D
 (3) A and E (4) C and E

19. A. The shocking denial of access to basic facilities at the village level institutionalizes inequality of opportunity and has prevented the poor from rising.
 B. Urban facilities provide some social mobility.
 C. But rural facilities are so typically pathetic as to become poverty traps.
 D. For this, our politicians are squarely to blame for these heroes are the zeroes who ensured continuing inequality of opportunity, poverty and powerlessness.
 E. Their solution is to compete in offering caste-based reservations, not providing the equality of opportunity that might make caste irrelevant.
 (1) A and C (2) A, B and E
 (3) C and D (4) B and C

20. A. To draw students from other countries, a country should provide them maximum opportunities to work while they study.
 B. Its government has also to allow them to stay on upto 18 months after they complete their studies.
 C. Working part-time has helped foreign students a great deal.
 D. An extension in their stay helps them pick up a job in the country and repay their educational loans, if any.
 E. Or they may simply explore the country which they may have missed out while studying here.
 (1) B and C (2) B, C and D
 (3) A, B and E (4) Only A

SECTION – II

Number of Questions = 20

DIRECTIONS for questions 21 to 24: Answer the questions on the basis of the information given below.

The formula 5 championships comprise five races in a year. In each race, the persons finishing the race in the 1st six positions are awarded 10, 8, 6, 4, 2 and 1 points respectively. The following table gives partial information about the positions of the top four persons (in terms of the cumulative points scored in all the five races combined in each of the five races. For each row (i.e., race), the last column gives the total number of points scored by these four persons together in that race.

Race	A	B	C	D	Total Points
1		1			21
2			3		22
3				2	20
4	2				19
5			4		23

The following additional information is known.

- (i) In each race, exactly two of these four persons finished the race within the first three positions.
 (ii) Each of the four persons finished each of the five races in one of the top six positions.
 (iii) No two persons finished in the same position in any race.
 (iv) No person finished two or more of the five races in the same position.

21. In which position did B finish the race 2?
 (1) 1st (2) 4th (3) 5th (4) 6th
22. How many points did C get in all the five races put together?
 (1) 21 (2) 23 (3) 25 (4) 27
23. Who among the four, got the highest total number of points in all the five races put together?
 (1) A (2) B (3) C (4) D
24. If the total number of points scored by D is more than that scored by A, then in which position did A finish the race 2?
 (1) 1st (2) 3rd (3) 4th (4) 5th

DIRECTIONS for questions 25 to 27: Answer the questions on the basis of the information given below.

The nutritionist at a football academy was provided with five energy drinks – P, Q, R, S and T – which can be mixed in any proportion to suit the needs of the players. The following table gives the break-up of the ingredients present in each of the five drinks.

Drink	Proportion of ingredients			
	Fats (%)	Proteins (%)	Minerals (%)	Carbohydrates (%)
P	30	20	10	40
Q	40	10	30	20
R	20	40	20	20
S	20	25	25	30
T	25	35	15	25

25. If a player has to be prescribed a drink containing at least 25% carbohydrates and at least 25% proteins, by mixing exactly two of the five drinks in equal proportions, in how many ways can these two drinks be selected?

- (1) 2 (2) 3 (3) 4 (4) 5

26. If not more than two litres of any of P, Q, R, S or T is available and six litres of a drink containing fats, proteins and carbohydrates in equal proportions is to be prepared for the players, then what is the maximum percentage of carbohydrates that such a drink can contain?

- (1) 22.5% (2) 25%
 (3) 26.0% (4) None of these

27. If an ideal drink is one which contains all the four ingredients in equal proportions, and exactly three of the given five drinks have to be mixed in the ratio 1 : 1 : 2 to get the ideal drink, then which of the following combinations of drinks can be used (not necessarily mixing the drinks in their order of appearance)?

- (1) P, Q and R (2) P, Q and S
 (3) Q, R and S (4) Q, S and T

DIRECTIONS for question 28: The question below is followed by two statements, A and B. Answer the question using the following instructions:

Mark (1) if the question can be answered by using one of the statements alone but cannot be answered by using the other statement alone.

Mark (2) if the question can be answered by using either of the statements alone.

Mark (3) if the question can be answered by using both the statements together but not by either of the statements alone.

Mark (4) if the question cannot be answered even by using both the statements together.

