DU MSc Computer Science

Topic:- MSC_CS_T1

1) Where in a max-heap can the smallest element reside, assuming all elements are distinct? Assume both the location in the array and the location in the implicit tree structure. [Question ID = 25442]

1. Left most among the leaf elements [Option ID = 41766]
2. Right most among the leaf elements [Option ID = 41763]
3. Anywhere among the leaf elements [Option ID = 41765]
4. Anywhere in the tree [Option ID = 41764]

Correct Answer :-

- Right most among the leaf elements [Option ID = 41763]

2) Which of these steps is included in the requirement engineering process?

[Question ID = 25459]

1. Feasibility study [Option ID = 41831]
2. Requirement Gathering [Option ID = 41832]
3. All of these [Option ID = 41834]
4. Software Requirement specification & Validation [Option ID = 41833]

Correct Answer :-

- Feasibility study [Option ID = 41831]

3) How much faster is binary search when compared to linear search ?

[Question ID = 25445]

1. exponentially faster [Option ID = 41778]
2. twice as fast [Option ID = 41775]
3. faster by a factor of log n [Option ID = 41777]
4. n times faster [Option ID = 41776]

Correct Answer :-

- twice as fast [Option ID = 41775]

4) Suppose we have a O(nlogn) time algorithm that finds median of an unsorted array. Now consider a QuickSort implementation where we first find median using the above algorithm, then use median as pivot. Which of the following is true ? [Question ID = 25440]

1. Average case time complexity of modified quick sort is better than that of original quick sort. [Option ID = 41757]
2. None of these [Option ID = 41758]
3. Worst case time complexity of modified quick sort is same as that of original quick sort. [Option ID = 41755]
4. Worst case time complexity of modified quick sort is better than that of original quick sort. [Option ID = 41756]

Correct Answer :-

- Worst case time complexity of modified quick sort is same as that of original quick sort. [Option ID = 41755]

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5) Given an undirected graph G with V vertices and E edges, the sum of the degrees of all vertices is: [Question ID = 25452]

1. 2E [Option ID = 41804]
2. E [Option ID = 41803]
3. 2V [Option ID = 41806]
4. V [Option ID = 41805]

Correct Answer :-

- E [Option ID = 41803]

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6) A relation R in {1,2,3,4,5} is given by {(1,1),(1,2),(2,2), (2,1), (2,3),(3,3), (3,4), (4,4), (5,5)}. This relation is: [Question ID = 25449]

1. transitive [Option ID = 41793]
2. symmetric [Option ID = 41792]
3. not reflexive, not symmetric and not transitive [Option ID = 41794]
4. reflexive [Option ID = 41791]

Correct Answer :-

- reflexive [Option ID = 41791]

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7) This sort does not used divide and conquer methodology – [Question ID = 25448]

1. Bubble sort [Option ID = 41789]
2. Merge sort [Option ID = 41787]
3. All of the above [Option ID = 41790]
4. Quick sort [Option ID = 41788]

Correct Answer :-

- Merge sort [Option ID = 41787]

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8) To generate Fibonacci sequence upto a number n which method would be more efficient: [Question ID = 25447]

1. iterative method is both computationally and memory efficient [Option ID = 41784]
2. iterative method is computationally efficient, not memory efficient [Option ID = 41786]
3. Recursive method is both computationally and memory efficient [Option ID = 41783]
4. recursive method is computationally efficient, not memory efficient [Option ID = 41785]

Correct Answer :-

- Recursive method is both computationally and memory efficient [Option ID = 41783]

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9) Given the job of sorting an array of n elements using Quicksort, what is the least number of times a specific pair of elements will be compared with each other? [Question ID = 25436]

1. log n [Option ID = 41742]
2. 0 [Option ID = 41741]
3. n [Option ID = 41740]
4. 1 [Option ID = 41739]

Correct Answer :-

- 1 [Option ID = 41739]

