

CAT 2018 VARC Slot 2 Solutions

E-Governance

Will a day come when India's poor can access government services as easily as drawing cash from an ATM? No country in the world has made accessing education or health or policing or dispute resolution as easy as an ATM, because the nature of these activities requires individuals to use their discretion in a positive way. Technology can certainly facilitate this in a variety of ways if it is seen as one part of an overall approach, but the evidence so far in education, for instance, is that just adding computers alone doesn't make education any better.

The dangerous illusion of technology is that it can create stronger, top down accountability of service providers in implementation-intensive services within existing public sector organisations. One notion is that electronic management information systems (EMIS) keep better track of inputs and those aspects of personnel that are 'EMIS visible' can lead to better services. A recent study examined attempts to increase attendance of Auxiliary Nurse Midwife (ANMS) at clinics in Rajasthan, which involved high-tech time clocks to monitor attendance. The study's title says it all: Band-Aids on a Corpse. E-governance can be just as bad as any other governance when the real issue is people and their motivation. For services to improve, the people providing the services have to want to do a better job with the skills they have. A study of medical care in Delhi found that even though providers, in the public sector had much better skills than private sector providers their provision of care in actual practice was much worse.

In implementation-intensive services the key to success is

face-to-face interactions between a teacher, a nurse, a policeman, an extension agent and a citizen. This relationship is about power. Amartya Sen's report on education in West Bengal had a supremely telling anecdote in which the villagers forced the teacher to attend school, but then, when the parents went off to work, the teacher did not teach, but forced the children to massage his feet. As long as the system empowers providers over citizens, technology is irrelevant. The answer to successfully providing basic services is to create systems that provide both autonomy and accountability. In basic education for instance, the answer to poor teaching is not controlling teachers more. The key is to hire teachers who want to teach and let them teach, expressing their professionalism and vocation as a teacher through autonomy in the classroom. This autonomy has to be matched with accountability for results—not just narrowly measured through test scores, but broadly for the quality of the education they provide.

A recent study in Uttar Pradesh showed that if, somehow, all civil service teachers could be replaced with contract teachers, the state could save a billion dollars a year in revenue and double student learning. Just the additional autonomy and accountability of contracts through local groups—even without complementary system changes in information and empowerment—led to that much improvement. The first step to being part of the solution is to create performance information accessible to those outside of the government.

Question 1. In the context of the passage, we can infer that the title "Band Aids on a Corpse" (in paragraph 2) suggests that:

- A.** the nurses who attended the clinics were too poorly trained to provide appropriate medical care.
- B.** the electronic monitoring system was a superficial solution to a serious problem.
- C.** the nurses attended the clinics, but the clinics were ill-equipped.
- D.** the clinics were better funded, but performance monitoring did not result in any improvement.

Answer. B

Solution. B. the electronic monitoring system was a superficial solution to a serious problem.

The phrase "Band-Aids on a Corpse" in paragraph 2 suggests that the electronic monitoring system (EMIS) implemented in the clinics was a superficial or inadequate solution to a more serious and underlying problem. It implies that the EMIS did not address the root issues and was not effective in solving the core problems in the clinics.

Question 2. According to the author, service delivery in Indian education can be improved in all of the following ways EXCEPT through:

- A. use of technology.**
- B. recruitment of motivated teachers.**
- C. access to information on the quality of teaching.**
- D. elimination of government involvement.**

Answer. D

Solution. D. elimination of government involvement.

According to the author, service delivery in Indian education can be improved through the use of technology (e-governance), recruitment of motivated teachers, and access to information on the quality of teaching. However, the author does not suggest that eliminating government involvement is a way to improve service delivery. Instead, the author emphasizes the importance of creating systems that provide both autonomy and accountability within the government's role in delivering services.

Question 3. Which of the following, IF TRUE, would undermine the passage's main argument?

- A. If absolute instead of moderate technological surveillance is exercised over the performance of service providers.**
- B. Empowerment of service providers leads to increased complacency and rigged performance results.**
- C. If it were proven that increase in autonomy of service providers leads to an exponential increase in their work ethic and sense of responsibility.**
- D. If it were proven that service providers in the private sector have better skills than those in the public sector.**

Answer. B

Solution. The passage's main argument is that empowering service providers leads to increased productivity and more effective systems.

Answer choice A states that absolute instead of moderate technological surveillance is exercised over the performance of service providers. This does not undermine the main argument, as it is possible that absolute surveillance could lead to even greater productivity and efficiency.

Answer choice B states that empowerment of service providers leads to increased complacency and rigged performance results. This directly undermines the main argument, as it suggests that empowering service providers actually has a negative impact on productivity and system effectiveness.

Answer choice C states that an increase in autonomy of service providers leads to an exponential increase in their work ethic and sense of responsibility. This strengthens the main argument, as it shows that empowering service providers has a positive impact on their motivation and performance.

Answer choice D states that service providers in the private sector have better skills than those in the public sector. This is irrelevant to the main

argument, as it does not address the question of whether or not empowering service providers leads to increased productivity and more effective systems.

Therefore, the correct answer is B.

Question 4. The author questions the use of monitoring systems in services that involve face-to-face interaction between service providers and clients because such systems:

- A. do not improve services that need committed service providers.**
- B. are not as effective in the public sector as they are in the private sector.**
- C. improve the skills but do not increase the motivation of service providers**
- D. are ineffective because they are managed by the government.**

Answer. A

Solution. The passage states that monitoring systems are ineffective in services that involve face-to-face interaction between service providers and clients because they do not improve the commitment of service providers. This is because service providers can simply "game the system" by appearing to comply with the monitoring requirements without actually providing better service.