28. Mr.Dhanlal has to divide his four-acre field, which is in the shape of a square, among his four sons – A, B, C and D. What fraction of the area of the field did D get?

- A. The part of the field that each of the four sons got is in the shape of a square.
 B. B received $\frac{1}{4}$ th of what D received, which, in turn, is $\frac{1}{5}$ th of what A and C together received.

DIRECTIONS for questions 29 to 31: Answer the questions on the basis of the information given below.

The Indian Forests Department (IFD) conducts an annual survey across five major national parks – Corbett, Ranthambore, Nagarhole, Bandipur and Pench, to estimate the number of chitals present. The survey estimates that the total number of chitals in all the five national parks together is 3600.

The following additional information is known.

- (i) Corbett has the highest number of chitals while Ranthambore does not have the least number of chitals.
 (ii) The national park with the least number of chitals has $\frac{1}{9}$ th the total number of chitals.
 (iii) Two of the national parks have $\frac{1}{3}$ rd and $\frac{5}{36}$ th of the total number of chitals respectively.
 (iv) Bandipur has 500 more chitals than the national park with the least number of chitals.
 (v) Nagarhole has one and a half times as many chitals as those in one of the other four national parks.

29. What is the difference between the 3rd and the 4th highest number of chitals present in any of the five national parks?

- (1) 100 (2) 300 (3) 400 (4) 500

30. Which of the five national parks has the least number of chitals?

- (1) Bandipur (2) Pench
 (3) Nagarhole (4) Ranthambore

31. Which of the following statements is not true?

- (1) Corbett has 1200 chitals
 (2) Bandipur has 900 chitals
 (3) Nagarhole has 500 chitals
 (4) Pench has 400 chitals

DIRECTIONS for question 32: The question below is followed by two statements, A and B. Answer the question using the following instructions:

Mark (1) if the question can be answered by using one of the statements alone but cannot be answered by using the other statement alone.

Mark (2) if the question can be answered by using either of the statements alone.

Mark (3) if the question can be answered by using both the statements together but not by either of the statements alone.

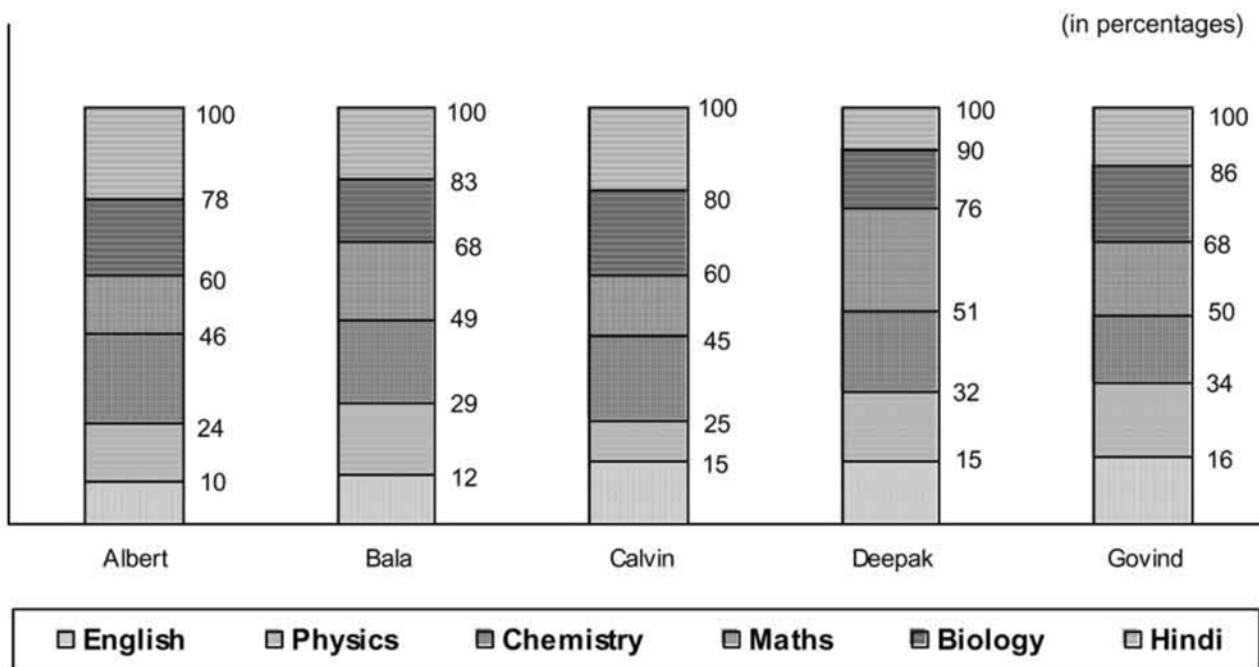
Mark (4) if the question cannot be answered even by using both the statements together.