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10) Suppose A is finite set with n elements. The number of elements in the largest equivalence relation of A is:

[Question ID = 25439]

1. 1 [Option ID = 41753]
2. n [Option ID = 41751]
3. n^2 [Option ID = 41752]
4. n+1 [Option ID = 41754]

Correct Answer :-

- n [Option ID = 41751]

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11) An undirected graph G on 25 vertices has 5 connected components. What is the minimum number of edges G must have? [Question ID = 25441]

1. 19 [Option ID = 41761]
2. Depends on the sizes of the five connected components [Option ID = 41762]
3. 24 [Option ID = 41759]
4. 20 [Option ID = 41760]

Correct Answer :-

- 24 [Option ID = 41759]

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12) A CPU has 32-bit address bus. How much memory can it address? [Question ID = 25460]

1. 4 GB [Option ID = 41837]
2. 1 GB [Option ID = 41835]
3. 2 GB [Option ID = 41836]
4. 8 GB [Option ID = 41838]

Correct Answer :-

- 1 GB [Option ID = 41835]

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13) A page fault:

[Question ID = 25454]

1. occurs when a program accesses a page of memory [Option ID = 41812]
2. is an error in a specific page [Option ID = 41811]
3. is an access to a page not currently in memory [Option ID = 41813]
4. is a reference to a page belonging to another program [Option ID = 41814]

Correct Answer :-

- is an error in a specific page [Option ID = 41811]

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14) An operating systems contains 3 user processes, each requiring 2 units of resource R. The minimum number of units of R such that no deadlock will ever occur is

[Question ID = 25453]

1. 5 [Option ID = 41809]
2. 4 [Option ID = 41808]

3. 3 [Option ID = 41807]
4. 6 [Option ID = 41810]

Correct Answer :-

- 3 [Option ID = 41807]

15) Consider Subnet mask of class B network on the internet is 255.255.240.0. What is the maximum number of hosts per subnet?

[Question ID = 25458]

1. 4096 [Option ID = 41829]
2. 4098 [Option ID = 41827]
3. 4092 [Option ID = 41830]
4. 4094 [Option ID = 41828]

Correct Answer :-

- 4098 [Option ID = 41827]

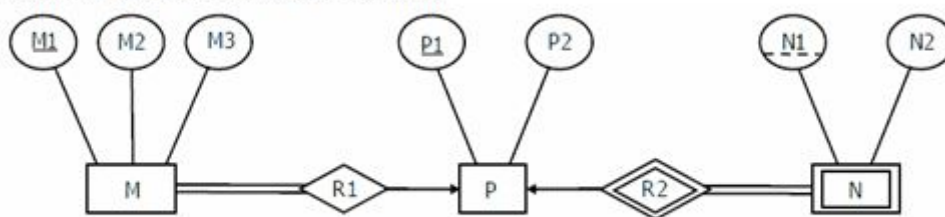**16) A complete binary tree T has 40 leaves. What is the number of internal nodes having two children?**

[Question ID = 25446]

1. 41 [Option ID = 41782]
2. 39 [Option ID = 41779]
3. 20 [Option ID = 41781]
4. 19 [Option ID = 41780]

Correct Answer :-

- 39 [Option ID = 41779]

17) Consider the following ER diagram.

The minimum number of tables needed to represent M, N, P, R1, R2 is:

[Question ID = 25521]

1. 2 [Option ID = 42079]
2. 5 [Option ID = 42082]
3. 3 [Option ID = 42080]
4. 4 [Option ID = 42081]

Correct Answer :-

- 2 [Option ID = 42079]

18)

For the given data set: 8, 4, 5, 6, 2, 1, 7, 3, the result after three iterations of merge sort will be:

[Question ID = 25437]

1. 1,2,3,4,5,6,7,8 [Option ID = 41743]
2. 3, 4, 1,2,7, 8, 5,6 [Option ID = 41746]
3. 4,8,5,6,1,2,3,7 [Option ID = 41745]
4. 4,5,6,8,1,2,7,3 [Option ID = 41744]