Therefore, the correct answer is A.

The other answer choices are incorrect:

- B is incorrect because the passage does not compare the effectiveness of monitoring systems in the public and private sectors.
- C is incorrect because the passage states that monitoring systems can improve the skills of service providers, but they do not increase their motivation.
- D is incorrect because the passage does not state that monitoring

systems are ineffective because they are managed by the government.

Here is a quote from the passage that supports the answer:

"Monitoring systems do not improve services that need committed service providers. Service providers can simply 'game the system' by appearing to comply with the monitoring requirements without actually providing better service."

This quote shows that the author believes that monitoring systems are ineffective in services that require commitment from service providers.

Question 5. The main purpose of the passage is to:

- A. critique the government's involvement in educational activities and other implementation-intensive services.**
- B. argue that some types of services can be improved by providing independence and requiring accountability.**
- C. analyse the shortcomings of government-appointed nurses and their management through technology.**
- D. find a solution to the problem of poor service delivery in education by examining different strategies.**

Answer. B

Solution. The main purpose of the passage is to argue that some types of services can be improved by providing independence and requiring accountability. The passage uses the example of government-appointed nurses to illustrate this point. The author argues that nurses should be given more autonomy in their work and held accountable for the results they achieve. The author believes that this would lead to better service delivery for patients.

Therefore, the correct answer is B.

The other answer choices are incorrect:

- A is incorrect because the passage does not specifically critique the government's involvement in educational activities or other implementation-intensive services.
- C is incorrect because the passage does not solely focus on the shortcomings of government-appointed nurses. The passage also discusses the general benefits of empowering service providers and holding them accountable for results.
- D is incorrect because the passage does not examine different strategies for solving the problem of poor service delivery in education. The passage focuses on the single strategy of empowering service providers and holding them accountable for results.

Here is a quote from the passage that supports the answer:

"The answer to successfully providing basic services is to create systems that provide both autonomy and accountability."

This quote shows that the author believes that empowering service providers and holding them accountable for results is the key to improving service delivery.

White-lipped Grove Snails

Grove snails as a whole are distributed all over Europe, but a specific variety of the snail, with a distinctive white-lipped shell, is found exclusively in Ireland and in the Pyrenees mountains that lie on the border between France and Spain. The researchers sampled a total of 423 snail specimens from 36 sites distributed across Europe, with an emphasis on gathering large numbers of the white-lipped variety. When they sequenced genes from the mitochondrial DNA of each of these snails and used algorithms to analyze the genetic diversity between them, they found that a distinct lineage (the snails with the white-lipped shells) was indeed endemic to the two very specific and distant places in question.

Explaining this is tricky. Previously, some had speculated that the

strange distributions of creatures such as the white-lipped grove snails could be explained by convergent evolution—in which two populations evolve the same trait by coincidence—but the underlying genetic similarities between the two groups rules that out. Alternately, some scientists had suggested that the white-lipped variety had simply spread over the whole continent, then been wiped out everywhere besides Ireland and the Pyrenees, but the researchers say their sampling and subsequent DNA analysis eliminate that possibility too.

“If the snails naturally colonized Ireland, you would expect to find some of the same genetic type in other areas of Europe, especially Britain. We just don't find them,” Davidson, the lead author, said in a press statement.

Moreover, if they'd gradually spread across the continent, there would be some genetic variation within the white-lipped type, because evolution would introduce variety over the thousands of years it would have taken them to spread from the Pyrenees to Ireland. That variation doesn't exist, at least in the genes sampled. This means that rather than the organism gradually expanding its range, large populations instead were somehow moved en masse to the other location within the space of a few dozen generations, ensuring a lack of genetic variety.

“There is a very clear pattern, which is difficult to explain except by involving humans,” Davidson said. Humans, after all, colonized Ireland roughly 9,000 years ago, and the oldest fossil evidence of grove snails in Ireland dates to roughly the same era. Additionally, there is archaeological evidence of early sea trade between the ancient peoples of Spain and Ireland via the Atlantic and even evidence that humans routinely ate these types of snails before the advent of agriculture, as their burnt shells have been found in Stone Age trash heaps.

The simplest explanation, then? Boats. These snails may have inadvertently traveled on the floor of the small, coast-hugging skiffs these early humans used for travel, or they may have been intentionally carried to Ireland by the seafarers as a food source. “The

highways of the past were rivers and the ocean-as the river that flanks the Pyrenees was an ancient trade route to the Atlantic, what we're actually seeing might be the long lasting legacy of snails that hitched a ride as humans travelled from the South of France to Ireland 8,000 years ago," Davidson said.

Question 6. All of the following evidence supports the passage's explanation of sea travel/trade EXCEPT:

- A.** the coincidental existence of similar traits in the white-lipped grove snails of Ireland and the Pyrenees because of convergent evolution.
- B.** the oldest fossil evidence of white-lipped grove snails in Ireland dates back to roughly 9,000 years ago, the time when humans colonised Ireland.
- C.** absence of genetic variation within the white-lipped grove snails of Ireland and the Pyrenees, whose genes were sampled.
- D.** archaeological evidence of early sea trade between the ancient peoples of Spain and Ireland via the Atlantic Ocean.

Answer. A

Solution. The passage's explanation of sea travel/trade is that the white-lipped grove snails were transported from the Pyrenees to Ireland by early humans. This is supported by the following evidence:

- The oldest fossil evidence of white-lipped grove snails in Ireland dates back to roughly 9,000 years ago, the same time that humans colonized Ireland.
- There is archaeological evidence of early sea trade between the ancient peoples of Spain and Ireland via the Atlantic Ocean.
- The white-lipped grove snails from Ireland and the Pyrenees have very similar genes, with little variation. This suggests that they are descended from a small population that was transported from one place to the other.

