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BIBLE
Free **UMAT Sample Questions**

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Table of Contents

Section 1 – Logical Reasoning & Problem Solving

Section 2 – Understanding People

Section 3 – Non-Verbal Reasoning

Section 1 – Logical Reasoning & Problem Solving

Problem Solving

UMAT Sample Question 1

A classroom window was broken today. You know that two students were responsible. There were 4 students inside the classroom, Allen, Beatrice, Camille and Donald. You know that two of them are the ones who broke the window, and you also know that all four of them saw who did it. After asking each of them in turn who broke the window, you receive the following replies:

Allen: Camille and myself did it.

Beatrice: Allen and Donald did it.

Camille: Beatrice and myself did it.

Donald: Allen and Beatrice did it.

Given that one of them told the complete truth, two of them told half-truths (i.e. they only named one guilty student correctly) and one of them told a complete lie, and assuming that it is one of the guilty students who told the complete lie, which of the students was the one who told the complete lie?

A) Allen
B) Beatrice
C) Camille
D) Donald

Answer: B

It may be tempting for students to immediately resort to the guess and check approach. However, it is important to realise that questions in the UMAT are carefully designed to test qualities desirable in future doctors. In Section 1, this is most often logical reasoning. Hence, there will always be a logical method to simplify these styles of questions.

One method of logical solution involves recognising that for one student to have told a complete truth, and another to have told a complete lie, the students in question must have named completely different students. I.e. the person who told the complete truth must name the two culprits, whilst the person who told the complete lie must name the remaining two students who are innocent. The only two students who named different students are Beatrice and Camille, and therefore one of them told the complete truth, and the other the complete lie. Now, we make use of the fact that the student who told the complete lie is one of the guilty students. If Beatrice is telling the complete truth, then Allen and Donald were responsible, and so one of them must have told the complete lie – however, we know from earlier, that if Beatrice told the complete truth, then Camille must have told the complete lie. Therefore, Camille is the one telling the complete truth, so Beatrice is the one telling the complete lie (which works, as Camille names herself and Beatrice as the guilty ones).

The other method of solution is similar and involves recognising that the culprit who is telling a complete lie cannot name themselves, as this would be inconsistent. For example, Allan cannot be the culprit who is telling the complete lie; if his statement 'Camille and myself did it' was a complete lie, he wouldn't be the culprit which is inconsistent as only the culprit told the complete lie. Thus, Beatrice or Donald is the culprit who told the complete lie.

Assuming Beatrice told the complete lie, Allen and Donald cannot be the culprits. Thus Camille is the other culprit who is thus telling the complete truth. Simple checking shows Allen and Donald are both telling half truths, and thus this is the correct answer.

Assuming Donald is the culprit who told the complete lie, then Allan and Beatrice are not culprits whilst Camille is the other culprit. However, by looking at Camille's statement it can be seen that in this situation she is also telling a complete lie. Since only one student told a complete lie, this answer is not correct and Donald cannot be the culprit who told the complete lie.

Logical Reasoning

UMAT Sample Questions 2 to 4 refer to the following excerpt:

In the human body, binding of glucagon to the outside of liver cells causes production of cAMP. This in turn activates PKA by splitting the inactive PKA into R and C subunits. The C subunits then convert PBK into PBK-P, which in turn converts Phosphorylase-B into Phosphorylase-A-P. Phosphorylase-A-P then changes stored glycogen into glucose, which is used by the body for energy. Phosphorylase-B has no effect on stored glycogen.

In addition, there is a substance present called PP-1, which can convert Phosphorylase-A-P into Phosphorylase-B.

UMAT Sample Question 2

Which of the following, if also true, would increase the amount of glucose generated?

A) The R subunits send a signal to the cell membrane, which in turn sends a signal into the extracellular space to attract more glycogen to the exterior of the cell.
B) The C subunits convert a certain IPP-1 into IPP-1-P, which will then bond to PP-1 to form a complex in which PP-1 is bound exclusively to IPP-1-P.
C) The C subunits act to increase the efficiency of a VPP-2, which is involved in the formation of PP-1.
D) PBK is also able to increase the activity of Phosphorylase-B, although it will decrease the activity of the R subunit

Answer: B

These kinds of questions must be answered evaluating each individual scenario one by one. Once an answer option that works is found, students can immediately move on without considering the other options. However, if not pressed for time it is recommended that students evaluate all answer options to reduce the risk of errors in reading and reasoning.

There are two approaches to evaluating each scenario. Producing a flowchart of all events on the side of the page would greatly simplify the task and reduce the chance of errors. It is recommended that most students take this approach.

If pressed for time, another method would be to refer back to the passage constantly while evaluating the scenario. This is prone to more errors and can take longer than producing a flow chart at times.

Option A can be ruled out immediately, as glucagon, not glycogen, bonds to the outside of the cell. This option illustrates the importance of careful reading, and the benefits of considering all other answer options even after a solution has been obtained (although it is quicker and beneficial to read very carefully and move on without considering the other options).

Option C is incorrect, as more PP-1 will inhibit Phosphorylase-A-P, leading to less glucose. Option D can also be eliminated, as both Phosphorylase-B and the R subunit have no effect on anything based on the information in the question. Option B is the best response, as the PP-1, normally inhibiting Phosphorylase-A-P, will be sequestered, enabling Phosphorylase-A-P to generate more glucose.

UMAT Sample Question 3

There is another substance present called GSK-3. This converts GS-A to GS-B-P. GS-A is responsible for converting glucose into glycogen. Which of the following, if also true, will increase the amount of glycogen generated?

A)   Insulin is added, and it will bind to the outside of liver cells, causing a certain IRS-1 to become IRS-1-P, triggering a signal cascade which results in the activation of a PKB, allowing it to convert GSK-3 to an inactive form called GSK-3-P.

B)   PBK-P will also activate a molecule PSA, which is able to convert GS-A to GS-B-P.

C)   GSK-3 increases the activity of PBK-P, whilst inhibiting PP-1.

D)   Insulin is added, and it will bind to the outside of liver cells, occupying the binding sites normally used by glucagon.

Answer: A

This question must be answered in a similar fashion to the previous one. A flowchart produced for the first question can also be used in this case. Option B is incorrect as GS-A is responsible for converting glucose to glycogen, and by converting GS-A to GS-B-P less glycogen will be produced. Option C can also be eliminated as PBK-P is part of the process of converting glucose into glycogen, not the other way around. Similarly, PP-1 discourages glucose formation by converting Phosphorylase-A-P into Phosphorylase-B and thus by inhibiting PP-1 it encourages glucose formation rather than glycogen formation.

Option D is tricky, as it will prevent the conversion of glycogen to glucose. However, it will not increase the generation of glycogen, and thus A is the best answer. A is correct, as inactivation of GSK-3 will lead to more GS-A, which will generate more glycogen.