Correct Answer :-

- 1,2,3,4,5,6,7,8 [Option ID = 41743]

19) A graph with n vertices will surely have a circuit or a self loop, if the total number of edges are: [Question ID = 25444]

1. greater than 2n [Option ID = 41773]
2. greater than n-1 [Option ID = 41774]
3. greater than n(n-1) [Option ID = 41771]
4. greater than n(n-1)/2 [Option ID = 41772]

Correct Answer :-

- greater than n(n-1) [Option ID = 41771]

20) Consider the relation SUPPLIER(NAME, STREET, CITY). Assume that each supplier and each street within a city have a unique name, and (NAME,CITY) forms the primarykey. No other functional dependencies are implied other than those implied by primary key. Which one of the following is TRUE about the above schema? [Question ID = 25455]

1. The schema is in 3NF but not in BCNF [Option ID = 41816]
2. The schema is in BCNF [Option ID = 41815]
3. The schema is in 2NF but not in 3NF [Option ID = 41817]
4. The schema is not in 2NF [Option ID = 41818]

Correct Answer :-

- The schema is in BCNF [Option ID = 41815]

21) Dynamic memory allocation in C++ is done from the:

[Question ID = 25450]

1. Circular Queue [Option ID = 41797]
2. Bidirectional Link List [Option ID = 41798]
3. Stack [Option ID = 41795]
4. Heap [Option ID = 41796]

Correct Answer :-

- Stack [Option ID = 41795]

22) What is output of following program?

int main()
{
int a=10;
int b,c;
b = a++;
c = a;

```
cout<<a<<b<<c;
return 0;
}
```

[Question ID = 25438]

1. 111111 [Option ID = 41748]
2. 101011 [Option ID = 41749]
3. 101010 [Option ID = 41750]
4. 111011 [Option ID = 41747]

Correct Answer :-

- 111011 [Option ID = 41747]

23) Which of the following transport layer protocols is used to support electronic mail? [Question ID = 25457]

1. IP [Option ID = 41824]
2. TCP [Option ID = 41825]
3. UDP [Option ID = 41826]
4. SMTP [Option ID = 41823]

Correct Answer :-

- SMTP [Option ID = 41823]

24) Which of the following statements is TRUE in a threaded binary tree – [Question ID = 25443]

1. None of the above [Option ID = 41770]
2. The number of NULL links in a threaded is 10% of the number of threads [Option ID = 41768]
3. Inorder threading of a tree is different from its postorder threading [Option ID = 41769]
4. Deletion in a threaded is not time consuming [Option ID = 41767]

Correct Answer :-

- Deletion in a threaded is not time consuming [Option ID = 41767]

25) The preorder traversal of some binary tree produced the sequence BFCEDA, and the inorder traversal of the same tree produced the sequence FCBDEA. Which of the following is the correct postorder traversal sequence?

[Question ID = 25451]

1. BDAECF [Option ID = 41799]
2. CFDAEB [Option ID = 41800]
3. DBEAFC [Option ID = 41801]
4. None of these [Option ID = 41802]

Correct Answer :-

- BDAECF [Option ID = 41799]

Topic:- MSC_CS_T2

1) People become vegetarians for a variety of reasons. Some do it to alleviate animal suffering, others because they want to pursue a healthier lifestyle. Still others are fans of sustainability or

wish to reduce greenhouse gas emissions.

If vegetarianism is adopted by 2050, it would stave off about 7 million deaths per year, while veganism would knock that estimate up to 8 million, thanks largely to a lessening of coronary heart disease, diabetes, stroke and some cancers.