32. Three boys – X, Y and Z – have a total of 18 chocolates, of which a few are 'Dairy Milks' and the remaining are 'Kit Kats'. Each boy has a distinct (at least one) number of 'Kit Kats' and a distinct (at least one) number of 'Dairy Milks'. Each boy has more 'Kit Kats' than 'Dairy Milks'. What is the number of chocolates of each type with Z?

- A. The number of 'Dairy Milks' with X is less than that with each of Y and Z but the total number of chocolates with X is more than that with Z.
 B. The total number of 'Dairy Milks' with the three of them is 6 and Z has 3 'Kit Kats'.

DIRECTIONS for questions 33 to 35: Answer the questions on the basis of the information given below.

Five students – Albert, Bala, Calvin, Deepak and Govind – attend six exams, one in each of the six subjects – English, Physics, Chemistry, Maths, Biology and Hindi. The maximum marks in each of these subjects are 100 and in every subject, the marks scored by each of the students is an integer. The following bar graph gives the subject wise break-up (in percentage terms) of the total marks scored by each student.



The values shown in the above graph are cumulative values. Hence, for example, Albert scored 14% (i.e., 24 – 10) of his total marks in Physics and 22% (i.e., 46 – 24) of his total marks in Chemistry.

33. The total marks scored by any of the five students are at most
 (1) 500 (2) 520 (3) 550 (4) 600
34. The total marks scored by Calvin in the exam are at most
 (1) 480 (2) 500 (3) 540 (4) 550
35. If among the five students, Govind scored the highest marks in Maths, then his total score in all the six subjects put together is more than that of at least how many of the other four students?
 (1) 1 (2) 2 (3) 3 (4) 4

DIRECTIONS for questions 36 and 37: Answer the questions on the basis of the information given below.

Three friends, Shilpa, Shraddha and Shruti, bet in a race in which six of their pets – Nestor, Snowland, Napolean, Squealer, Major and Boxer – participate. It is known that the first four positions in the race are attained by four of the six above-mentioned pets. The three friends speculated on the pets that may finish in each of the first four positions of the race. Their speculations are listed in the table below.

Name	Position			
	1 st	2 nd	3 rd	4 th
Shilpa	Nestor	Boxer	Napolean	Snowland
Shraddha	Boxer	Major	Nestor	Squealer
Shruti	Snowland	Napolean	Boxer	Squealer

The following additional information is known.

- (i) No pet finished the race in the same position as speculated by Shilpa but exactly two of the four pets speculated by her finished the race within the first four positions.
- (ii) Exactly two pets finished the race in the same positions as speculated by Shraddha, while only one pet speculated by her failed to finish within the first four positions.
- (iii) Exactly two pets speculated by Shruti finished the race with the first four positions, while only one pet finished the race in the position as she speculated.

36. Which pet finished the race in the third position?

- (1) Napolean
- (2) Major
- (3) Nestor
- (4) Squealer

37. Which of the following is the correct order of the pets which finished the race in the first, second, third and fourth positions respectively?

- (1) Nestor, Boxer, Squealer, Major
- (2) Major, Snowland, Nestor, Squealer
- (3) Major, Napolean, Nestor, Squealer
- (4) Boxer, Squealer, Nestor, Snowland.

DIRECTIONS for questions 38 to 40: Answer the questions on the basis of the information given below.

Mr. X works as a marketing manager for company XYZ. The following table shows the total amount of business mobilised by him and also his annual salary, split-up under different components, that he receives from company XYZ, for the four years from 2004 to 2007.