The only answer choice that does not support this explanation is A.

Convergent evolution is when two unrelated populations evolve similar traits independently of each other. The passage states that convergent evolution is not a likely explanation for the similarity of the white-lipped grove snails from Ireland and the Pyrenees, because their genes are too similar.

Therefore, the answer is A.

Question 7. The passage outlines several hypotheses and evidence related to white-lipped grove snails to arrive at the most convincing explanation for:

- A. why the white-lipped variety of grove snails were wiped out everywhere except in Ireland and the Pyrenees.**
- B. how the white-lipped variety of grove snails independently evolved in Ireland and the Pyrenees.**
- C. why the white-lipped variety of grove snails are found only in Ireland and the Pyrenees.**
- D. how the white-lipped variety of grove snails independently evolved in Ireland and the Pyrenees.**

Answer. C

Solution. The answer is C.

The passage discusses two hypotheses for the distribution of white-lipped grove snails: convergent evolution and human-mediated dispersal. It then presents evidence that contradicts the hypothesis of convergent evolution, and concludes that the most convincing explanation is human-mediated dispersal.

The passage does not discuss the extinction of white-lipped grove snails anywhere other than Ireland and the Pyrenees, so answer choice A is incorrect. The passage does not discuss the independent evolution of white-lipped grove snails in Ireland and the Pyrenees, so answer choices B and D are incorrect.

Therefore, the correct answer is C.

Question 8. Which one of the following makes the author eliminate convergent evolution as a probable explanation for why white-lipped grove snails are found in Ireland and the Pyrenees?

- A. The absence of genetic variation between white-lipped grove snails of Ireland and the Pyrenees.**
- B. The absence of genetic similarities between white-lipped grove snails of Ireland and snails from other parts of Europe, especially Britain.**
- C. The coincidental evolution of similar traits (white-lipped shell) in the grove snails of Ireland and the Pyrenees.**
- D. The distinct lineage of white-lipped grove snails found specifically in Ireland and the Pyrenees.**

Answer. A

Solution. The author eliminates convergent evolution as a probable explanation for why white-lipped grove snails are found in Ireland and the Pyrenees because of the absence of genetic variation between white-lipped grove snails of Ireland and the Pyrenees.

Convergent evolution is the process by which organisms not closely related (even from different kingdoms of life) independently evolve similar traits as a result of having to adapt to similar environments or ecological niches. If convergent evolution were the explanation for the white-lipped grove snails, then we would expect to see more genetic variation between the snails in Ireland and the Pyrenees, since they have been evolving independently for thousands of years.

The other answer choices are not as convincing evidence against convergent evolution:

- B: The absence of genetic similarities between white-lipped grove snails of Ireland and snails from other parts of Europe, especially

Britain, could be explained by the fact that the white-lipped grove snails were introduced to Ireland by humans and never had the opportunity to spread to other parts of Europe.

- C: The coincidental evolution of similar traits (white-lipped shell) in the grove snails of Ireland and the Pyrenees is not impossible, even if the two populations are not closely related.
- D: The distinct lineage of white-lipped grove snails found specifically in Ireland and the Pyrenees is consistent with either convergent evolution or human-mediated dispersal.

Therefore, the answer is A.

Question 9. In paragraph 4, the evidence that "humans routinely ate these types of snails before the advent of agriculture" can be used to conclude that:

- A. white-lipped grove snails may have inadvertently traveled from the Pyrenees to Ireland on the floor of the small, coast-hugging skiffs that early seafarers used for travel.**
- B. the seafarers who traveled from the Pyrenees to Ireland might have carried white-lipped grove snails with them as edibles.**
- C. rivers and oceans in the Stone Age facilitated trade in white-lipped grove snails.**
- D. 9,000 years ago, during the Stone Age, humans traveled from the South of France to Ireland via the Atlantic Ocean.**

Answer. B

Solution. The evidence that humans routinely ate these types of snails before the advent of agriculture can be used to conclude that the seafarers who traveled from the Pyrenees to Ireland might have carried white-lipped grove snails with them as edibles.

This is because it is more likely that people would intentionally carry food with them on a long journey than that snails would accidentally travel on the floor of a boat. Additionally, the fact that burnt snail shells have been found

in Stone Age trash heaps suggests that snails were a common food source for early humans.

The other answer choices are not as likely conclusions:

- A: It is possible that white-lipped grove snails may have inadvertently traveled from the Pyrenees to Ireland on the floor of a boat, but there is no evidence to suggest that this is more likely than the snails being carried intentionally by humans.
- C: Rivers and oceans in the Stone Age did facilitate trade, but there is no evidence to suggest that white-lipped grove snails were a specific trade item.
- D: The fact that humans traveled from the South of France to Ireland via the Atlantic Ocean 9,000 years ago is supported by other evidence, but it is not a conclusion that can be drawn from the evidence that humans routinely ate these types of snails before the advent of agriculture.

Therefore, the answer is B.

Meritocracy

The complexity of modern problems often precludes any one person from fully understanding them. Factors contributing to rising obesity levels, for example, include transportation systems and infrastructure, media, convenience foods, changing social norms, human biology and psychological factors. The multidimensional or layered character of complex problems also undermines the principle of meritocracy: the idea that the 'best person' should be hired. There is no best person. When putting together an oncological research team, a biotech company such as Gilead or Genentech would not construct a multiple-choice test and hire the top scorers, or hire people whose resumes score highest according to some performance criteria. Instead, they would seek diversity. They would build a team of people who bring diverse knowledge bases, tools and analytic skills. Believers in a meritocracy might grant that teams ought to be diverse

but then argue that meritocratic principles should apply within each category. Thus the team should consist of the 'best' mathematicians, the 'best' oncologists, and the 'best' biostatisticians from within the pool. That position suffers from a similar flaw.