Experts suggest that food production accounts for one-quarter to one-third of all anthropogenic greenhouse gas emissions worldwide, most of it because of the livestock industry. "But just eating a little less meat right now might make things a whole lot better for our children and grandchildren." "When looking at what would be in line with avoiding dangerous levels of climate change, we found that you could only stabilise the ratio of food-related emissions to all emissions if everyone adopted a plant-based diet," Springmann, a scientist, says. "That scenario is not very realistic – but it highlights the importance that food-related emissions will play in the future." Research indicates that if everyone became vegetarian by 2050– largely thanks to the elimination of red meat – food-related emissions would drop by about 60%. With veganism instead, emission declines would be around 70%.

Should we all go vegetarian, ideally we would dedicate at least 80% of that pastureland to the restoration of grasslands and forests, which would capture carbon and further alleviate climate change. Of course, people formerly engaged in the livestock industry would also need assistance transitioning to a new career. Even those whose entire livelihoods do not depend on livestock would stand to suffer. Meat is an important part of history, tradition and cultural identity. "The cultural impact of completely giving up meat would be very big, which is why efforts to reduce meat consumption have often faltered," are researcher says.

Solution: moderation in meat-eating's frequency and portion.

In fact, clear solutions already exist for reducing greenhouse gas emissions from the livestock industry. What is lacking is the will to implement those changes.

How would eating a little less meat affect the future generations?

[Question ID = 25466]

1. Greenhouse gas emissions would drop drastically [Option ID = 41861]
2. People will have healthier and happier lifestyles [Option ID = 41859]
3. It would lead to restoration of grasslands and forests [Option ID = 41862]
4. Killing of animals for food will stop [Option ID = 41860]

Correct Answer :-

- People will have healthier and happier lifestyles [Option ID = 41859]

greenhouse gas emissions worldwide, most of it because of the livestock industry. "But just eating a little less meat right now might make things a whole lot better for our children and grandchildren." "When looking at what would be in line with avoiding dangerous levels of climate change, we found that you could only stabilise the ratio of food-related emissions to all emissions if everyone adopted a plant-based diet," Springmann, a scientist, says. "That scenario is not very realistic — but it highlights the importance that food-related emissions will play in the future." Research indicates that if everyone became vegetarian by 2050– largely thanks to the elimination of red meat – food-related emissions would drop by about 60%. With veganism instead, emission declines would be around 70%.

Should we all go vegetarian, ideally we would dedicate at least 80% of that pastureland to the restoration of grasslands and forests, which would capture carbon and further alleviate climate change. Of course, people formerly engaged in the livestock industry would also need assistance transitioning to a new career. Even those whose entire livelihoods do not depend on livestock would stand to suffer. Meat is an important part of history, tradition and cultural identity. "The cultural impact of completely giving up meat would be very big, which is why efforts to reduce meat consumption have often faltered," are researcher says.

Solution: moderation in meat-eating's frequency and portion.

In fact, clear solutions already exist for reducing greenhouse gas emissions from the livestock industry. What is lacking is the will to implement those changes.

Mark the statement that is NOT true:

[Question ID = 25468]

1. Livestock is responsible for generation of a large amount of greenhouse gases [Option ID = 41867]
2. Most diseases would vanish if we did not eat meat [Option ID = 41868]
3. We are not interested in reducing greenhouse gas emissions from the livestock industry [Option ID = 41869]
4. You could only stabilise the ratio of food-related emissions to all emissions if everyone became a vegetarian [Option ID = 41870]

Correct Answer :-

- Livestock is responsible for generation of a large amount of greenhouse gases [Option ID = 41867]

3) People become vegetarians for a variety of reasons. Some do it to alleviate animal suffering, others because they want to pursue a healthier lifestyle. Still others are fans of sustainability or wish to reduce greenhouse gas emissions.

If vegetarianism is adopted by 2050, it would stave off about 7 million deaths per year, while veganism would knock that estimate up to 8 million, thanks largely to a lessening of coronary heart disease, diabetes, stroke and some cancers.

