

## Answers and Explanations

1. B The First paragraph talks about food inflation and vegetable inflation rising and also states that the food inflation has an overwhelming impact on overall inflation. The second paragraph talks about how this data concerns RBI. For RBI this data i.e. trend is a concern since if the trend continues, RBI will have to explain to the government. As of now, the trend is a concern for RBI and therefore the data offers a potential application (use) to RBI. Thus, the most appropriate Option is B. Options A is wrong since there is no cause and effect relationship between the two paragraphs. Option C is wrong, since no assertion is made in the first paragraph. In Option E, while the first paragraph discusses pain points, the second paragraph does not discuss any remedy. Option D is wrong since, the second paragraph does not hint at any inefficiency on the part of RBI other than the possibility of RBI giving an explanation in the future if and only if the trend continues in the future and crosses 11%. Even then it may not hint at any inefficiency on the part of RBI. At this point in time it is inappropriate to label RBI inefficient. As of now, therefore the trend is a concern for RBI and therefore the data offers a potential application to RBI. But we cannot make any inference beyond this. Since the acceptable upper limit of inflation is 11%, the current trend may not mean that RBI is effective or ineffective in managing inflation. Also since how much resources RBI had in its arsenal to control inflation is not given in the first or second paragraphs, and how much was put to use is also not discussed in both the paragraphs, so, the second paragraph does not hint anything about efficiency or inefficiency.
2. E The last two lines of the poem talk about sense of identification (word "my" is used) that poet may have towards her parents. This hints that fond memories were attributed to parents and not to the surroundings or the beautiful house. Surroundings and house became beautiful because of parents. Option A is wrong as "mountains" are not mentioned anywhere. Option B is wrong as there is no mention of the "community". Option C is again wrong as there is no mention of "climate", there is mention of only "steam" and "brazier", which is not climate. Option D is wrong because it captures the essence only of the first three lines from the stanza and not the entire passage. Hence, Option E is the best answer.
3. B Statements 3, 4 and 5 cannot be the opening statement since the usage of "Here" implies that the subject of the discussion has already been introduced; nor can statement 1, since statement 1 begins with "This" and that too implies the subject has been introduced. The introduction to the passage can only be through Statement 2. Statement 1 labels/describes the area that has been introduced in statement 3. Therefore, the sequence should start from 2, proceed to statement 3 and then on to 1. Statement 3 after statement 4 is awkward as emphasis shifts from races to mountains. Hence, Option B is the correct answer.
4. B Statement 4 asks a specific query, which is illustrated by an example given in the statement 3 therefore creating a pattern of 4 followed by 3. Alternatively, statement 4 raises a question and statement 3 raises the same question in a different and a general manner ("In other words"). It again shows that 3 should follow 4. Statement 1 talks about why do elements get their property, while statement 4 describes a specific case. As stated in the statement 1, the properties can only be derived from the periodic table. Hence, statement 4 should follow statement 1. Statement 2 is a conclusive statement and hence should be the last statement. Statement 1 cannot flow from statement 3 because statement 1 does not give any hint about an answer to the question raised by statement 3. Statement 1 should also come before statement 3 as statement 1 mentions 'order' in periodic table while statement 3 asks justification behind the 'order', which is answered in statement 2. Hence, Option B is the correct answer.
5. C The second sentence/line in the passage can be completed by either 1) "unproductive" or 3) "overstated". But the following sentence (third) questions the perception of "change of attitudes" contained in the second sentence/line. The serious study of popular films by critics implies that the critics are compelled to rationalize their "penchant for" and hence, 3 will be followed by 4. By rationalizing their penchant for popular films, they unwittingly reveal their continued investment in the categorization of popular and art films. Hence, the appropriate sequence of words should start with 3 follow it with 4 and then by 6. Hence, option C is the correct answer.
6. A A is the correct answer as first and second part of the sentence should have same grammatical structure. Option C is also grammatically correct but it has no meaning as "MBA college" cannot be "best in Job". Options B, D and E are combined sentences as "I" gets repeated in the second part of the sentence, like in the first part. Moreover, the article "a" is missing before "good job" in options B, D and E.
7. E The poem talks about seemingly dissimilar items actually seeking each other and also connected with each other. Invisible atoms which may be of different types, such as seeds and earth, or stars and seas, each of these groups of dissimilar items are finally connected. Hence, Option E best captures the spirit of the stanza. Options A and B are specific examples related to stars, rivers and seas. Option C is wrong as there is nothing mentioned about division in the stanza. Option D is wrong as the stanza does not talk about religious differences.
8. E All the sentences are grammatically correct. Hence, option E is correct.
9. D The question is, among the five options which would imply that the stock price increase is "fair"? Increase in the stock price took place after the company agreed to pay 200 million and not when punishment was announced by the commission. Even assuming commission and court are the same, given that complying with the commission is mandatory/statutory behaviour, compliance is no "fair" reason for stock price to increase based on compliance behaviour. Hence, option E cannot be the right answer. When the company agreed to pay the fine, the market perceived it as acknowledgement of deceit and the valuation of such deceit is clear (from the fine amount). This acknowledgement of behaviour (deceit) and specifically the valuation or price of such behaviour becoming clear, gives lots more information to the market thereby increasing the stock price. Hence, D is the answer. Options A and B are wrong since stock price did not increase when the organization was exposed, but when the organization acknowledged. Option C is wrong as there is no data on stock price movement when the organization's "fraud" was exposed.
10. C The paragraph says 2 million hectares of world's current tomato cultivation areas are lost in the most favourable areas of cultivation. Therefore, favourable area under cultivation is reducing. Given that favourable areas have more production per hectare and extended areas have lesser production per hectare, the overall production per hectare will reduce though total global production may increase. Hence, Option C is the