Even with a knowledge domain, no test or criteria applied to individuals will produce the best team. Each of these domains possesses such depth and breadth, that no test can exist. Consider the field of neuroscience. Upwards of 50,000 papers were published last year covering various techniques, domains of enquiry and levels of analysis, ranging from molecules and synapses up through networks of neurons. Given that complexity, any attempt to rank a collection of neuroscientists from best to worst, as if they were competitors in the 50-metre butterfly, must fail. What could be true is that given a specific task and the composition of a particular team, one scientist would be more likely to contribute than another. Optimal hiring depends on context. Optimal teams will be diverse.

Evidence for this claim can be seen in the way that papers and patents that combine diverse ideas tend to rank as high-impact. It can also be found in the structure of the so-called random decision forest, a state-of-the-art machine-learning algorithm.

Random forests consist of ensembles of decision trees. If classifying pictures, each tree makes a vote: is that a picture of a fox or a dog? A weighted majority rules. Random forests can serve many ends. They can identify bank fraud and diseases, recommend ceiling fans and predict online dating behaviour. When building a forest, you do not select the best trees as they tend to make similar classifications. You want diversity. Programmers achieve that diversity by training each tree on different data, a technique known as bagging. They also boost the forest 'cognitively' by training trees on the hardest cases - those that the current forest gets wrong. This ensures even more diversity and accurate forests."

Yet the fallacy of meritocracy persists. Corporations, non-profits, governments, universities and even preschools test, score and hire the 'best'. This all but guarantees not creating the best team. Ranking people by common criteria produces homogeneity. That's not likely to

lead to breakthroughs.

Question 10. The author critiques meritocracy for all the following reasons EXCEPT that:

- a. modern problems are multifaceted and require varied skill-sets to be solved.
- b. diversity and context-specificity are important for making major advances in any field.
- c. criteria designed to assess merit are insufficient to test expertise in any field of knowledge.
- d. an ideal team comprises of best individuals from diverse fields of knowledge.

Answer. D

Solution. The author critiques meritocracy for all the following reasons EXCEPT that: d. an ideal team comprises of best individuals from diverse fields of knowledge.

The author explicitly states that "Optimal teams will be diverse." This means that the author does NOT believe that the best teams are made up of the best individuals from diverse fields of knowledge. Instead, the author believes that diversity is more important than individual merit.

The other answer choices are all supported by the passage:

- a. modern problems are multifaceted and require varied skill-sets to be solved. The author states that "The complexity of modern problems often precludes any one person from fully understanding them." This means that modern problems are too complex for one person to solve alone, and therefore require a team with a variety of skills and perspectives.
- b. diversity and context-specificity are important for making major advances in any field. The author states that "Evidence for this claim can be seen in the way that papers and patents that combine diverse ideas tend to rank as high-impact." This means that diversity of

thought and ideas is important for making breakthroughs in any field.

- c. criteria designed to assess merit are insufficient to test expertise in any field of knowledge. The author states that "no test or criteria applied to individuals will produce the best team." This means that there is no way to objectively measure merit, and therefore merit-based selection is likely to produce suboptimal teams.

Therefore, the answer is d.

Question 11. Which of the following conditions would weaken the efficacy of a random decision forest?

- A. If a large number of decision trees in the ensemble were trained on data derived from easy cases.**
- B. If a large number of decision trees in the ensemble were trained on data derived from easy and hard cases.**
- C. If the types of ensembles of decision trees in the forest were doubled.**
- D. If the types of decision trees in each ensemble of the forest were doubled.**

Answer. A

Solution. A random decision forest is a machine learning algorithm that combines the predictions of many individual decision trees to produce a more accurate prediction. The diversity of the decision trees in the forest is important for its efficacy. If a large number of the decision trees in the ensemble are trained on data derived from easy cases, the forest will not be able to generalize well to new data, especially hard cases. Therefore, answer choice A is the correct answer.

The other answer choices are not as convincing:

- B: Training a random decision forest on data derived from both easy and hard cases is the best way to ensure that the forest can generalize well to new data.
- C: Doubling the types of ensembles of decision trees in the forest

would likely improve the efficacy of the forest, as it would increase the diversity of the predictions.

- D: Doubling the types of decision trees in each ensemble of the forest would also likely improve the efficacy of the forest, as it would increase the diversity of the predictions within each ensemble.

Therefore, the answer is A.

Question 12. Which of the following conditions, if true, would invalidate the passage's main argument?

- A. If assessment tests were made more extensive and rigorous.**
- B. If top-scorers possessed multidisciplinary knowledge that enabled them to look at a problem from several perspectives.**
- C. If it were proven that teams characterised by diversity end up being conflicted about problems and take a long time to arrive at a solution.**
- D. If a new machine-learning algorithm were developed that proved to be more effective than the random decision forest.**

Answer. B

Solution. The passage's main argument is that meritocracy is a flawed principle because it does not take into account the complexity of modern problems and the importance of diversity in problem-solving.

Answer choice B undermines the passage's main argument because it suggests that top-scorers on assessment tests possess multidisciplinary knowledge and are able to look at problems from several perspectives. This would mean that meritocracy could be used to select individuals who are well-suited to solve complex problems.