UMAT Sample Question 4

A researcher adds a substance called casein kinase III to the inside of liver cells, and observes that a large amount of glycogen has been converted into glucose. In addition, the rate of formation of Phosphorylase-B decreased. Which of the following explanations would best account for the observed events?

A)   Casein kinase III increases the amount or activity of GS-A.
B)   Taking casein kinase III tablets would be an effective way to increase glucose production by liver cells.
C)   Casein kinase III reduces the activity of PP-1.
D)   Casein kinase III increases the activity of PBK-P.

Answer: C

Option A can be ruled out first, as an increase in amount or activity of GS-A would convert more glucose into glycogen, not glycogen into glucose as observed. B can also be easily eliminated, as is also not a valid conclusion, since the casein kinase III in the experiment was injected directly into the liver cells, and one cannot conclude that taking tablets would have the same effect.

Option D would mean that PBK-P would convert more Phosphorylase-B into Phosphorylase-A-P, which then converts glycogen to glucose. Whilst this would explain why a large amount of glycogen was converted into glucose, it would not explain why the rate of formation of Phosphorylase-B decreased (note that an increase in conversion of Phosphorylase-B into Phosphorylase-A-P does not equate to a decrease in the rate of <u>formation</u> of Phosphorylase-B). Option C, on the other hand, explains <u>both</u> the observed events, and hence is a better answer. By reducing the activity of PP-1, there would be more Phosphorylase-A-P than before, explaining the observed conversion of glycogen into glucose. Since PP-1 also converts Phosphorylase-A-P into Phosphorylase-B, thus a reduction in PP-1's activity would also mean a decrease in the rate of formation of Phosphorylase-B, and thus option C successfully explains all the observations made.

Data Interpretation

UMAT Sample Question 5

Incidence of oral and tobacco-related cancers out of all cancers in the United States and India:
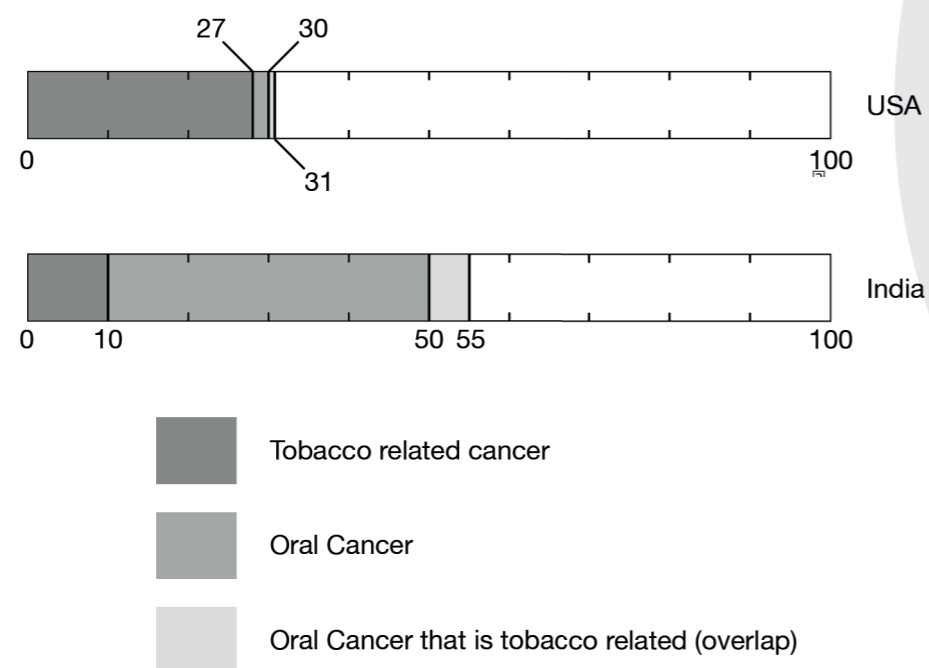
Areas of overlap (green) represent the incidence of oral cancer that is tobacco-related.

What cannot be concluded from the diagram?

A)   In India, tobacco-related cancers are not more than twice as likely to be found outside the mouth than oral cancers which are not tobacco-related

B)   Tobacco does not play as significant a role in the development of cancers in the US as in India

C)   More people are diagnosed with oral cancer not due to tobacco use in India than the total number of oral cancer cases in the US

D)   In all oral cancers, the proportion which is not due to tobacco use is not as large in India compared to the US

Answer: C

The diagrams display statistical information regarding the relative proportions of oral and tobacco-related cancers out of all cancers in the US and India. It is important to read the question stem carefully and note that it is asking what 'cannot' be concluded.

First, it is imperative that the table is deconstructed. It is stated that 'Areas of overlap represent the incidence of oral cancer that is tobacco-related'. For example, in the USA it can be seen that 4% of all cancers are in the oral cavity, 30% of all cancers are tobacco-related and 75% of oral cancer is tobacco-related.

Similarly, in India, 50% are tobacco-related, 45% are oral cancer, 8 out of 9 cases of oral cancer are tobacco-related.

Option A is incorrect, as the statement is true. From the graph Tobacco-related cancers outside the mouth constitute 10% of all cancers, whereas oral cancer not related to tobacco use make up 5%. Therefore the former is exactly twice as likely as the latter, so 'not more than twice' is correct. Be careful for the double negative.

Option B is incorrect, as the statement is true. It accurately describes the larger proportion of tobacco-related cancer out of all cancers in India than the US. In India, 50% of cancers are tobacco related whereas in the US it is 30%.

Option D is incorrect, and requires manipulation of the statistics to conclude that the statement is true. 1 in 9 oral cancer cases in India and 25% of oral cancer cases in the US are not tobacco-related. If this is not worked out, it may appear that 5% of all cancer in India is greater than 1% of all cancer in the US, but the question asks for the proportion of non-tobacco related oral cancer out of the oral cancer cases.

Option C is correct as it cannot be concluded, although the percentages (5% vs 4%) would appear to support the statement. The diagram displays the percentages involved but does not mention the number of people and cases. If the US has 10 times the number of overall cases then the statement would be false.

Scientific Experiments

UMAT Sample Question 6

A researcher is studying a protein, called Protein X. She hypothesises that Protein X, if injected into a bacterium, will cause another protein called beta-galactosidase to be created by the bacterium (beta-galactosidase can only be created by bacteria). If Protein X does indeed cause beta-galactosidase to be created by the bacterium, then the only way this could happen would be for Protein X to firstly interact with a third protein, called 'lac repressor'. Lac repressor is naturally present in the bacterium, and is bound to DNA. Protein X would interact with lac repressor in such a way that it would cause lac repressor to detach from DNA, and this in turn causes beta-galactosidase to be created by the bacterium.

In order to test her hypothesis, the researcher injects Protein X into a bacterium on a sterile plate, and then adds a substance called X-gal, which is normally white, to the dish. If beta-galactosidase is made by the bacterium, then it will act on X-gal to turn it blue. If beta-galactosidase is not made by the bacterium, then it will remain white. There is no other way to change the colour of X-gal, except by the action of beta-galactosidase. She also sets up a second sterile dish with a bacterium, but she doesn't inject this bacterium with Protein X. However, she still adds X-gal (this is the control). The researcher performs this experiment, and observes that the X-gal has turned blue on both dishes.