correct inference. Option A and E are not correct since going by the discussion above, increase in 'per hectare production of tomato' or production remaining the same is not possible. Options B and D are wrong because there is no mention of 'wastage of tomato' in the passage.

11. D Grotesque and macabre both mean/signify unpleasant, out of the normal and hideous. But Macabre while being unpleasant specifically focuses on death or is related to death. Among the options given below, all the right hand side words signify or are related to death/dead. But among options, the words on the left hand side, only sorcery is unpleasant and therefore similar to grotesque. Hence D.
12. C In all these words, the emphasis is on the second syllable "fect". Hence, option with first part emphasised are wrong. This makes C as the right answer. Further, generally, affect is used as verb, while effect is used as noun. Hence, C is the correct answer.
13. D The last paragraph of the passage gives away that "I" is a pencil, as the one object among the options given, that can satisfy the passage completely. Thus, Option D is the correct answer.
14. B Supercilious is arrogant or contemptuous attitude. In the passage, it is used w.r.t. pencil. Since, pencil looks simple and trivial, people might develop supercilious attitude towards it. Hence, B is the right answer.
15. C The essence of passage is how we are forced to upgrade in order to stay relevant. Hence, up gradation is forced rather than left to our choices. Hence, C is the best answer. Option A is wrong because second law of thermodynamics, as mentioned in the paragraph, talks about things falling apart and not about "energy required". B and E are contradictory to the ideas mentioned in the passage. D is partially incorrect as up-gradation is not simple.
16. A In the passage, the author is making two points. The first is that change is constant and the second is how to adapt to the change so as to survive. In other words, the first is more of an observation by the author while the second part is his/her core argument/exhortation. Thus, the essence of the passage is the second point (i.e. how to adapt) while keeping in mind the existence of the first. Based on the argument above, Option A is the closest since it includes both the points and hence, the correct answer. Option B contains only the first point, while Option C is irrelevant. Option D and E are reactive and would be a consequence of non-adherence of the author's exhortation.
17. D If the CEO were to consult the author, then going by the passage, life-time employment does not guarantee continuous up-gradation. Also, the tenure of an employee does not guarantee up-gradation. Similarly, inferring from the passage, those who do not upgrade should be fired and be replaced with new employees. The other solution can be providing regular training in place of firing. Hence, correct option is D.
18. E As per Existentialists, we are completely plastic when we are born, and we are product of growing up and what we do. If we extend this logic, then our behaviour would be more determined by what we do in the recent past than distant past. Hence, the right option is E.
19. A ...So I shall sometimes speak of it, not as Existentialist, but as Libertarian—meaning that those holding it do not just (like all of us) think liberty important, but think it supremely important and believe that our having a nature would infringe it. ...

The above excerpt from the passage suggests that while existentialists hold liberty important, libertarians hold liberty supremely important. Therefore, existentialism can be extended to Libertarianism. Therefore, A is the correct answer.