Year →	2004	2005	2006	2007
Business mobilised (in Rs. lakhs)	22.5	31.0	38.5	47.5
Component of Salary (in Rs.)				
Basic salary	72,000	96,000	1,20,000	1,44,000
Travelling allowance	11,250	15,500	19,250	23,750
Medical allowance	15,000	15,000	15,000	15,000
Performance Bonus	45,000	62,000	77,000	95,000
Festival Bonus	5,000	5,000	5,000	10,000
Commission	67,500	93,000	115,500	142,500

Of the six components of Mr. X's annual salary, the 'Basic salary' component increases by a fixed amount of Rs.24,000 every year. Of the remaining five components, some vary in direct proportion to the total amount of business mobilized by him and the remaining do not vary in any particular pattern with respect to the changes in the total business mobilized by him, and hence they are considered to be fixed. Using the information provided for the year 2007 as the basis for projecting the values for 2008, answer the questions that follow.

38. What is the annual salary of Mr. X in 2008, if the total amount of business mobilized by him in that year is Rs.62 lakh?

- (1) Rs.4,86,000
- (2) Rs.5,12,500
- (3) Rs.5,34,000
- (4) Rs.5,62,000

amount of business mobilized (approximately) by him in 2008, is at least

- (1) Rs.52 lakh
- (2) Rs.47.5 lakh
- (3) Rs.43.2 lakh
- (4) Rs.41.5 lakh

39. If the annual salary of Mr. X for the year 2008 was more than that for the year 2007, then the total

40. If the annual salary of Mr. X in 2008 was Rs.6,00,000, what was the total amount of business mobilized by him in that year?

- (1) Rs.56 lakh
- (2) Rs.74 lakh
- (3) Rs.67 lakh
- (4) Rs.72 lakh

SECTION – III Number of Questions = 20

DIRECTIONS for questions 41 and 42: Answer the questions on the basis of the information given below.

There are 100 players numbered 1 to 100 and 100 baskets numbered 1 to 100. The first players puts one ball each in every basket starting from the first basket (i.e., in the baskets numbered 1, 2, 3, ...), the second player puts two balls each in every second basket starting from the second basket (i.e., in the baskets numbered 2, 4, 6,), the third player puts three balls each in every third basket starting from the

third basket (i.e., in the baskets numbered 3, 6, 9,), and so on till the hundredth player.

41. Which basket will finally have the maximum number of balls?

- (1) 96
- (2) 98
- (3) 100
- (4) 90

42. How many baskets will finally have exactly twice the number of balls as the number on the basket itself?

- (1) 8
- (2) 6
- (3) 4
- (4) 2

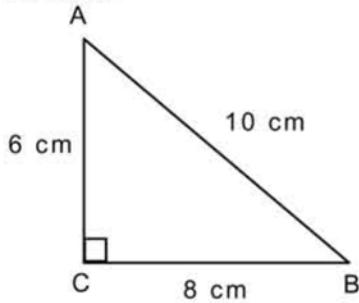
DIRECTIONS for questions 43 to 60: Answer the questions independently of each other.

43. There are four billiard balls randomly located on a pool table. Each ball is of a distinct colour from among Red, Blue, Green and Yellow. The balls are all struck simultaneously and it is observed that there are a total of 57 collisions between the balls before they all come to rest. If it is known that each collision involved exactly two balls, then which of the following statements is / are definitely false?

- (I) No ball was involved in 29 collisions or more
 - (II) No ball collided ten or more times with the same ball.
 - (III) No ball was involved in more than 54 collisions.
 - (IV) Exactly one ball collided exactly 53 times with the same ball.
- (1) Only I and III (2) Only I, II and IV
 (3) Only II and IV (4) Only I and II

44. Given a series 1, 2, 5, 10, 17, 26, 37, ..., what is the sum of the first 50 terms of the series?
 (1) 40475 (2) 43375 (3) 45575 (4) 42375

45. Mahendar found a thin sheet of aluminium which was in the form of a right-angled triangle as shown below. What is the maximum possible volume (in cc.) of water that can be held in a right circular cone formed from the sheet, with C as the vertex? Assume that the cone is formed by rolling up all or a part of the sheet.