Which of the following is the best conclusion that can be made from the results?

A) The bacterium can create another protein, different from Protein X, which acts on lac repressor to detach it from DNA
B) Protein X can act on X-gal directly to make it turn blue
C) Substances found in the air can induce the bacterium to create beta-galactosidase
D) The bacterium can make beta-galactosidase without the addition of Protein X

Answer: D

In the UMAT it is imperative that questions are only answered based on the information given in the passage, and that unwarranted extrapolations are not made. We are told in the passage that the only way X-gal will change colour is due to the action of beta-galactosidase. Thus, we can eliminate option B.

Options A and C sound viable, and may be true, but we cannot conclude these without making extrapolations and extending outside the scope of the passage. We are looking for the best conclusion, which occurs in option D - since the X-gal in the control plate turned blue without the addition of Protein X, and since X-gal can only turn blue because of beta-galactosidase, it follows that even without X-gal injected into the bacterium, beta-galactosidase was present. Since only bacteria can make beta-galactosidase, it follows that the bacterium in the control plate made beta-galactosidase without Protein X, and hence Option D is correct.

Section 2 – Understanding People

Health Professional and Patient

UMAT Sample Questions 7 to 9 refer to the following excerpt –

A mother grapples with consenting to her daughter's risky brain operation.

1. Doctor: Look, I understand this is difficult for you but your daughter is in a critical condition and we can't afford to-

2. Mother: What exactly are you trying to say?

3. Doctor: I'm saying that you need to make a decision very soon. This can't wait until tomorrow –

4. Mother: I know, I know, but this isn't the kind of decision you make in a split second on an empty stomach! What if I regret this for the rest of my life?

5. Doctor: Like I said, I'm aware this is the last thing you want to do. I've told you that her situation is critical, and the tumour can only increase in size from here. Without surgery her chances of regaining consciousness are minimal but with it those chances are slightly increased.

6. Mother: What would you do?

7. Doctor: I'm sorry, I can't give you anything more than my professional medical opinion. I've laid out all the facts for you.

8. Mother: If you operate-

9. Doctor: If we operate, there still won't be a guarantee that it will fix anything. But there is a chance that it will, and I'm asking you now if you'll take that chance.

10. Mother: [exasperated] She's just a child!

UMAT Sample Question 7

When the mother asks the doctor "What would you do?", her main intention is to

A)   Avoid making the decision
B)   Seek advice
C)   Confront the doctor's ignorance
D)   Highlight the difficulty of her choice

Answer: B

Option A is plausible but students may find themselves thinking what they themselves would do, as opposed to considering only the context given. There are also clues which point away from option A, such as the doctor saying that the mother needs to make a decision soon and her acknowledgement "I know, I know". Therefore this implies that she is aware of the pressing urgency of making a decision.

Option C is too far-fetched. It is unreasonable to suggest that the mother is somehow testing the doctor on his medical knowledge or prove to him that she is more attuned to the situation than he is.

Option D can probably be considered, but in this context it is helpful to look at the response to her question. If the mother was trying to prove a point about how difficult her choice was, the doctor would have responded in an entirely different manner to apologising for giving nothing more than "his professional medical opinion". This apology is more suited to a request for help, thus option B is the best answer.

UMAT Sample Question 8

Overall, the doctor's manner throughout the consultation was

A)   Sympathetic as he tried to provide all relevant medical information
B)   Unsympathetic as he refused to answer her questions directly
C)   Sympathetic as he expressed personal concern for the daughter
D)   Unsympathetic as he accused the mother of delaying her decision

Answer: A

In these questions where the answers are 'branched', most of the time it is efficient to first identify whether the doctor is sympathetic or unsympathetic first, rather than considering every answer.

Here, if we consider the doctor to be unsympathetic overall, options A and C would be eliminated.

Option B can be discarded, as looking at the entire passage there is no instance where the doctor avoids the mother's questions.

Option D is similarly unsuitable - students need to pick up on the nuances of the doctor's response to comment 2. He is not accusing the mother but reminding her of her responsibilities - there is a difference, as he is basically repeating his own comment (comment 1) in a more direct manner.

Therefore the doctor must be sympathetic, leading to options A and C.

Option C takes the doctor's concern too far; he is worried that the mother will not make a proper decision in time but nowhere is it suggested that he has invested personal concern in her daughter. In fact, he backs away from this in disclosing only his 'professional medical opinion'.

This leaves option A as the right answer. The doctor attempts to equip the mother with the necessary medical forewarning but cannot solve the problem for her. He does, however, address both sides of the potential outcomes.

UMAT Sample Question 9

The mother's outburst at the end of the passage indicates

A)   Her indignation at the treatment of the daughter
B)   Her fear of what the outcomes of surgery might be
C)   Her despair that such a dilemma has to strike her daughter so young
D)   Her anger at being pressured to make a decision

Answer: C

Option A cannot be inferred from the mother's behaviour in the passage. There is no mention of the way her daughter is treated, and although she may be ill, it cannot be assumed that she is being mistreated, neglected, etc. Similarly, there is no tone of accusation in the mother's voice in any of her comments.

Option B is more a general feeling throughout the passage rather than the particular sentiment expressed in the mother's last comment. The mother expressed her fear from comment 4 onwards yet the issue of her daughter being a child is somewhat different to her anguish over the outcomes of the procedure.

Likewise, option D cannot be inferred from the last comment alone and is not limited to the context of the mother's concern for her daughter being a child. The mother's anger may be apparent throughout the passage but again, this does not come through in her 'exasperated' outburst. Anger also suggests resentment at making a decision, but her tone by the end has become more despairing.

Option C is thus the most correct, as the mother is primarily lamenting the fact that her daughter is so young and yet still must endure this dangerous operation. The emphasis on the word 'just' and her 'exasperated' tone should make it clear that despair is her dominant emotion.

Non-medical Interaction

UMAT Sample Questions 10 to 12 refer to the following excerpt –

The following conversation takes place between a couple who are trying to have a child after multiple unsuccessful attempts.

1. Ted: Honey, have you ever thought about, you know, any other options?

2. Beth: Other options? We've tried them all, the gamete transfer, the IVF, the borrowed eggs for heaven's sake! What do you want me to do?

3. Ted: What I mean was, have you ever thought about how, you know, since we want a child and there are lots of kids out there without a family...

4. Beth: What exactly are you suggesting?

5. Ted: Nothing, I just thought that since we've been trying for so long and everything's been unsuccessful-

6. Beth: Are you talking about giving up? How dare you, Ted, I can't believe I'm hearing this! It's my body, my choice!

7. Ted: Just hear me out, ok? I know how hard it's been for us, for you especially. I know it's been taking a massive toll on your health...I just think that maybe we should give it some time, reconsider things, you know?