20. E Option A is wrong since PETA activists interfere with animal related experiments, impeding better understanding of animal behaviour and subsequently, human behaviour. Save the Tiger activists, broadly concerned about illegal poaching are irrelevant to the passage. Where they are concerned about the way tigers are being ill-treated, they are similar to PETA and hence would not earn the sympathy of the author. Architect, Physicists are irrelevant to the passage. The passage clearly states, in the last line, that we need to compare human studies with animal studies for better understanding of human behaviour. Since zoologists study animals, the author is most likely to agree with them. Hence, E is the best answer.
21. B Animal behaviour is farthest from "culture", as used in the first sentence of the second paragraph. Hence, B is the right option.
22. C Psychopaths hide their deficits as long as possible, thereby pretending to be normal. There are many symptoms of psychopathy, which they can hide for long. But the core deficit viz. lack of indifference or compassion is something they cannot hide for long. The passage directly mentions that compassion, the core deficit is missing among psychopath towards the end of first paragraph. Hence, C is the correct option.
23. A According to the author empathy and compassion exist not as freak biological accidents but for a reason. They have a function. Hence, option A is right. The above argument rules out Option B. Empathy according to the author is the product of moral choice and not the cause of it. Therefore, Option C is wrong. Psychopaths' lack of regard of others, as stated in the passage makes option D wrong. Option E is not discussed in the passage so it is irrelevant and therefore, wrong.
24. D As the faculty is not changing the grade for a particular student as others might get affected, he is clearly showing empathy to that student as well as to other students. But at the same time, he is not displaying compassion to any student in this situation (though we cannot conclude that he is not compassionate). It is difficult to conclude whether the faculty is a psychopath or not. Hence, Option D is correct.
25. D Among the options available, the root cause would be that option which if removed will stop the further consequences. Applying this principle D is the root cause because had the management not meted out a disproportionate punishment, the current situation faced by the organization would not have risen. Even if the pastor flouted the norms, and the waitress violated the privacy, the public outcry would not have arisen unless the public perceived the punishment meted by the organization as unfair. It is not a crime to flout a norm; but, the waitress might have committed an offence by flouting the rules of the organization. However the punishment for such an alleged offence is what started the outcry. Hence, Option D is the right answer.
26. B Since waitress was punished in a disproportionate manner to the mistake she committed, hence, the organization should first apologize to the waitress and offer to re-instate her as early as possible. However, waitress is wrong to display customer details on her personal social media page. She should also apologise for this act of discretion. Hence, the organization should offer to reinstate and ask her to apologize

for her action, in the social media. Hence, B is the best answer.

27. E If the money was stolen, then someone who had the need for money should have stolen it. Out of the options available the choices 1&4 and 2&4 will increase the probability that Vimla has stolen it and hence, B and D are wrong. Options 3&5, 1&3, and 1&5 will increase the probability that Shreya's son has stolen it. Out of the three options 3&5 would make the probability of stealing by son the highest, which would imply that the probability that Vimla has stolen it is the lowest. Hence, E is the right answer.
28. D The objective is to prevent (P) further theft while being appropriate (A). Therefore, best option should be P:Yes and A:Yes Statement 1: (P-N, A-Y) Objective of prevention is not met in 1. Statement 2: (P-Y, A-N) Statement 3: (P-Y, A-Y) Message delivered to Vimla is same in statement 3 and 4, but 3 is more appropriate Statement 4: (P-Y, A-Y (somewhat)): Message delivered to Vimla is same in 3 and 4, but 3 is more appropriate, as in 4 Shreya is bringing in a third party (neighbours) when it is she who suspects. Statement 5: (P-Y, A-Y). This is more appropriate than 4 but less appropriate than 3 since compared to 4 where Shreya is placing the blame on her neighbours, in 5 Shreya owns it up, however in 3 Shreya is discussing the incident, while in 5 she is pointing a finger at Vimla purely on suspicion. Therefore, Option D is the correct answer.
29. C Since company is formed with a motto of ethics and equal compensation, it should not be disturbed. Compensation, should not change based on who gets the business because tomorrow someone else might get the business or getting business may be a role assigned to one member, while others play equally important but different role. It is not an unethical situation because the project was won on the basis of capability and not because of favour from Rahman's father. Hence, C becomes the best option as no one is favoured.
30. D In options A, B and C, the house owner lacks control over the quality of construction. However, in option D the owner can monitor discrepancies on an everyday basis and take corrective actions, if required, especially given Mrs. Biswas' professional experience. Option D is equivalent to continuous monitoring which is superior to one time monitoring in other options. Hence, D is the best answer.
31. B Option C makes first and second options (in the caselet) less attractive, but does not make third option (in the caselet) as attractive as option B does. Option D makes first option (in the caselet) and second option (in the caselet) attractive but does not improve the chances of preferring the third option (in the caselet). Option E makes first option (in the caselet) less attractive and second option most attractive. Based on arguments presented in the previous question, it is clear that third option (in the caselet) was not the best. Hence, A is not the right answer. If the builder had good reputation among the local house owners, it means that the builder has been constructing houses to the satisfaction of the local house owners which probably would mean that the builder should be able to assure good quality. Hence, B is the answer.
32. C If builders are forced to pay penalty for bad quality then they are more likely to deliver good quality, though it would be difficult to force the penalty on unregistered builders. The chances of unregistered builder improving quality because of penalty are lower, as the builder can, more easily, escape the clutches of law. Hence, the right set of option should start with 3. It gives us C as the right answer.