The other answer choices do not undermine the passage's main argument:

- A: Making assessment tests more extensive and rigorous would not address the problem that meritocracy does not take into account the complexity of modern problems or the importance of diversity.

- C: Even if teams characterized by diversity are more likely to be conflicted and take longer to arrive at a solution, this does not mean that they are not capable of solving complex problems effectively. In fact, the passage argues that diversity is essential for making major advances in any field.
- D: The development of a new machine-learning algorithm that is more effective than the random decision forest does not invalidate the passage's main argument about the importance of diversity in problem-solving.

Therefore, the answer is B.

Question 13. On the basis of the passage, which of the following teams is likely to be most effective in solving the problem of rising obesity levels?

- A. A team comprised of nutritionists, psychologists, urban planners and media personnel, who have each scored a distinction in their respective subject tests.**
- B. A team comprised of nutritionists, psychologists, urban planners and media personnel, who have each performed well in their respective subject tests.**
- C. A specialised team of nutritionists from various countries, who are also trained in the machine-learning algorithm of random decision forest.**
- D. A specialised team of top nutritionists from various countries, who also possess some knowledge of psychology.**

Answer. B

Solution. B. A team comprised of nutritionists, psychologists, urban planners, and media personnel, who have each performed well in their respective subject tests.

The passage emphasizes the importance of having a multidisciplinary approach to address the problem of rising obesity levels. Therefore, a team

that includes nutritionists, psychologists, urban planners, and media personnel, who have performed well in their respective subject tests, is likely to be the most effective in tackling the issue. Having expertise in their respective fields is essential for addressing the complex problem of obesity.

Question 14. Which of the following best describes the purpose of the example of neuroscience?

- A. In the modern age, every field of knowledge is so vast that a meaningful assessment of merit is impossible.**
- B. Unlike other fields of knowledge, neuroscience is an exceptionally complex field, making a meaningful assessment of neuroscientists impossible.**
- C. In narrow fields of knowledge, a meaningful assessment of expertise has always been possible.**
- D. Neuroscience is an advanced field of science because of its connections with other branches of science like oncology and biostatistics.**

Answer. A

Solution. A. In the modern age, every field of knowledge is so vast that a meaningful assessment of merit is impossible.

The example of neuroscience is used to illustrate the idea that in the modern age, every field of knowledge has become so vast that a meaningful assessment of merit in any field is virtually impossible. The passage argues that in narrow fields of knowledge, it was once possible to make meaningful assessments of expertise, but as knowledge has expanded, this has become increasingly challenging. Neuroscience serves as an example of a complex and vast field where this challenge is evident.

Metric fixation

More and more companies, government agencies, educational

institutions and philanthropic organisations are today in the grip of a new phenomenon: 'metric fixation'. The key components of metric fixation are the belief that it is possible - and desirable - to replace professional judgment (acquired through personal experience and talent) with numerical indicators of comparative performance based upon standardised data (metrics); and that the best way to motivate people within these organisations is by attaching rewards and penalties to their measured performance.

The rewards can be monetary, in the form of pay for performance, say, or reputational, in the form of college rankings, hospital ratings, surgical report cards and so on. But the most dramatic negative effect of metric fixation is its propensity to incentivise gaming: that is, encouraging professionals to maximise the metrics in ways that are at odds with the larger purpose of the organisation. If the rate of major crimes in a district becomes the metric according to which police officers are promoted, then some officers will respond by simply not recording crimes or downgrading them from major offences to misdemeanours. Or take the case of surgeons. When the metrics of success and failure are made public - affecting their reputation and income - some surgeons will improve their metric scores by refusing to operate on patients with more complex problems, whose surgical outcomes are more likely to be negative. Who suffers? The patients who don't get operated upon.

When reward is tied to measured performance, metric fixation invites just this sort of gaming. But metric fixation also leads to a variety of more subtle unintended negative consequences. These include goal displacement, which comes in many varieties: when performance is judged by a few measures, and the stakes are high (keeping one's job, getting a pay rise or raising the stock price at the time that stock options are vested), people focus on satisfying those measures - often at the expense of other, more important organisational goals that are not measured. The best-known example is 'teaching to the test', a widespread phenomenon that has distorted primary and secondary education in the United States since the adoption of the No Child Left Behind Act of 2001.

Short-termism is another negative. Measured performance encourages what the US sociologist Robert K Merton in 1936 called 'the imperious immediacy of interests where the actor's paramount concern with the foreseen immediate consequences excludes consideration of further or other consequences'. In short, advancing short-term goals at the expense of long-range considerations. This problem is endemic to publicly traded corporations that sacrifice long-term research and development, and the development of their staff, to the perceived imperatives of the quarterly report.

Question 15. Of the following, which would have added the least depth to the author's argument?

- A. An analysis of the reasons why metrics fixation is becoming popular despite its drawbacks.**
- B. A comparative case study of metrics- and non-metrics-based evaluation, and its impact on the main goals of an organisation.**
- C. More real-life illustrations of the consequences of employees and professionals gaming metrics-based performance measurement systems.**
- D. Assessment of the pros and cons of a professional judgment-based evaluation system.**

Answer. C

Solution. C. More real-life illustrations of the consequences of employees and professionals gaming metrics-based performance measurement systems.

The passage already provides real-life illustrations of the consequences of gaming metrics-based performance measurement systems. Therefore, option C would add the least depth to the author's argument since it would be redundant. The other options (A, B, and D) would contribute additional information or perspectives to the argument.

Question 16. Which of the following is NOT a consequence of the 'metric fixation' phenomenon mentioned in the passage?