Experts suggest that food production accounts for one-quarter to one-third of all anthropogenic greenhouse gas emissions worldwide, most of it because of the livestock industry. "But just eating a little less meat right now might make things a whole lot better for our children and grandchildren." "When looking at what would be in line with avoiding dangerous levels of climate change, we found that you could only stabilise the ratio of food-related emissions to all emissions if everyone adopted a plant-based diet," Springmann, a scientist, says. "That scenario is not very realistic — but it highlights the importance that food-related emissions will play in the future." Research indicates that if everyone became vegetarian by 2050– largely thanks to the

elimination of red meat – food-related emissions would drop by about 60%. With veganism instead, emission declines would be around 70%.

Should we all go vegetarian, ideally we would dedicate at least 80% of that pastureland to the restoration of grasslands and forests, which would capture carbon and further alleviate climate change. Of course, people formerly engaged in the livestock industry would also need assistance transitioning to a new career. Even those whose entire livelihoods do not depend on livestock would stand to suffer. Meat is an important part of history, tradition and cultural identity. "The cultural impact of completely giving up meat would be very big, which is why efforts to reduce meat consumption have often faltered," are researcher says.

Solution: moderation in meat-eating's frequency and portion.

In fact, clear solutions already exist for reducing greenhouse gas emissions from the livestock industry. What is lacking is the will to implement those changes.

Why does the author think it is unrealistic to expect everyone to adopt vegetarianism?

[Question ID = 25467]

1. Livelihoods of billions of people depend on meat industry [Option ID = 41865]
2. People are not convinced about the need to change their food habits [Option ID = 41864]
3. Meat is an inalienable part of our culture and history [Option ID = 41866]
4. It is not easy to change one's food habits [Option ID = 41863]

Correct Answer :-

- It is not easy to change one's food habits [Option ID = 41863]

4) **Read the three passages given below and answer the questions that follow. You have to mark only one option for each question:**

Passage I

"Happiness is the consequence of personal effort. You fight for it, strive for it, insist upon it, and sometimes even travel around the world looking for it," writes Elizabeth Gilbert. "You have to participate relentlessly in the manifestations of your own blessings. And once you have achieved a state of happiness, you must make a mighty effort to keep swimming upward into that happiness forever, to stay afloat on top of it. If you don't, you will leak away your innate contentment."

However, the latest scientific research suggests that such an attitude can also seriously backfire for many people – leading, for instance, to feelings of stress, loneliness, and personal failure. According to this view, happiness is best seen as kind of timid bird: the harder you strive to catch it, the further it flies away.

These findings help to explain the familiar stress and disappointment that some feel during special events such as their birthday, Christmas or New Year's Eve, or a wedding: the more you wanted to enjoy every last moment, the less fun it became, whereas an unexpectedly good trip somewhere nearby may have been a far more positive experience.

'once you stop chasing it, you might just find that it appears naturally of its own accord' means that, Iris Mauss, a U.S. psychologist's research has since shown that the desire for (and pursuit of) happiness can also increase feelings of loneliness and disconnection, perhaps because it causes you to focus your attention on yourself and your own feelings rather than appreciating

the people around you. "Self-focus might make me engage with other people less, and I might judge other people more negatively if I perceive them to 'mess' with my happiness," Mauss says.

"People might set very high standards for their own happiness as a function of this – they may think they should be happy all the time, or extremely happy, and that can set people up to feel disappointed with themselves, that they fall short – and that could have these self-defeating effects."

A study by Maglio, another researcher, has found that the conscious pursuit of happiness may backfire – it's very difficult to feel that you've reached maximum happiness. Happiness really is like a timid animal. And once you stop chasing it, you might just find that it appears naturally of its own accord.