33. E In Snakes and Ladder, the player cannot exhibit any skill and therefore cannot determine the outcome, which is random if the dice is fair. The past data in the table is not relevant for selection. Hence, the best selection process should give equal opportunity to everyone and therefore, Option E is the right answer.
34. A In hundred shooting trials, it is highly unlikely that any student would get a high score unless he/she is really good at shooting. The trials give us enough information to choose those who have scored the highest. Therefore, option A is correct.
35. E In the game of cricket, a player has to stop batting when he gets out. Therefore, there is no guarantee that even the best of batsman will play out all 100 balls. On the contrary, even the worst batsman can play hundred balls, though chances are low. Hence, there is a possibility that best batsman can get out after playing 5 balls and worst batsman can play more balls than him. Hence, the coach can never be sure of rejecting a person with low score or select a batsman, based on the above data. Hence, options A, B, C, and D all are wrong. Best answer is Option E.
36. B Option A is not possible because it is unfair to the students as mentioned in the case. Option C is not a solution as it talks only about discussions and not a decision. It can be a good initial point but not a concrete way to solve the problem. Option D is not the best solution as it does not address the concern of parking lot and emergencies. Further D is an inferior option in comparison to Option B even with respect to pollution control. Option E does not solve the problem as it does not address concerns of parking lot. Further, Option E is inferior in comparison to Option B with respect to pollution control. Option B is the best solution as it addresses parking as well as other issues including those related to environment.
37. A Option C is not correct as it offers a path but does not offer a solution. Option D is wrong because it does not provide the administration with any increase in revenue. Option E can reduce carbon footprints and satisfy stakeholders but there is no scope of increase in revenues. Option B is unfair as one stakeholder pays for deeds of others and it does not solve carbon footprints. Option A increases satisfaction for all stakeholders; it will also increase revenue and can reduce carbon footprints by making it costly to drive vehicles inside campus. So, Option A is the correct answer.
38. C The business has already reached 90% utilization (and this is improving further) during peak hours, in addition he has space constraints. Making substantial changes will incur lot of costs but opportunities for benefits are limited because of existing 90% utilization. Further, selling dishes of other regions might affect current focus on authentic Tamil food (and this was the business opportunity according to the passage). – . Moreover, there is no surety that he will do well in other cuisines because lack of experience/expertise. Hence, Giri is better off to focus on authentic and quality Tamil cuisine which is the reason for his success. So, option C is the correct answer.
39. E The objective is to experiment with a few Karnataka dishes. Customer should be aware of it, but this (experimentation) should not be added to the mainstream business as of now, therefore, should not be part of the main menu. The only option that satisfies both the criteria is E and therefore, Option E is the right answer.
40. A In Option A, the trend for sales for Karnataka dishes increasing along with the total sales increasing and hence, is the right answer.

41. C Answer is C (10), as can be seen from the table below:

Time	Oven	Puri nos.	
7			
7.05			
7.1		2	
7.15			
7.2		2	Puri preparation
7.25			Reheating sabji
7.3		2	Heating
7.35			
7.4		2	
7.45			
7.5			
7.55			
8		2	

	Puri	Sabji	Timeline	Customers in line	Event
Preparation	2 / 10 min	30 min	7:00		Start + Sabji comes from home
Remains hot	5 min	30 min	7:10		2 puri
Reheat time	NA	10 min	7:20	5-2-2	2 puri
			7:30		2 puri + Sabji becomes cold
			7:40	5 + 5 - 2 - 2 - 2	Sabji reheated
			7:50		2 puri
			8:00	5 + 5 + 5 - 2 - 2 - 2 - 2 - 2	2 puri
			Total		10 puri

42. B Answer is B (Rs. 280), can be seen.

Time	Oven1	Puri		Oven2	Puri		
7							
7.05							
7.1							
7.15		2			2		
7.2							
7.25							
7.3		2			2		Puri preparation
7.35							Reheating sabji
7.4							Heating
7.45					2		Idle
7.5							
7.55							
8							
8.05		2					
8.1							
8.15							
8.2							
8.25							
8.3							
8.35		2					
8.4							
8.45							
8.5		2			2		
8.55							
9							
		2			2		
Total		12			10	G.Total	22
		Profit	Transpt				
Answer		22*15	-50	280			

	Puri	Sabji	Timeline	Oven 1	Oven 2
Preparation	2/15 min	45 min	7:00	Start + Sabji comes from home	
Remains hot	5 min	30 min	7:15	2 puri	2 puri
Reheat time	NA	15 min	7:30	2 puri + Sabji becomes cold	2 puri
			7:45	sabji reheated	Sabji
			8:00	2 puri	Sabji
			8:15	2 puri	Sabji
			8:30	2 puri	2 puri
			8:45	2 puri	Sabji reheated
			9:00	2 puri	2 puri
			Total	22 puri	
				=(Price - cost) *plates - transportation cost	
				280	

43. D Option D is the best option as it gives highest profit. Even if we subtract wages of Aman (100), option D remains the better.