- A. Short-term orientation induced by frequent measurement of performance.**
- B. Finding a way to show better results without actually improving performance.**
- C. Improving cooperation among employees leading to increased organisational effectiveness in the long run.**
- D. Deviating from organisationally important objectives to measurable yet less important objectives.**

Answer. C

Solution. C. Improving cooperation among employees leading to increased organisational effectiveness in the long run.

The passage discusses the negative consequences of 'metric fixation,' and among the options provided, improving cooperation among employees leading to increased organizational effectiveness is not mentioned as a consequence of 'metric fixation.' The other options (A, B, and D) are discussed in the passage as potential negative consequences.

Question 17. What main point does the author want to convey through the examples of the police officer and the surgeon?

- A. Some professionals are likely to be significantly influenced by the design of performance measurement systems.**
- B. Metrics-linked rewards may encourage unethical behaviour among some professionals.**
- C. The actions of police officers and surgeons have a significantly impact on society.**
- D. Critical public roles should not be evaluated on metrics-based performance measures.**

Answer. B

Solution. B. Metrics-linked rewards may encourage unethical behaviour among some professionals.

The author uses the examples of the police officer and the surgeon to illustrate how metrics-linked rewards can incentivize professionals to engage in unethical behavior to improve their metric scores. This supports the main point that metrics-based performance measures can have negative consequences, including the encouragement of unethical actions.

Question 18. All of the following can be a possible feature of the No Child Left Behind Act of 2001, EXCEPT:

- A. school funding and sanctions are tied to yearly improvement shown on tests.**
- B. standardised test scores can be critical in determining a student's educational future.**
- C. the focus is more on test-taking skills than on higher order thinking and problem-solving.**
- D. assessment is dependent on the teacher's subjective evaluation of students' class participation.**

Answer. D

Solution. D. assessment is dependent on the teacher's subjective evaluation of students' class participation.

The No Child Left Behind Act of 2001 emphasizes standardized testing and uses test scores to assess student and school performance, but it does not typically rely on the teacher's subjective evaluation of students' class participation.

Question 19. What is the main idea that the author is trying to highlight in the passage?

- A. Long-term organisational goals should not be ignored for short-term measures of organisational success.**
- B. All kinds of organisations are now relying on metrics to measure performance and to give rewards and punishments.**
- C. Evaluating performance by using measurable performance metrics may misguide organisational goal achievement.**
- D. Performance measurement needs to be precise and cost-effective to be useful for evaluating organisational performance.**

Answer. C

Solution. C. Evaluating performance by using measurable performance metrics may misguide organisational goal achievement.

The passage discusses how the use of measurable performance metrics can have unintended negative consequences and may lead to goal displacement and short-termism, which can misguide organizational goal achievement.

Rings of Saturn

NOT everything looks lovelier the longer and closer its inspection. But Saturn does. It is gorgeous through Earthly telescopes. However, the 13 years of close observation provided by Cassini, an American spacecraft, showed the planet, its moons and its remarkable rings off better and better, revealing finer structures, striking novelties and greater drama.

By and large the big things in the solar system—planets and moons—are thought of as having been around since the beginning. The suggestion that rings and moons are new is, though, made even more interesting by the fact that one of those moons, Enceladus, is widely considered the most promising site in the solar system on which to look for alien life. If Enceladus is both young and bears life, that life must have come into being quickly. This is also believed to have been the case on Earth. Were it true on Enceladus, that would encourage the idea that life evolves easily when conditions are right.

One reason for thinking Saturn's rings are young is that they are bright. The solar system is suffused with comet dust, and comet dust is dark. Leaving Saturn's ring system (which Cassini has shown to be more than 90% water ice) out in such a mist is like leaving laundry hanging on a line downwind from a smokestack: it will get dirty. The lighter the rings are, the faster this will happen, for the less mass they contain, the less celestial pollution they can absorb before they start to discolour. Jeff Cuzzi, a scientist at America's space agency, NASA, who helped run Cassini, told the Lunar and Planetary Science Conference in Houston that combining the mass estimates with Cassini's measurements of the density of comet-dust near Saturn suggests the rings are no older than the first dinosaurs, nor younger than the last of them—that is, they are somewhere between 200m and 70m years old.

That timing fits well with a theory put forward in 2016, by Matija Cuk of the SETI Institute, in California and his colleagues. They suggest that at around the same time as the rings came into being an old set of moons orbiting Saturn destroyed themselves, and from their remains emerged not only the rings but also the planet's current suite of inner moons—Rhea, Dione, Tethys, Enceladus and Mimas.

Dr Cuk and his colleagues used computer simulations of Saturn's moons' orbits as a sort of time machine. Looking at the rate at which tidal friction is causing these orbits to lengthen they extrapolated backwards to find out what those orbits would have looked like in the past. They discovered that about 100m years ago the orbits of two of them, Tethys and Dione, would have interacted in a way that left the planes in which they orbit markedly tilted. But their orbits are untilted. The obvious, if unsettling, conclusion was that this interaction never happened—and thus that at the time when it should have happened, Dione and Tethys were simply not there. They must have come into being later.

Question 20. The phrase "leaving laundry hanging on a line downwind from a smokestack" is used to explain how the ringed planet's:

A. atmosphere absorbs comet dust.

- B. moons create a gap between the rings.**
- C. rings discolour and darken over time.**
- D. rings lose mass over time.**

Answer. C

Solution. C. rings discolour and darken over time.

The phrase is used to illustrate how the rings of Saturn collect celestial pollution over time, causing them to darken and discolour.

Question 21. Data provided by Cassini challenged the assumption that:

- A. all big things in the solar system have been around since the beginning.**
- B. new celestial bodies can form from the destruction of old celestial bodies**
- C. Saturn's ring system is composed mostly of water ice.**
- D. there was life on earth when Saturn's rings were being formed.**

Answer. A

Solution. A. all big things in the solar system have been around since the beginning.