    [pause]

8. Beth: [small voice, on the verge of tears] You don't understand how hard it is...

9. Ted: I know, I know. But we'll work it out, I mean, why don't we just give this adopting thing a go? It might turn out good, you never know.

10. Beth: My god, you still don't get it! I never ever want to hear the word "adopt" again! [rushes out of the room]

UMAT Sample Question 10

When Beth says "It's my body, my choice!", her purpose is mainly to

A)   Assert her femininity and independence
B)   Accuse Ted of his lack of tenacity
C)   Retain her say and right to decide in the matter
D)   Highlight her struggle for independence from Ted

Answer: C

In option A, Beth does want to make clear her ownership of her body which is not entirely wrong. However this is a literal interpretation and in consideration of the word "mainly", her comment appears to signify more than this. Nowhere is her femininity suggested or discussed in the passage. Thus option A is incorrect.

Option B is superficially correct if students impose their personal views upon the passage. Whilst earlier in Beth's comment "Are you talking about giving up?" she is questioning his motives, option B is too extreme to say that Beth is attacking Ted, rather she is unhappy with his opinion, not his character.

Option D is similarly far-fetched, nowhere is it suggested that Ted is asserting his control over Beth, rather it is Beth who appears more dominant and forthright.

Thus option C is correct, as Beth's response to Ted's suggestion of adoption signifies her indignation at his resigned attitude - "How dare you..." Beth appears to resent Ted's views and makes as if he cannot understand this situation which is deeply personal for her.

UMAT Sample Question 11

The tone of comment 7 is mostly one of:

A)   Reconciliation
B)   Wheedling
C)   Defensiveness
D)   Diplomacy

Answer: D

Option A is overly optimistic in that whilst Ted makes steps towards pacifying Beth, they do not reach an agreement, nor is this perceived by Ted as he is merely raising a suggestion. Thus option A is incorrect.

Option B is too extreme as it suggests that Ted is the one appealing to Beth whilst the passage and his language show that he is still holds power in the active discussion.

Option C is too hostile. When considering Ted's comments, they are not in response to any direct accusations by Beth, therefore it is incorrect to say that he is aiming to defend himself.

It is clear that option D is the best answer as Ted skilfully navigates the conversation into the direction he desires. His repeated "I know" shows his empathy for Beth's feelings whilst being able to simultaneously insert his point of view into the discussion.

UMAT Sample Question 12

The conflict between Beth and Ted in this passage revolves mainly around:

A)   Ted's inability to understand Beth's feelings
B)   The difference in the couple's desires for having children
C)   Beth's refusal to acknowledge the futility of her previous actions
D)   Beth's infertility

Answer: B

This question is relatively difficult. Students need to recognise "in this passage" and not extrapolate beyond the scope of the passage.

It is incorrect to say option A as Ted does not show an inability to understand Beth's feelings, rather insists upon his opinion in spite of her reaction. This is evident in his "I know it's been hard…" where he clearly empathises with Beth.

Option C contradicts Beth's attitude displayed at the beginning of the first passage in comment 2 – "We've tried them all…" In listing all their previous attempts Beth demonstrates that she is completely aware of the futility of these pathways, thus leading to their current state.

It may be tempting for students to choose option D as it appears to be at the heart of the problem. One could argue that if Beth wasn't infertile, the conflict in the passage would not exist. However the question is not asking for the source of the conflict, but what the conflict revolves around which is slightly different. Students would also be inferring too much from the passage, as there is no sign of resentment from Ted towards Beth's infertility, only mutual exasperation.

Thus option B is the best answer. By concentrating only on and within the scope of the passage, the main argument between the couple seem to be over Ted's wish to adopt and Beth's insistence on continuing with other treatment. This is supported by Beth's closing comment – "I never ever want to hear the word 'adopt' again!"

Reflective Passages

UMAT Sample Questions 13 to 16 refer to the following excerpt –

The following passage relates to Daniel, who has lost his ability to speak and some mobility after a stroke.

"Everyday I wake up and hear my wife, Lizzy, bustling about in the kitchen. I just don't want to get up. I know the minute I try to sit up and get out of bed, I'll just be faced with my inability to move my right arm and the heaviness of my right leg. It has taken me long enough to get to this stage where I can walk, but it's still with a limp. Some days, I can't stand to look at Lizzy's bright smile and chirpy 'Good morning!' She isn't able to understand what I'm going through. So she can't tell how much it affects me emotionally. I can't call out my kids' names to wake them up. I can see how they try to avoid eye contact with me. I don't blame them. This shouldn't have happened to me. I was young and healthy. How am I meant to be a good husband and father to them..."

"I know what I want to say, the words have already formed in my head. But the minute I open my mouth, those damn words just won't come out. And this arm, this stupid, bloody arm. What use is it? I should just cut it off and be done with it. Lizzy keeps nagging me to try to move it. Doesn't she get that it is paralysed? It can't be moved. For god sakes, sometimes I just want to yell at her. She has no idea what it's like to be me. Does she think that I don't want to be normal again? All I do is wish that my body would just work properly! Now look at me. I'm practically a vegetable. What's the point living..."

UMAT Sample Question 13

Daniel's mood throughout the passage goes from:

A)   Upset to annoyed
B)   Upset to angry
C)   Self-pitying to annoyed
D)   Self-pitying to angry

Answer: D

Option A is incorrect because annoyed is not strong enough to describe Daniel's emotions in the second paragraph. The language he uses clearly shows that he is completely frustrated with himself and increasingly angry at himself, his disability, and his wife. Annoyed is not nearly forceful enough to describe these emotions. Phrases like "stupid, bloody arm" and "those damn words" dominate this second paragraph. Also, in the first paragraph, Daniel is not simply upset in general. While he is upset, this is not the MOST CORRECT answer in this case.

Option B is partly correct. While the emotional language in the second paragraph clearly depicts Daniel as a very angry man (see above explanation), the first part of this answer is incorrect. Upset is too broad a term to describe what Daniel was feeling in the first paragraph. Phrases such as "can't understand what I'm going through" and "this shouldn't have happened to me" clearly depict that Daniel is not merely upset at what he is going through or what has happened to him. There is a distinct undertone of self-pitying.

Option C is partly correct because Daniel is self-pitying but he was not just annoyed (see above two explanations)

Option D is the best answer, incorporating the self pity evident in the first paragraph and the anger evident in the second.

UMAT Sample Question 14

What does Daniel mean by "Some days, I can't stand to look at Lizzy's bright smile and chirpy 'Good morning!'"?