Cond 1: Shyam puri, Aman, Sabji					Cond 2: Aman puri, Shyam, Sabji					Cond 2: Aman puri, Shyam, Sabji				
Time	Shyam	Puri Nos	Aman	Sabji	Time	Aman	Puri Nos	Shyam	Sabji	Time	Oven1		Oven2	Puri Nos
7					7					7				
7.05					7.05					7.05			Aman	
7.1					7.1					7.1				
7.15					7.15					7.15	Shyam			
7.2		2			7.2					7.2		2		
7.25					7.25					7.25				
7.3		2			7.3		3			7.3				3
7.35					7.35					7.35				
7.4		2			7.4		3			7.4	Shyam			3
7.45					7.45					7.45				
7.5		2			7.5		3			7.5				3
7.55					7.55					7.55				
8		2			8		3			8				3
8.05					8.05					8.05				
8.1		2			8.1		3			8.1			Aman	3
8.15					8.15					8.15	Shyam			
8.2		2			8.2		3			8.2				3
8.25					8.25					8.25				
8.3		2			8.3		3			8.3				3
8.35					8.35					8.35				
8.4		2			8.4		3			8.4	Shyam			3
8.45					8.45					8.45				
8.5		2			8.5		3			8.5				3
8.55					8.55					8.55				
9		2			9		3			9		2		3
	Total	22					30		0			4		30
			Profit				Profit							Profit
			330				450							510

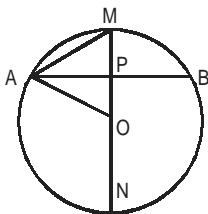
44. D Humility is the quality of not being proud of being perfect as you are aware of your limitations. Therefore, among the options, the option that focuses on awareness of the self with respect to limitations should be in the consideration set for the correct answer. However, the focus on awareness of self is not necessarily linked to "improvement" or "overcoming" the limitations. Moreover, the culture of humility should not be confused with the performance measurement or rewards and compensation. Among the options, Option D focuses on making one aware of one self without any link with rewards or performance and hence, Option D is the right answer.
45. A The principal has received an anonymous mail which could be a result of an underlying concern, which might be genuine or not, among the student(s). So, she should focus on the underlying concern, but this way of communicating anonymously is something that should be strongly discouraged. Since the underlying concern may or may not be genuine, she should openly invite students for discussions but not discuss the mail as such. Hence, Option A is the right answer because principal is addressing: a) the issue of

anonymous email and b) whether the content of the email is a concern.

46. D The series can be written as follows:  $105 + 110 + 115 + 120 = 450$ . Thus, Option D is the correct answer.
47. A Tank get half-filled in 30 minutes, i.e., in 1 minute  $\frac{1}{60}$  fraction get filled. Let's check this through options with 1 minute cases:
- Option A:  $\frac{1}{4} - \left( \frac{1}{10} + \frac{1}{12} + \frac{1}{20} \right) = \frac{1}{4} - \frac{14}{60} = \frac{1}{60}$  (correct answer)
- Option B:  $-1/60$  (drained)
- Option C:  $\left( \frac{1}{10} + \frac{1}{12} \right) - \left( \frac{1}{4} + \frac{1}{20} \right) = \frac{11}{60} - \frac{18}{60}$  (drained)
- Option D:  $7/60$  filled in 1 minute.
48. B Assume marked price of shirts =  $x$ /per shirt Four shirts will cost (with the offer) =  $3x + 100$  Then, 20 shirts will cost (5 such offers) =  $5(3x + 100) = 15x + 500 = 20000$   
Thus,  $x = 19500/15 = 1300$ .  
Therefore, B is the right answer.



49. B



AB is a chord and MN is the perpendicular bisector of the chord AB at point P (as PM and PN both are perpendicular to AB). Then, MN is also diameter of the circle. Hence, OA = OM = ON, are the radii of the circle. We need to find PN, which is equal to OP + ON. Given, AP = 12 and PM = 8, therefore, OP = (r - 8), where r is radius of the circle. OPA is a right angle triangle. Hence,  $12^2 + (r - 8)^2 = r^2$

$$144 + r^2 + 64 - 16r = r^2$$

$$16r = 208, r = 13$$

$$\text{If radius is 13, then } OP = (13 - 8) = 5$$

$$\text{Hence, } PN = 5 + 13 = 18.$$

50. B  $4(x - 2)^2 + 4(y - 3)^2 - 2(x - 3)^2$   
 $= 4(x^2 - 4x + 4) + 4(y^2 - 6y + 9) - 2(x^2 - 6x + 9)$   
 $= 2x^2 - 4x + 4y^2 - 24y + 34$   
 $= 2(x^2 - 2x + 1) + 4(y^2 - 2y \cdot 3 + 9) + (34 - 2 - 36)$   
 $= 2(x - 1)^2 + 4(y - 3)^2 - 4$   
 $= -4$  (assuming minimum value of square terms is zero).  
 Thus, Option B is the right answer

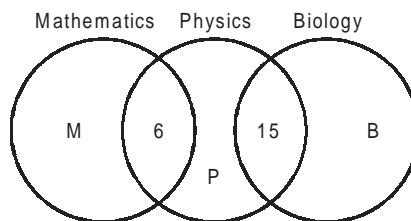
51. C If  $f(x) = ax + b$ , then  $f(f(x)) = a(ax + b) + b = a^2x + ab + b$   
 $9x + 8 = a^2x + ab + b$   
 Thus,  $a^2 = 9$ ,  $a = 3$ .  
 Moreover,  $ab + b = 8$ , or,  $3b + b = 8$ , or,  $b = 2$   
 So,  $a + b = 5$ .