Identify the statement that is NOT true according to the author:

[Question ID = 25465]

1. We sometimes have a feeling of stress and disappointment during special events [Option ID = 41855]
2. Our feeling of loneliness and disconnection at a wedding party is because it causes you to focus your attention on yourself rather than on others there [Option ID = 41856]
3. We are often unhappy because we expect to be happy all the time, or extremely happy [Option ID = 41857]
4. We could always be happy if we stopped trying to be happy [Option ID = 41858]

Correct Answer :-

- We sometimes have a feeling of stress and disappointment during special events [Option ID = 41855]

5) Read the three passages given below and answer the questions that follow. You have to mark only one option for each question:
Passage I
"Happiness is the consequence of personal effort. You fight for it, strive for it, insist upon it, and sometimes even travel around the world looking for it," writes Elizabeth Gilbert. "You have to participate relentlessly in the manifestations of your own blessings. And once you have achieved a state of happiness, you must make a mighty effort to keep swimming upward into that happiness forever, to stay afloat on top of it. If you don't, you will leak away your innate contentment."

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Iris Mauss, a U.S. psychologist's research has since shown that the desire for (and pursuit of) happiness can also increase feelings of loneliness and disconnection, perhaps because it causes you to focus your attention on yourself and your own feelings rather than appreciating the people around you. "Self-focus might make me engage with other people less, and I might judge other people more negatively if I perceive them to 'mess' with my happiness," Mauss says.

"People might set very high standards for their own happiness as a function of this – they may think they should be happy all the time, or extremely happy, and that can set people up to feel disappointed with themselves, that they fall short – and that could have these self-defeating effects."

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Why do we often feel stress and disappointment during a happy celebration?

[Question ID = 25463]

1. Often the way the function is being conducted is not to your liking [Option ID = 41848]
2. We might set very high standards for our own happiness [Option ID = 41850]
3. We come to focus on ourselves instead of appreciating others around us [Option ID = 41849]
4. The focus is on others and not on you [Option ID = 41847]

Correct Answer :-

- The focus is on others and not on you [Option ID = 41847]

6) Read the three passages given below and answer the questions that follow. You have to mark only one option for each question:
Passage I
"Happiness is the consequence of personal effort. You fight for it, strive for it, insist upon it, and sometimes even travel around the world looking for it," writes Elizabeth Gilbert. "You have to participate relentlessly in the manifestations of your own blessings. And once you have achieved a state of happiness, you must make a mighty effort to keep swimming upward into that happiness forever, to stay afloat on top of it. If you don't, you will leak away your innate contentment."

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'once you stop chasing it, you might just find that it appears naturally of its own accord' means that, Iris Mauss, a U.S. psychologist's research has since shown that the desire for (and pursuit of) happiness can also increase feelings of loneliness and disconnection, perhaps because it causes you to focus your attention on yourself and your own feelings rather than appreciating the people around you. "Self-focus might make me engage with other people less, and I might judge other people more negatively if I perceive them to 'mess' with my happiness," Mauss says.

"People might set very high standards for their own happiness as a function of this – they may think they should be happy all the time, or extremely happy, and that can set people up to feel

disappointed with themselves, that they fall short — and that could have these self-defeating effects."

A study by Maglio, another researcher, has found that the conscious pursuit of happiness may backfire — it's very difficult to feel that you've reached maximum happiness. Happiness really is like a timid animal. And once you stop chasing it, you might just find that it appears naturally of its own accord.

[Question ID = 25464]

1. Happiness really is a timid animal [Option ID = 41851]
2. Happiness is the consequence of sustained efforts [Option ID = 41854]
3. The more you want to enjoy every last moment, the less fun it becomes [Option ID = 41852]
4. It comes to you when you stop consciously seeking happiness [Option ID = 41853]

Correct Answer :-

- Happiness really is a timid animal [Option ID = 41851]

7) Read the three passages given below and answer the questions that follow. You have to mark only one option for each question:
Passage I
"Happiness is the consequence of personal effort. You fight for it, strive for it, insist upon it, and sometimes even travel around the world looking for it," writes Elizabeth Gilbert. "You have to participate relentlessly in the manifestations of your own blessings. And once you have achieved a state of happiness, you must make a mighty effort to keep swimming upward into that happiness forever, to stay afloat on top of it. If you don't, you will leak away your innate contentment."