A)   Daniel has grown to find Lizzy's mannerism's annoying
B)   Daniel has grown to resent Lizzy's positivity
C)   Daniel has grown to hate Lizzy's positivity
D)   Daniel has grown to find Lizzy's mannerism's aggravating

Answer: B

Option A is incorrect because Daniel has just addressed one aspect of Lizzy's mannerisms and he does not reveal how he has come to find Lizzy annoying. This sentence, in relation to the rest of the passage, does not depict Lizzy as having mannerisms that annoy Daniel. Had Daniel found her mannerisms annoying he would have mentioned them in a more exasperated or displeased way, but instead, he is relating his despair at his current situation by saying "Some days, I can't stand...". "Some days" indicates that his feeling towards Lizzy's words and actions are dependent on the way Daniel is feeling because of his disability, not because of the way Daniel feels towards Lizzy.

Option C is incorrect because hate too strong a word. Hate is a very emotionally wrought, negative word, which Daniel is not feeling towards his wife. While Daniel is focusing on Lizzy's positivity, he is not saying how much he hates it. He has just revealed how he is unable to face it when he is feeling sorry for himself.

Option D is incorrect because in the context of this first paragraph (where this sentence occurs) Daniel is in a self-pitying mode. He is not yet angry, but is feeling sorry for himself. He has emphasised how he feels other people are unable to understand what he is going through, including his wife who he feels "isn't able to understand what I'm going through". Therefore, aggravation is not what he feels in this first paragraph (similar to A).

Option B is the best answer because Daniel feels that Lizzy does not understand what he is going through and is unable to empathise with him. Hence, Daniel's comment is filled with resentment at Lizzy's cheerful attitude, which he feels that he cannot adopt himself.

UMAT Sample Question 15

˝What's the point living...˝ indicates Daniel is:

A)   Deeply despaired because of his disability
B)   Contemplating suicide
C)   Thinking of leaving his family
D)   Angry at his family because he feels they do not understand him

Answer: A

Option B extends beyond the scope of the passage, using unwarranted extrapolation and hence cannot be concluded. It is best not to think from a completely negative point of view in section 2 questions. Suicide is too extreme and should not be assumed in this case as he has not previously indicated that he has thought of taking his own life.

Option C is incorrect because while in the passage Daniel previously wondered, ˝How am I meant to be a good husband and father to them...˝, he has not given any indicated he was willing or thinking of leaving his family. This statement was merely made because of his despair at his inability to be the man he used to be prior to the stroke.

Option D is incorrect because Daniel has made it clear he is mainly angry at himself. While he has given indication that he was annoyed at Lizzy for not being able to understand what he has been doing through, it all stems from Daniel's annoyance at himself and his body for not being able to do what he wants it to do (to have normal function).

Option A is clearly the best option when the passage is taken as a whole. Daniel's sadness all stems from his disability caused by his stroke. All his complaints are surrounding his despair as his inability to perform tasks that he was able to before his stroke. He is upset and angry at himself because he cannot be who he wants to be. Hence, the final sentence indicates that Daniel is deeply despaired because of how his disability has affected his life.

UMAT Sample Question 16

Who does Daniel feel the most pity for?

A)   Himself
B)   His wife, Lizzy
C)   His two children
D)   Both A and C

Answer: A

Option B is incorrect because while he does talk about his wife a lot, he is talking about her in a way that reveals his inadequacies and how Lizzy does not understand what he is going through. He repeats how Lizzy cannot understand what he is going through. It is clear that he is not feeling pity for her.

Option C is incorrect because he has not focused on his pity of his children. He has mentioned them in relation to his inability to be what HE feels he should be like. "I can't call out my kids' names to wake them up. I can see how they try to avoid eye contact with me. I don't blame them." These few sentences focus on his inabilities rather than what his children are experiencing, thus, C is not correct judging from this passage.

D is incorrect because C is incorrect.

Thus, A is the correct answer. It is clear throughout the passage that Daniel is going through a lot of self pity. "She has no idea what it's like to be me" and "What's the point living..." are filled with self pity. Daniel has focused on himself throughout the passage, thus he feels the most pity for himself.

Other Passages

UMAT Sample Questions 17 to 18 refer to the following excerpt –

The following is about a recent high school graduate taking a tour of her grandmother's (Nana) native country.

Gina had never been inside a church before. As the local tour guide led the group deeper into the darkness amongst the pews, she stood underneath the high vaulted roof and gazed upwards, straining to make out the inscriptions on the beams above her. They were carved in shapes strange and unnatural to her, the letters angled and sharp. The little light there was struggled to filter through the centuries of dust and grime settled on the panelled windows. So this was where it all began, the christening of Nana under this very roof. For Gina it was overwhelming, yet still so unfathomable to her.

As she took another step forward, the musty smell of stagnated air gagged her like a cloth over the mouth. The tour group had moved on into another part of the chapel and their fading footsteps left her cold to the bones. As much as she wanted to stay and explore, her clammy skin and the tiredness that seemed to seep right through her pulled her backwards out of the church and into the mottled sunshine outside. Gina leant against the rough stone and closed her eyes, trembling. Nana would never have been so weak at her age.

UMAT Sample Question 17

The atmosphere within the church is best not described as

A)   uninviting
B)   foreign
C)   hostile
D)   unsettling

Answer: C

The negative in the question may throw students off - again, it is most important above all to take time to read the question properly. A lot of time can be wasted by not doing this.

Option A, uninviting, is somewhat suggested in the passage as evident in the phrases "musty smell of stagnated air" which "gagged her like a cloth over the mouth". Whilst these phrases are not sufficient to eliminate this answer option entirely, we are looking for the best answer as is usually the case in section II.

Option B can certainly be inferred from the way the roof inscriptions seem "strange and unnatural" as well as through Gina's adverse physical state within the church.

Option D is evident throughout the passage. Phrases such as 'So this was where it all began…' and '….she wanted to stay and explore…' highlight the foreign nature of the church.

Option C is the best answer as the church itself is not overtly repulsive to Gina, and the word 'hostile' connotes a more active and aggressive emotion when rather it is a more subtle feeling. 'Uninviting' is a better answer option.

UMAT Sample Question 18

Gina's closing comment "Nana would never have been so weak at her age" suggests that

A)   her grandmother rarely felt ill
B)   Gina can never live up to her grandmother's expectations
C)   Health was very important for her grandmother
D)   Gina often compares herself to her grandmother

Answer: D

The aim of this question is for students to try and take the question at face value without drawing unnecessary inferences or relying on personal experience, i.e. stay in the scope and consider the context.

Option A is an answer which might be inferred from the comment, but it is still an extrapolation. Even if her Nana would not have been ill at her age doesn't mean that she was rarely ill.

The same process of logic can be applied to option B because whilst it is perfectly adequate that Gina may feel that she is not living up to her grandmother's expectations this one time, the same cannot be said in using the word 'never'. Students should thus be careful of such exclusive or absolute terminology.

Option C is completely irrelevant as the issue of health and her grandmother's priorities are never mentioned.

Thus the correct answer is option D since it is the least extrapolated answer out of the four. That Gina compares herself to her Nana often is the most secure and reasonable conclusion we can gain from the comment.