52. D During the 2 km walk, Arup takes 30 minutes and Swarup takes 24 minutes. Hence, Swarup is ahead of Arup by 6 minutes. In boat, both of them row for 30 minutes. Hence, Swarup maintains the margin of 6 minutes. In car, every hour Arup goes ahead by 10 km. Before Arup starts, in 6 minutes, Swarup covers 4 km. Arup covers this distance in  $(60/10) \times 4 = 24$  minutes. During walk and in boat Arup goes =  $30 + 30 = 60$  minutes. They will meet again at 8 AM + 60 minutes + 24 minutes = 9 : 24 AM.

53. E Assuming the age of: Hari's father = F, Hari's mother = M, Hari = H, when Chari was born. Hence, their ages would be: F - H, M - H and 0, when Hari was born. Similarly, the ages of four other members, at the time of Gouri's birth, would be: F + 4, M + 4, H + 4, 4. (since Chari is 4 years older than Gouri). We need to find H.  
 It is given that:  
 $F + M + H = 70 \rightarrow \dots (i)$   
 It is also given that:  
 $F + M + H + 16 = 2(F - H + M - H) \dots (ii)$   
 If we can replace F + M + H from Eq. (1) in Eq. (2) then:  
 $\text{Eq. 2} \rightarrow 70 + 16 = 2(F + M + H - 3H)$  (expressing -2H as H - 3H in RHS)  
 $86 = 2(70 - 3H), 6H = 54$   
 $H = 9$ . Hence, E is the correct answer.

54. A Amit and Benn both got 35 marks. Maximum possible = 40 (if all correct). So they made 1 mistake. (9 correct and one wrong =  $9 \times 4 - 1 = 35$ ). Their answers are all same, except 3rd and 5th number. As they made only 1 mistake, both of them are correct in one of these two. Except 3rd and 5th answers, out of remaining 8, Chitra had 5 mismatches with both of them i.e. 5 mistakes. In 3rd and 5th numbers, her answer was same as Benn. So, one out of 3rd and 5th question is right and the other one is wrong. Hence, she made a total of 6 mistakes and her marks should be =  $4 \times 4 - 6 = 10$ .

55. D



$$\text{Total} = 60, \text{Math} = M + 6, \text{Physics} = P + 21, \text{Bio} = B + 15$$

In English,

$$\text{Total marks by M and B as common English} = 50^* (\text{Math} + \text{Bio})$$

$$\text{Total marks by students in Math} = 45^* (\text{Math})$$

$$\text{Total marks by students in Bio} = 60^* (\text{Bio})$$

$$50^* (\text{Math} + \text{Bio}) = 45^* (\text{Math}) + 60^* (\text{Bio})$$

$$\text{Or, Math} = 2^* \text{Bio}$$

$$\text{Minimum Bio} = 15, \text{Minimum Math} = 2^* 15 = 30,$$

So, the possible maximum students in ONLY Physics should be  $60 - 15 - 30 = 15$ .

56. E Value of  $\sin(30^\circ) = 1/2$ . Hence, we need to find the maximum value of  $(\cos x^\circ - \sin x^\circ)$  to solve the question.

As value of  $\cos x^\circ$  decreases as angle moves from 0 to 90 and value of  $\sin x^\circ$  increases, highest possible value of  $\cos x^\circ - \sin x^\circ$  will be at 50 as it is closer to zero.

The minimum value will be at 150, in the given range of:

$$5^\circ \leq x^\circ \leq 15^\circ. \cos 15^\circ - \sin 15^\circ \text{ can be written as:}$$

$$\cos(45^\circ - 300^\circ) - \sin(45^\circ - 30^\circ)$$

$$\text{Applying the formula for } \cos(A - B) \text{ and } \sin(A - B),$$

$$(\cos 45^\circ \times \cos 30^\circ + \sin 45^\circ \sin 30^\circ) - (\sin 45^\circ \cos 30^\circ - \cos 45^\circ \sin 30^\circ)$$

$$= \left( \frac{1}{\sqrt{2}} \times \frac{\sqrt{3}}{2} + \frac{1}{\sqrt{2}} \times \frac{1}{2} - \frac{1}{\sqrt{2}} \times \frac{\sqrt{3}}{2} + \frac{1}{\sqrt{2}} \times \frac{1}{2} \right)$$

$$= \left( \frac{1}{2\sqrt{2}} + \frac{1}{2\sqrt{2}} \right) = \left( \frac{2}{2\sqrt{2}} \right) \frac{1}{1.42} = \frac{1}{\sqrt{2}} = 0.71.$$

This means that 0.71 is the minimum value of the expression  $(\cos x^\circ - \sin x^\circ)$  in the range of x given.