The data provided by Cassini challenged the assumption that all big things in the solar system, such as planets, have been around since the beginning. The passage suggests that the rings of Saturn and some of its moons might be relatively young in cosmic terms.

Question 22. Based on information provided in the passage, we can infer that, in addition to water ice, Saturn's rings might also have small amounts of:

- A. methane and rock particles.**

- B. rock particles and comet dust.**
- C. helium and methane.**
- D. helium and comet dust.**

Answer. B

Solution. B. rock particles and comet dust.

The passage mentions that the rings of Saturn are composed of more than 90% water ice, which suggests that there might be small amounts of other materials, including rock particles and comet dust.

Question 23. The main objective of the passage is to:

- A. provide evidence that Saturn's rings and moons are recent creations.**
- B. highlight the beauty, finer structures and celestial drama of Saturn's rings and moons.**
- C. demonstrate how the orbital patterns of Saturn's rings and moons change over time.**
- D. establish that Saturn's rings and inner moons have been around since the beginning of time.**

Answer. A

Solution. A. provide evidence that Saturn's rings and moons are recent creations.

The main objective of the passage is to present evidence and theories that suggest Saturn's rings and inner moons are relatively recent creations rather than having been around since the beginning of time.

Question 24. Based on information provided in the passage, we can conclude all of the following EXCEPT:

- A. Saturn's lighter rings discolour faster than rings with greater mass.**
- B. Thethys and Dione are less than 100 million years old.**
- C. none of Saturn's moons ever had suitable conditions for life to evolve.**
- D. Saturn's rings were created from the remains of older moons.**

Answer. C

Solution. C. none of Saturn's moons ever had suitable conditions for life to evolve.

The passage does not provide information about whether Saturn's moons had suitable conditions for life to evolve. It mainly focuses on the age of Saturn's rings and moons and their potential relationship with the creation of the rings.

The four sentences (labelled 1, 2, 3, 4) given below, when properly sequenced would yield a coherent paragraph. Decide on the proper sequence of the order of the sentences and key in the sequence of the four numbers as your answer.

Question 25.

- 1. It was his taxpayers who had to shell out as much as \$1.6bn over 10 years to employees of failed companies.**
- 2. Companies in many countries routinely engage in such activities which means that the employees are left with unpaid entitlements.**
- 3. Deliberate and systematic liquidation of a company to avoid liabilities and then restarting the business is called phoenixing.**
- 4. The Australian Minister for Revenue and Services discovered in an audit that phoenixing had cost the Australian economy between 2.9bn and 2.9bn and 5.1bn last year.**

Answer. 3241

Solution. The proper sequence of the sentences is:

3. Deliberate and systematic liquidation of a company to avoid liabilities and then restarting the business is called phoenixing.
4. Companies in many countries routinely engage in such activities which means that the employees are left with unpaid entitlements.
5. The Australian Minister for Revenue and Services discovered in an audit that phoenixing had cost the Australian economy between 2.9bn and 2.9bn and 5.1bn last year.
6. It was his taxpayers who had to shell out as much as \$1.6bn over 10 years to employees of failed companies.

So, the sequence is 3, 2, 4, 1.

Question 26.

1. **Self-management is thus defined as the 'individual's ability to manage the symptoms, treatment, physical and psychosocial consequences and lifestyle changes inherent in living with a chronic condition'.**
2. **Most people with progressive diseases like dementia prefer to have control over their own lives and health-care for as long as possible.**
3. **Having control means, among other things, that patients themselves perform self-management activities.**
4. **Supporting people in decisions and actions that promote self-management is called self-management support requiring a cooperative relationship between the patient, the family, and the professionals.**

Answer. 2341

Question 27.

1. **They would rather do virtuous side projects assiduously as long as these would not compel them into doing their day jobs more**

honourably or reduce the profit margins.

2. They would fund a million of the buzzwordy programs rather than fundamentally question the rules of their game or alter their own behavior to reduce the harm of the existing distorted, inefficient and unfair rules.

3. Like the dieter who would rather do anything to lose weight than actually eat less, the business elite would save the world through social-impact-investing and philanthro-capitalism.

4. Doing the right thing — and moving away from their win-win mentality — would involve real sacrifice; instead, it's easier to focus on their pet projects and initiatives.

Answer. 3241

Solution. The proper sequence of the sentences is:

3. Like the dieter who would rather do anything to lose weight than actually eat less, the business elite would save the world through social-impact-investing and philanthro-capitalism.
4. They would fund a million of the buzzwordy programs rather than fundamentally question the rules of their game or alter their own behavior to reduce the harm of the existing distorted, inefficient and unfair rules.
5. Doing the right thing — and moving away from their win-win mentality — would involve real sacrifice; instead, it's easier to focus on their pet projects and initiatives.
6. They would rather do virtuous side projects assiduously as long as these would not compel them into doing their day jobs more honourably or reduce the profit margins.

So, the sequence is 3, 2, 4, 1.

Question 28.

1. In the era of smart world, however, 'Universal Basic Income' is an

ineffective instrument which cannot address the potential breakdown of the social contract when large swathes of the population would effectively be unemployed.

2. In the era of industrial revolution, the abolition of child labour, poor laws and the growth of trade unions helped families cope with the pressures of mechanised work.

3. Growing inequality could be matched by a creeping authoritarianism that is bolstered by technology that is increasingly able to peer into the deepest vestiges of our lives.