Section 3 – Non-Verbal Reasoning

Sequencing

UMAT Sample Question 19
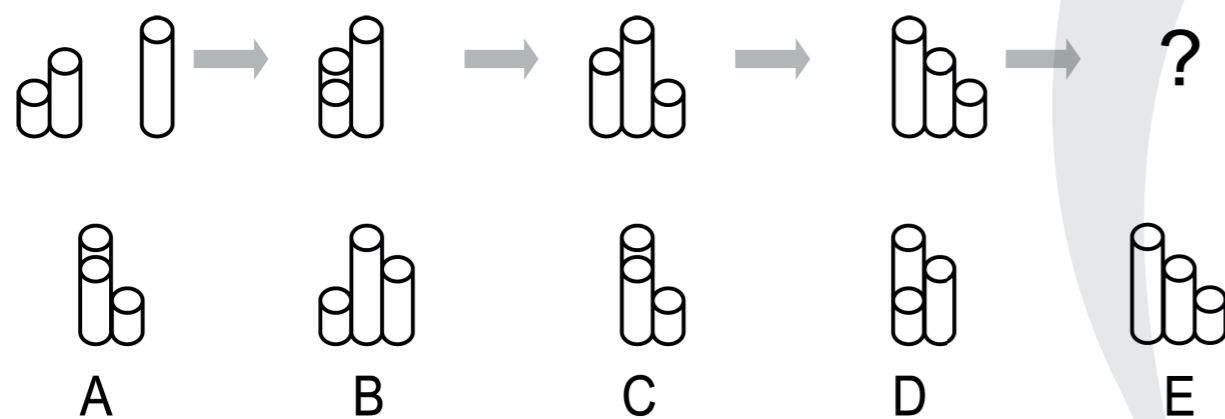
Answer: E

It is important to remember that the motion of these blocks are all relative to one another. Hence, the easiest way to solve this question is to pick one block and keep it as stationary, and examine how the other blocks are moving relative to that block.

The tall block seems to be moving the least so we should take this one as stationary. It is important to note that since it is relative motion, any one of the three blocks can be held stationary and the question can still be solved – the only difference is that it is easiest to choose the block moving the least.

Keeping the tall block stationary, we should now consider one block and work out where it should be in the final answer. Choosing the middle sized block, we can see that it moves to the left one position (relative to the 'stationary' tall block) and then to the right two positions, then again left one position. Continuing with the pattern, it should then move two positions to the right. This eliminates options A, B and C, leaving options E and D.

Now we consider the remaining short block. Relative to the tall block, it is moving one position to the right, then one position to the left, then one position to the right and hence it should move one position to the left in the final answer. This eliminates option D and gives us the solution, option E.

Pick the Middle

UMAT Sample Question 20

Arrange the following into a logical sequence and pick the middle.

A   B   C   D   E
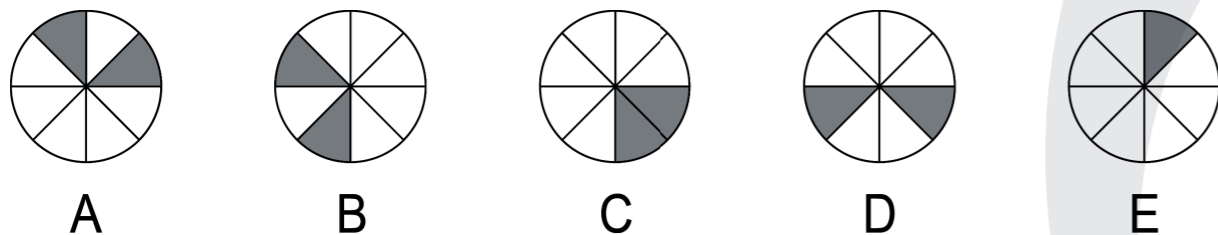
Answer: D

Immediately it should be evident that this question is a perfect candidate for the number path technique. Implementing this, we can see that the linear sequence occurs in the order E,A,D,C,B.

E consists of two blocks overlapping. Moving from E to A, one block moves clockwise one space and continues to do so for the rest of the sequence.

The other block, however, moves anticlockwise one space from E to A, then anticlockwise two spaces from A to D, then anticlockwise three spaces from D to C and then anticlockwise four spaces from C to B.

Hence the answer is D.

UMAT Sample Question 21

Arrange the following into a logical sequence and pick the middle

A   B   C   D   E
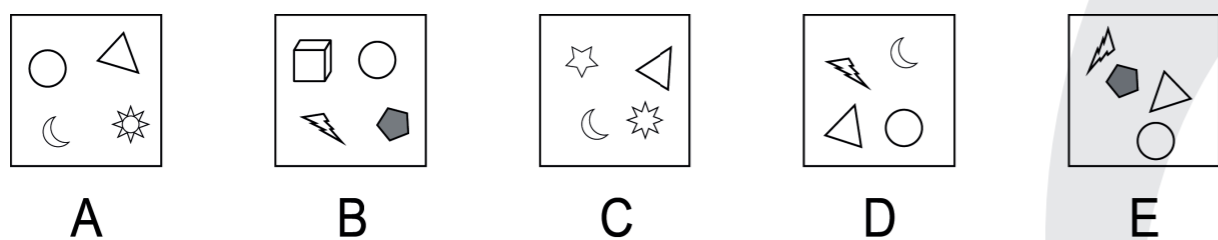
Answer: D

The first thing to determine in this question is where the pattern actually is. Is it between the position of the shapes? The number of the shapes? The type of shapes? After examination, the positions of the shapes seem largely arbitrary while the number of the shapes do not change. The types of shapes in each box do change, so the pattern is likely to be with this.

This is a difficult question. There are two key things that may be noticed here. Firstly, every box has at another box which differs from it by only one shape. For example, B and E differ only in that the cube is replaced by the triangle, while A and D differ in that the sun is replaced with a lightning bolt. The second thing to notice is that some boxes have two other boxes that differ from it by only one shape. For example, while A and D differ by one shape, A and C also differ in that the circle is replaced by a star. Two of the boxes, C and B only have one other box that differs from it by one shape.

Also, it may be noticed that shapes occur a different number of times in the pattern. The circle and the triangle appear four times, the moon and the lightning bolt appear three times, the sun and the pentagon appear twice while the cube and the star appear once.

Using either of the two pieces of evidence, one can ascertain that the sequence involves a different shape being replaced in each subsequent picture.

Using the first set of evidence, the two end boxes will correspond to the two boxes that have only one other box that it differs from by one shape, i.e. boxes C and B. Since the sequence can be read in either direction, we can choose either of the two as the starting box.

Arbitrarily choosing box C as the starting box, the next box must be box A, where the star has been replaced by the circle. The next box must be D, where the sun in box A is replaced by a lightning bolt. The box that differs from D by one shape is E, where the moon is replaced by the black pentagon, and hence E must be next in the sequence. Similarly, the next box is B where the triangle is replaced by the cube.