Hence, at 150, the value of  $(\sin 300 + \cos x^\circ - \sin x^\circ)$  would be  $(0.5 + .71)$ , which is greater than 1. So, Option E is the right answer.

57. C Volume =  $1/3 \times \text{Area of the base } (A^2) \times \text{Height of the pyramid}$   
 $(H = 13 \text{ cm})$  Thus,  $200 = 1/3 \times A^2 \times 13 \Rightarrow A^2 = 600/13$

$$\text{Therefore, side of the square base} = A = \sqrt{(600/13)}$$

$$\text{Say, diagonal of the base} = 2B$$

$$\text{Then, } B^2 + B^2 = A^2 = 600/13 \Rightarrow B^2 = 300/13$$

$$(\text{Slant edge of pyramid})^2 = H^2 + B^2$$

$$\text{Thus, length of the slant edge}$$

$$= \sqrt{(169 + 300/13)} = \sqrt{192.1} = 13.86 \approx 14.$$

58. C Out of a total of 36 cases following cases will satisfy the above condition:

Dice 1 (1): Dice 2 (2,3,4,5, & 6) i.e. 5 cases

Dice 1 (2): Dice 2 (3,4,5, & 6) i.e. 4 cases

Dice 1 (3): Dice 2 (4,5, & 6) i.e. 3 cases

Dice 1 (4): Dice 2 (5, & 6) i.e. 2 cases

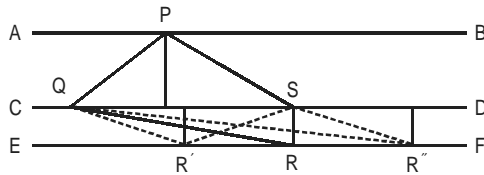
Dice 1 (5): Dice 2 (6) i.e. 1 case

Hence, possible number of cases =  $15/36$  i.e. Option C.

59. C If we choose maximum 4 students from each department, there will be 20 students. So, 21st student will ensure at least one group has 5 representatives.

60. E If N is perfect cube, then  $(p + 7)$ ,  $(q - 2)$ ,  $(r + 1)$  and  $(s)$  should be divided by 3 (11, 7, 5 and 3 being prime numbers). For smallest sum of  $p + q + r + s$ ,  $p = 2$ ,  $q = 2$ ,  $r = 2$  and  $s = 3$  (all are positive integers) Answer = 9 (Option E).

61. E



The area of PQSR is 30 with heights of QPS and QRS in the proportions of 2 : 1. It is further given that heights are integers; it means that QR would be maximum for when value of  $d_1 : d_2$  is lowest integer. The lowest possible integer value of  $d_1$  and  $d_2$  can be 1 and 2. For all other values of  $d_1$  and  $d_2$  (for example, 4 and 2, or 8 and 4), the value of QR will be lower.

This implies, that values of  $d_1 = 2$  units and value of  $d_2 = 1$  unit. For these values of  $d_1$  and  $d_2$ ; area of  $\triangle QPS$  will be 20 and area of  $\triangle QRS$  will be 10 (in proportion to the heights). The two triangles have same base: QS. Area of  $\triangle QPS = 20$

$$\frac{1}{2} \times QS \times d_1 = 20$$

$$QS = 20$$

Further, the least possible value of  $SR = 1$  (all other possible values of  $SR$ 's will be greater than 1, as can be seen in  $\triangle QRS$  and  $\triangle QRS'$ ). Which means  $\triangle QSR$  is a right angle triangle in which:

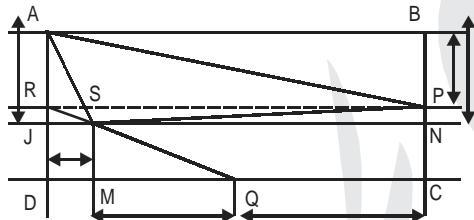
$$QS^2 + SR^2 = QR^2$$

$$20^2 + 1^2 = QR^2$$

$$QR^2 = \sqrt{401}$$

QR = slightly greater than 20 (Answer)

62. A



To get to the answer, we need to find area of APS. Let us assume the length of rectangle to be  $16x$  and breadth to be  $8y$ .