- (1) 2.23π (2) 3.23π (3) 3.63π (4) 2.63π

46. If p , q and r have a product of 1, then

$$\frac{1}{1+r^2p+r^2q} + \frac{1}{1+p^2q+p^2r} + \frac{1}{1+q^2r+q^2p} =$$

(1) $\frac{(p+q+r)^2}{9}$ (2) $\frac{3}{(p+q+r)^2}$
 (3) 1 (4) $\frac{3}{(p+q+r)^3}$

47. Given that a and b are two prime numbers while n is a natural number such that $\frac{1}{a} + \frac{1}{b} + \frac{1}{ab} = \frac{1}{n}$, find the value of $|a - b| - n$.
 (1) 4 (2) 0 (3) 2 (4) 1

48. There are two lighted candles whose rates of burning are in the ratio of 2 : 1. At 6:00 p.m., their lengths are in the ratio of 3 : 2 and at 9:00 p.m., their lengths are in the ratio of 2 : 3. At what time were their lengths equal?
 (1) 7:30 p.m. (2) 8:00 p.m.
 (3) 8:24 p.m. (4) 8:36 p.m.

49. The set Y consists of the following numbers. $Y = \{1, 3^{1/2}, 3, 3^{3/2}, \dots, 3^9, 3^{19/2}, 3^{10}\}$. In how many ways can a pair of distinct numbers be selected from the set Y such that their product is greater than or equal to 3^{10} ?

- (1) 110 (2) 210
 (3) 105 (4) 100

50. P, Q and R are distinct natural numbers. If $V = \frac{P(Q^2 + R^2) + Q(P^2 + R^2) + R(P^2 + Q^2)}{PQR}$, then V must be
 (1) greater than or equal to 16 but less than 64.
 (2) greater than 6.
 (3) greater than 24 but less than 87.
 (4) greater than 16.

51. A 50-digit number has all 7's. Find the remainder when the number is divided by 74.
 (1) 43 (2) 3 (3) 23 (4) 7

52. Amar and Ajeeth start simultaneously from the same point on a circular track, of length 5 km, and run in opposite directions. Their speeds are doubled every time they cross each other. Find the number of times that they will meet within the first hour, given that they started the race with the respective speeds of 6 kmph and 4 kmph.

- (1) 4 times
 (2) 6 times
 (3) 7 times
 (4) None of these

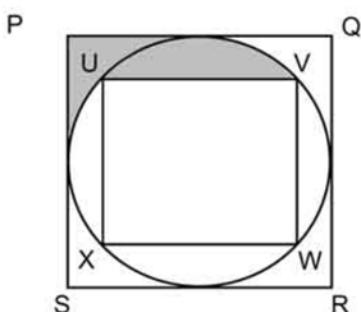
53. If a , b and c are positive numbers satisfying $a^2 + b^2 + c^2 = 12$, then which of the following is true of the sum $S = a + b + c$?
 (1) S is at least 6
 (2) S is at most 6
 (3) S is at least 12
 (4) None of these

54. X and Y are two types of oils prepared by mixing olive oil and mustard oil in the ratio 11 : 3 and 2 : 5 respectively. If a third type of oil, Z, is prepared by mixing oils X and Y in the ratio $m : n$, such that the percentage of olive oil in the resulting mixture is 50%, find $m : n$.
 (1) 3 : 8 (2) 1 : 1
 (3) 3 : 4 (4) 11 : 5

55. If $\log_x a$, $a^{x/2}$ and $\log_b x$ are in GP, then the value of x is
 (1) $\log_a(\log_b a)$
 (2) $\log_b(\log_a b)$
 (3) \log_{ba}
 (4) $a^{\log_b a}$

56. Two positive integers x and y are such that $x^2 + 12y^2 - 7xy - 4 = 0$. How many values can y assume?
 (1) 2 (2) 1 (3) 3 (4) 4

57. In the figure below, UVWX is a square, inscribed in a circle, which, in turn, is circumscribed by another square, PQRS. If the area of the circle is 64π sq.cm., find the area of the shaded region.



- (1) 32 sq.cm. (2) 16 sq.cm.
(3) 48 sq.cm. (4) 64 sq.cm.

58. If p is a natural number, how many values of p exist such that $\frac{(2p+1)^2}{2p+7}$ is an integer?
(1) 1 (2) 3 (3) 2 (4) 5
59. What is the sum of the digits of a two-digit number, which is 32 less than the square of the product of its digits?
(1) 12 (2) 9 (3) 10 (4) 8
60. All the internal angles of a convex polygon are distinct integers (when expressed in degrees), with the greatest of them being 110. The number of sides of the polygon is at most
(1) 4 (2) 5 (3) 6 (4) 7