We could also use the second set of evidence to solve the problem. The start and end of the sequence must be the boxes which have a shape that appears only once, implying that it is the first shape to get replaced and the last shape to arrive. The two boxes that fulfil this criterion are boxes C and B, which have star and the cube respectively – both shapes that appear only once. We can now arbitrarily choose box C or B as the start box and work it out as above.

Analogies

UMAT Sample Question 22

Answer: D

It is important to remember that these types of questions are best solved by isolating individual components. Once a component is chosen, we determine how it has changed from the first picture to the second and then apply this rule to the third picture to see where it should be in the answer.

The components of the question include the two lines (initially running horizontally and vertically) as well as the four shapes lining the tips of the lines. Let's first consider what is happening to the lines. The horizontal line does not change, whilst the vertical one moves 45 degrees clockwise. Applying this rule to the third picture, we are faced with a dilemma as to which lines correspond to the horizontal and vertical lines in the first two pictures.

Looking at the answer choices, we can see that the line extending diagonally from top right to bottom left is unchanged in all choices, meaning that it is corresponding to the unchanging horizontal line. Thus, applying the 45 degrees clockwise rotation to the other line gives us a vertical line, eliminating options A and C and leaving options B, D and E.

Considering the shapes on the tips of the horizontal line, we can see that they swap places and invert colours. Also, the square rotates by 45 degrees. Applying this to the line running from the top right to the bottom left in picture 3, which we now know corresponds to the horizontal line in pictures 1 and 2, there should be a white circle on the top right and a black square which has been rotated on the bottom left. This further eliminates option C and leaves option B and D.

The shapes on the vertical line are a little trickier. Both shapes swap sides, however the top shape rotates by 180 degrees while the bottom shape does not rotate. Applying these rules to the other line in picture three gives us option D as the answer.

Missing Part

UMAT Sample Question 23
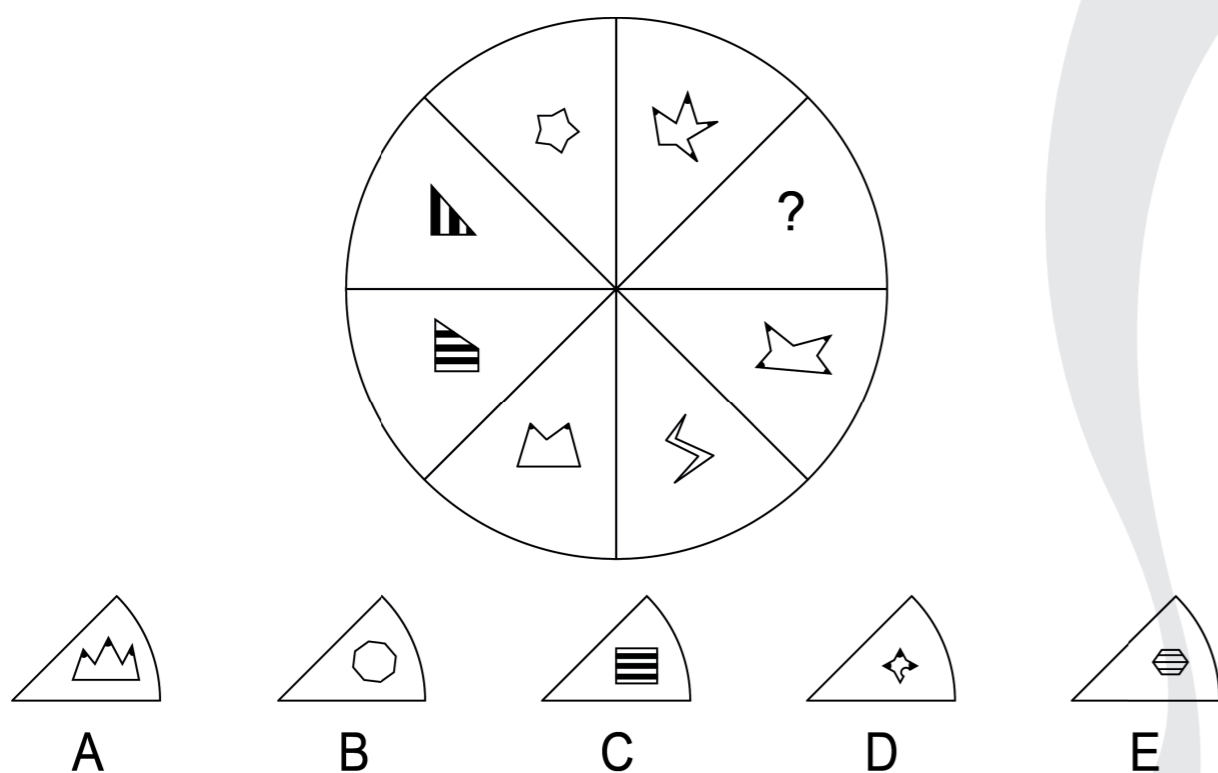
Answer: B

As you should remember, section III questions are filled with two parts: the components, and the distracter information. An important skill that needs to be developed when preparing for section III is the ability to quickly identify and disregard distracters. There is a systematic process with which to do this.

In order to approach this question, the first thing to do is to identify exactly where the pattern lies – within the patterns of lines and shading within the shapes? Within the shapes? A combination of both?

Considering the patterns within the shapes – the two left images consist of vertical and horizontal stripes. There is no immediate relationship/pattern evident regarding this, so we move on to the images where the tips are shaded. While one image has three corners shaded, the other has four, and the other has five, there is no apparent pattern as to which shapes will have shaded tips. We cannot deduce that the image we are looking for will have shaded tips, much like the fact that we cannot deduce it has stripes.

A similar situation occurs when considering the unshaded shapes – no apparent pattern.

Hence, this information is most likely distracter information. Considering the shapes themselves, we can see that most of them are irregular polygons, and hence probably have no relationships regarding symmetry or number of diagonals etc. The simplest thing to consider is the number of sides a shape has.

Counting the number of sides, we can see that this initially complex pattern has been reduced into a simple sequence. Starting with the upper left three sided shape and moving anticlockwise, we can see that the number of sides in each shape increases by one each time. Hence, we are looking for a shape with 8 sides, which is present in option B.

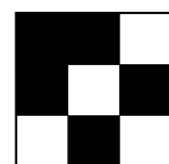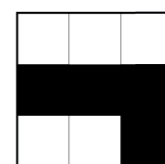## Matrix

UMAT Sample Question 24
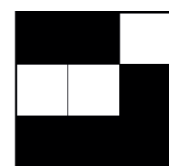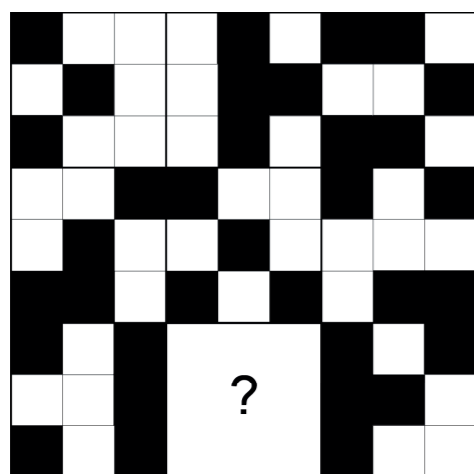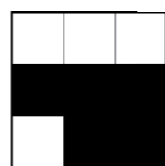
A   B   C

D   E

Answer: E

This matrix question is evidently made up of nine boxes, each box containing a further 9 boxes which may be coloured black or white.