Therefore area of rectangle is  $= 16x \times 8y = 128xy$

$BP = PC = AR = RD = 4y$ , Similarly,  $DQ = QC = 8x$

$SQ = 3(SR) \Rightarrow MQ = 3(DM) = 6x \Rightarrow MD = 2x$

Also,  $JD = 3RJ = 3y \Rightarrow AJ = 5y$ ,  $JD = 3y$ ,  $PN = RJ = y$

Area of APS = Area of AJNB - Area of  $\triangle AJS$  - Area of  $\triangle ABP$  - Area of  $\triangle SPN$ , where AJS,

ABP and SPN are all right angled triangles.

Area of AJNB =  $16x \times 5y = 80xy$

Area of AJS =  $\frac{1}{2} \times 2x \times 5y = 5xy$

Area of APB =  $\frac{1}{2} \times 16x \times 4y = 32xy$

Area of SPN =  $\frac{1}{2} \times y \times 14x = 7xy$

Area of APS =  $80xy - 32xy - 7xy - 5xy = 36xy$

Therefore area of APS/Area of ABCD

$$= \frac{36xy}{128xy} = \frac{36}{128} \text{ (Answer).}$$

63. E 3, 3, 2 is the correct distribution. Other possible combinations will violate the conditions of maximum overs mentioned in the question. So, the question can be answered without using S1 and S2. (Option E)

64. D All the regular bowlers have lower economy rate. Further, these rates have to be in integers. Let the best economy rate be  $a$ . Worst is  $b$ .

According to S1:  $a < 6$  and  $b > 9$  and all the regular bowlers economy rate is less than or equal to 6.

If we use S2, three possible conditions emerge:

Condition 1: If the worst bowler gets three overs

$$4 \times a + 4 \times 6 + 4 \times 6 + 1 = 3 \times 7 + 2 \times 9 + 3 \times b.$$

Solving this gives us an equation:  $4 \times a - 3 \times b = -10$ .

Since both  $a$  and  $b$  have to be integers the only possible values of  $a$  and  $b$  are 5 and 10.

Condition 2: If worst bowler gets two overs but the bowlers with economy rates of nine and seven get three overs each:

$$4 \times a + 48 + 1 = 21 + 27 + 2 \times b, \text{ which gives us}$$

$4 \times a - 2 \times b = -1$ . As,  $a$  and  $b$  are not integers, this possibility cannot be entertained.

Condition 3: If worst bowler gets three overs, but the bowler with economy of nine gets three overs and the bowler with economy rate of seven gets two overs:

$4 \times a + 48 + 1 = 2 \times 7 + 3 \times 9 + 3 \times b$ . Solving this should give us the equation  $4 \times a - 3 \times b = -8 \Rightarrow 3b - 4a = 8$ . We get the integer solution in this case ( $b = 4$  and  $a = 1$ ), but this does not satisfy S1 and, therefore, cannot be entertained.

Hence, using only S2, we get two "integer" solutions, out of which one does not satisfy S1. So, we are left with only one possible solution ( $a = 5$  and  $b = 10$ ), if we use both S1 ( $a < 6$ , and  $b > 9$ ) and S2 (cumulative runs scored...). (Option D).

65. A Option A (Calculations at the end)

66. E Option E (Calculations at the end)

67. D Option D (Calculations at the end)

68. B Option B (Calculations at the end)

			Sales Margin	Raw Material	Profit	Profit
#	Labour Cost*2	Labour Cost*1.5	Q69	Q70	Q71	Q72
Factory 3	1100	825	15.5%	3740	1175	960
Factory 6	800	600	14.6%	4260	1075	940
Factory 4	900	675	14.5%	3732	1025	868
Factory 2	800	600	15.1%	3655	1000	845
Factory 1	900	675	16.1%	3065	1000	835
Factory 5	1200	900	11.1%	3525	900	675
Factory 8	840	630	11.3%	3790	810	670
Factory 7	700	525	10.2%	3615	675	585

69. A We need to look at histogram to interpret the answer. The histogram for performance\_caff and performance\_plac is left skewed (most of data are on right side), which will shift median to right side compared to the mean. The situation is opposite in case of arousal\_caff. Furthermore, arousal\_plac's histogram is not symmetric and hence, there is no guarantee of its mean and median being equal. Hence, options B, C, D and E are incorrect and Option A is right

70. A The weakest relationship should be away from "extreme values", i.e. it should be the closest to zero. The closest relationship to zero, among the five options, is .16, which is between "extraversion" and "performance\_caff". Therefore, A is the right option.

71. C The question can be answered by looking at the scatterplot, which is on the left hand side of the diagonal. Option A is weak as the scatter is dispersed all over. Option B is very close, but some dispersion can be seen away from the "trend line". The scatterplot in the option D is dispersed as well and hence it cannot be right answer. The scatterplot in the option C is the closest to the trend line and hence it should be the answer, though the relationship is weaker as compared to that in the option B (This is because it is curvilinear in shape, while relationship value assumes linearity).

72. B Comparison between the visual pattern in the left side and the numbers in the right hand side indicates Option B is the correct answer.