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What is the traditional view about pursuit of happiness?

[Question ID = 25462]

1. Relentless pursuit of happiness does not bring you any happiness [Option ID = 41843]
2. Happiness comes to you if you stop chasing it [Option ID = 41845]
3. Looking for permanent happiness only results in a sense of failure [Option ID = 41844]
4. You have to strive hard to achieve happiness and make greater efforts to retain it [Option ID = 41846]

Correct Answer :-

- Relentless pursuit of happiness does not bring you any happiness [Option ID = 41843]

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8) The manner in which instruction is imparted in our schools and colleges has not changed much from the 20th century to the 21st century. Much of the knowledge is taught in our schools and colleges today prepares the student to pass examinations but not to analyse the knowledge in a context and apply that knowledge to practical problems. No wonder that many of the information technology firms that go to engineering colleges for campus recruitment find that 90% of the candidates are unfit for jobs.

A noted educator in a Ted talk explained why judging students based on marks obtained in examinations is amiss. A student who obtains 60% marks in an examination passes out in first class. He is lauded for his achievement. But he still has a 40% deficit. He compares this situation to a motor car running with three wheels. To be able to be a truly knowledgeable person, one has tointernalise the concepts with his already known knowledge, build on them and apply them. If you know only 40% or 60% of your curriculum, you miss the connections that link you to the whole, and the 60% knowledge which is partial will be of no use.

A fundamental thing missing from our schools and colleges is the context. A student is taught knowledge given in the books. But the student has to apply that knowledge in the society or community in which he lives. How well he communicates his ideas to others, how well he understands his emotions and emotions of others, to know how human psyche works and how to work in a team are all paramount to navigate life. These skills are not taught in schools or colleges.

How to provide a holistic and useful education to the young generation? It has to be through parental awareness about what their progeny are missing in schools and colleges. Parents and educationists may do well to note the words of Albert Einstein on the true purpose of education. "The value of college education is not the learning of many facts but the training of the mind to think."

Mark the statement that aptly sums up the passage

[Question ID = 25471]

1. Is examination-oriented education enough today? [Option ID = 41882]
2. We are missing the wood for the trees [Option ID = 41879]
3. Is our education relevant? [Option ID = 41880]
4. Need for a holistic and useful education [Option ID = 41881]

Correct Answer :-

- We are missing the wood for the trees [Option ID = 41879]

9) The manner in which instruction is imparted in our schools and colleges has not changed much from the 20th century to the 21st century. Much of the knowledge is taught in our schools and colleges today prepares the student to pass examinations but not to analyse the knowledge in a context and apply that knowledge to practical problems. No wonder that many of the information technology firms that go to engineering colleges for campus recruitment find that 90% of the candidates are unfit for jobs.

A noted educator in a Ted talk explained why judging students based on marks obtained in examinations is amiss. A student who obtains 60% marks in an examination passes out in first class. He is lauded for his achievement. But he still has a 40% deficit. He compares this situation to a motor car running with three wheels. To be able to be a truly knowledgeable person, one has tointernalise the concepts with his already known knowledge, build on them and apply them. If you know only 40% or 60% of your curriculum, you miss the connections that link you to the whole, and the 60% knowledge which is partial will be of no use.

A fundamental thing missing from our schools and colleges is the context. A student is taught knowledge given in the books. But the student has to apply that knowledge in the society or community in which he lives. How well he communicates his ideas to others, how well he understands his emotions and emotions of others, to know how human psyche works and how to work in a team are all paramount to navigate life. These skills are not taught in schools or colleges.

How to provide a holistic and useful education to the young generation? It has to be through parental awareness about what their progeny are missing in schools and colleges. Parents and educationists may do well to note the words of Albert Einstein on the true purpose of education. "The value of college education is not the learning of many facts but the training of the mind to think."