One recurring pattern you must always remember to look out for in matrix questions is the overlap – elimination situation. This is where two boxes are overlapped to give the third box, with the parts that are overlapping disappearing. Looking across rows in this pattern, we can see that this is the case with the left and middle boxes overlapping to give the right box.

As the question is asking for the middle box, the situation is slightly more complicated. We can infer that coloured regions in the left box which are present in the right box <u>are not</u> present in the middle box (if they were, they would have overlapped and been eliminated). Conversely, any coloured regions in the left box which are not present in the right box <u>are</u> present in the middle box. Similarly, any coloured region present in the right box but not present in the left box must be present in the middle box.

By examination, the solution is thus E.

Pyramid

UMAT Sample Question 25
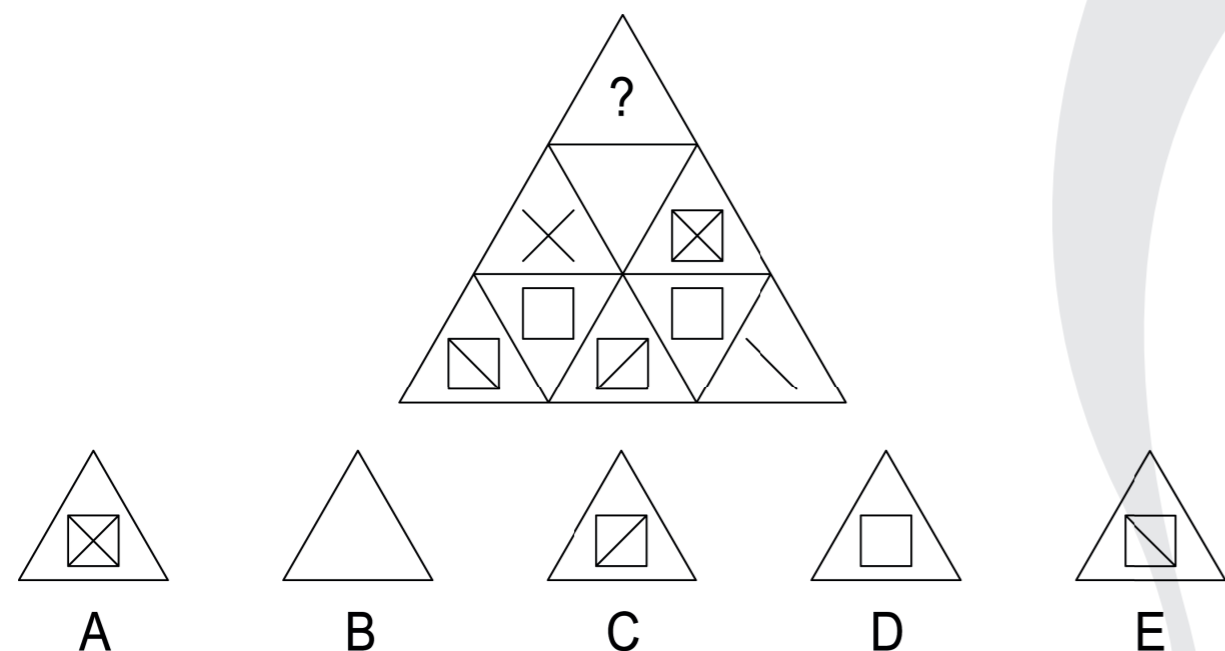
Answer: D

It is important in pyramid questions to first look for the recurring patterns that appear in the UMAT time and time again. A typical pattern concerning pyramids is overlap elimination between adjacent triangles and the one above it.

We shall number the triangles in the pyramid from one to nine to simplify explanation.
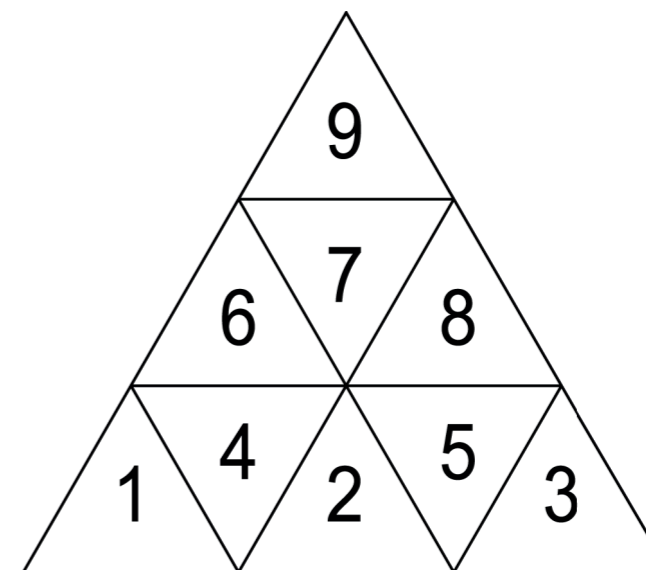
Looking at triangles 1 and 2, we can see that if these are superimposed and overlapping areas are eliminated, that we would get triangle 6 which is in an 'X' shape. Similarly, triangle 2 and 3 would undergo a similar relationship to get triangle 8.

Further, triangle 4 and 5 when superimposed and overlapping areas disappearing, would lead to nothing – as given in triangle 7.

Hence, the solution must be formed by superimposing triangles 6 and 8 and eliminating any areas of overlap.

This gives us option D as the solution.

Number Games

UMAT Sample Question 26

1		

2

A

2		
	3	
	2	

3

B

1	1	
		2
4	5	

7

C

5

D

4	?	1
	6	3
4	1	

8

E

Answer: C

It is difficult to determine where to begin looking for a pattern in this question. There seems to be no pattern between the location of the numbers within the boxes, or within the numbers themselves. It is important not to become overwhelmed here, and focus on the simplest patterns first.

Regarding the number of numbers in each box, we can see that this increases from one number to three numbers to five numbers to seven numbers. This may be a clue as to what the number should be, as it is unlikely that it is a useless sequence.

A keen test taker would be able to note that the highest number in each subsequent box is increasing. The highest number in box one is 1, in box two it is 3 and in box three it is 5. There is a pattern evident here – the highest number each box is equivalent to the number of numbers in the box.

Since there are seven numbers in the final box, the answer must be C, 7.

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Hurstville Level 3, 12 Butler Rd
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