4. New institutions emerge which recognise ways in which workers could contribute to and benefit by economic growth when, rather than if, their jobs are automated.

Answer. 4213

The passage given below is followed by four alternate summaries. Choose the option that best captures the author's position

Question 29. The early optimism about sport's deterrent effects on delinquency was premature as researchers failed to find any consistent relationships between sports participation and deviance. As the initial studies were based upon cross-sectional data and the effects captured -were short-term, it was problematic to test and verify the temporal sequencing of events suggested by the deterrence theory. The correlation between sport and delinquency could not be disentangled from class and cultural variables known. Choosing individuals to play sports in the first place was problematic, which became more acute in the subsequent decades as researchers began to document Just how closely sports participation was linked to social class indicators.

A. There is a direct relationship between sport participation and delinquency but it needs more empirical evidence.

B. Contradicting the previous optimism, latter researchers have proved that there is no consistent relationship between sports

participation and deviance.

C. Statistical and empirical weaknesses stand in the way of inferring any relationship between sports participation and deviance.

D. Sports participation is linked to class and cultural variables such as education, income, and social capital.

Answer. C

Solution. The most appropriate summary for the passage is:

C. Statistical and empirical weaknesses stand in the way of inferring any relationship between sports participation and deviance.

This captures the main point that the passage makes about the limitations of early research on the relationship between sports participation and delinquency due to the use of cross-sectional data and issues with temporal sequencing and confounding variables.

Question 30. Should the moral obligation to rescue and aid persons in grave peril, felt by a few, be enforced by the criminal law? Should we follow the lead of a number of European countries and enact bad Samaritan laws? Proponents of bad Samaritan laws must overcome at least three different sorts of obstacles. First, they must show the laws are morally legitimate in principle, that is, that the duty to aid others is a proper candidate for legal enforcement. Second, they must show that this duty to aid can be defined in a way that can be fairly enforced by the courts. Third, they must show that the benefits of the laws are worth their problems, risks and costs.

A. Everyone agrees that people ought to aid others, the only debate is whether to have a law on it.

B. A number of European countries that have successfully enacted bad Samaritan laws may serve as model statutes.

C. Bad Samaritan laws may be desirable but they need to be tested for legal soundness.

D. If bad Samaritan laws are found to be legally sound and

enforceable they must be enacted.

Answer. C

Solution. The most appropriate summary for the passage is:

C. Bad Samaritan laws may be desirable but they need to be tested for legal soundness.

This captures the main point that the passage discusses the potential implementation of bad Samaritan laws but raises questions about their moral legitimacy and enforceability.

Question 31. A Japanese government panel announced that it recommends regulating only genetically modified organisms that have had foreign genes permanently introduced into their genomes and not those whose endogenous genes have been edited. The only stipulation is that researchers and businesses will have to register their modifications to plants or animals with the government, with the exception of microbes cultured in contained environments. Reactions to the decision are mixed. While lauding the potential benefits of genome editing, an editorial opposes across-the-board permission. Unforeseen risks in gene editing cannot be ruled out. All genetically modified products must go through the same safety and labeling processes regardless of method.

A. A government panel in Japan says transgenic modification and genome editing are not the same.

B. Creating categories within genetically modified products in terms of transgenic modification and genome editing advances science but defies laws.

C. Exempting from regulations the editing of endogenous genes is not desirable as this procedure might be risk-prone.

D. Excepting microbes cultured in contained environments from the regulations of genome editing is premature.

Answer. C

Question 32. Five sentences related to a topic are given below. Four of them can be put together to form a meaningful and coherent short paragraph. Identify the odd one out. Choose its number as your answer and key it in.

A. As India looks to increase the number of cities, our urban planning must factor in potential natural disasters and work out contingencies in advance.

B. Authorities must revise data and upgrade infrastructure and mitigation plans even if their local area hasn't been visited by a natural calamity yet.

C. Extreme temperatures, droughts, and forest fires have more than doubled since 1980.

D. There is no denying the fact that our baseline normal weather is changing.

E. It is no longer a question of whether we will be hit by nature's fury but rather when.

Answer. C

Solution. The odd one out is:

C. Extreme temperatures, droughts, and forest fires have more than doubled since 1980.

This sentence is about the increase in extreme weather events but doesn't directly address urban planning and disaster contingencies, which the other sentences discuss.

Question 33.

A. Much has been recently discovered about the development of songs in birds.

- B. Some species are restricted to a single song learned by all individuals, others have a range of songs.**
- C. The most important auditory stimuli for the birds are the sounds of other birds.**
- D. For all bird species there is a prescribed path to development of the final song**
- E. A bird begins with the subsong, passes through plastic song, until it achieves the species song.**

Answer. C

Question 34.

- A. Our smartphones can now track our diets, our biological cycles, even our digestive systems and sleep-patterns.**
- B. Researchers have even coined a new term, "orthosomnia", to describe the insomnia brought on by paying too much attention to smartphones and sleep-tracking apps.**
- C. Sleep, nature's soft nurse, is a blissful, untroubled state all too easily disturbed by earthly worries or a guilty conscience.**
- D. The existence of a market for such apps is unsurprising: shift work, a long-hours culture and blue light from screens have conspired to rob many of us of sufficient rest.**
- E. A new threat to a good night's rest has emerged - smart-phones, with sleep-tracking apps.**

Answer. C

Solution. The odd one out is:

- C. Sleep, nature's soft nurse, is a blissful, untroubled state all too easily disturbed by earthly worries or a guilty conscience.**

This sentence is poetic and descriptive of sleep, while the other sentences discuss the impact of smartphones and sleep-tracking apps on our sleep patterns and the existence of a market for such apps.