What is the basic flaw in our education system today?

[Question ID = 25469]

1. It focuses on examinations rather than on application of knowledge to practical problems [Option ID = 41872]
2. It has not changed much from the 20th century to the 21st century. [Option ID = 41871]
3. Students passing out from engineering colleges are unfit for jobs [Option ID = 41873]
4. All of these [Option ID = 41874]

Correct Answer :-

- It has not changed much from the 20th century to the 21st century. [Option ID = 41871]

10) The manner in which instruction is imparted in our schools and colleges has not changed much from the 20th century to the 21st century. Much of the knowledge is taught in our schools and colleges today prepares the student to pass examinations but not to analyse the knowledge in a context and apply that knowledge to practical problems. No wonder that many of the information technology firms that go to engineering colleges for campus recruitment find that 90% of the candidates are unfit for jobs.

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What does 'If you know only 40% or 60% of your curriculum, you miss the connections that link you to the whole' mean?

[Question ID = 25470]

1. A student with a first class does not have in-depth knowledge of concepts to understand them and apply them in practice [Option ID = 41875]
2. He does not learn to understand and appreciate the beauty and complexity of life [Option ID = 41878]
3. He has not learnt how to use his knowledge in the society or community in which he lives [Option ID = 41876]
4. He has not learnt how to work in a team to be able to navigate life [Option ID = 41877]

Correct Answer :-

- A student with a first class does not have in-depth knowledge of concepts to understand them and apply them in practice [Option ID = 41875]

Topic:- MSC_CS_T3

1) If the sum of the reciprocals of the intercepts made by a plane on y and z axes exceeds its reciprocal made on x-axis by 3, then the plane always passes through which of the following points? [Question ID = 25515]

1. $\left(\dfrac{-1}{3},\dfrac{1}{3},\dfrac{1}{3}\right)$ [Option ID = 42057]

2. $\left(\dfrac{1}{3},\dfrac{1}{3},\dfrac{-1}{3}\right)$ [Option ID = 42055]

3. $\left(\dfrac{1}{3},\dfrac{-1}{3},\dfrac{-1}{3}\right)$ [Option ID = 42058]

4. $\left(\dfrac{1}{3},\dfrac{-1}{3},\dfrac{1}{3}\right)$ [Option ID = 42056]

Correct Answer :-

- $\left(\dfrac{1}{3},\dfrac{1}{3},\dfrac{-1}{3}\right)$ [Option ID = 42055]

2) If two roots of the equation $x^3-3x^2-4x+12=0$ are of opposite signs, then the sum of squares of the reciprocals of all its roots is

[Question ID = 25473]

1. 13 /18 [Option ID = 41890]
2. 11 /18 [Option ID = 41889]
3. 5 / 18 [Option ID = 41887]
4. 7 /18 [Option ID = 41888]

Correct Answer :-

- 5 / 18 [Option ID = 41887]

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3) Analysis of the results of Computer Science shows that 75% of students fail in course X. What is the probability that of 6 randomly selected students, 4 will pass?

[Question ID = 25487]

1. .03 [Option ID = 41944]
2. .09 [Option ID = 41943]
3. .01 [Option ID = 41946]
4. .07 [Option ID = 41945]

Correct Answer :-

- .09 [Option ID = 41943]

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4) If any tangent to the ellipse,$2x^2+3y^2=6$ intercepts lengths p and q on the coordinate axes, then

[Question ID = 25514]

1. $\dfrac{1}{p^2} + \dfrac{1}{q^2} = 2$ [Option ID = 42053]

2. $\dfrac{3}{p^2} + \dfrac{2}{q^2} = 1$ [Option ID = 42051]

3. $\dfrac{1}{p^2} + \dfrac{2}{q^2} = 3$ [Option ID = 42054]

4. $\dfrac{2}{p^2} + \dfrac{3}{q^2} = 1$ [Option ID = 42052]

Correct Answer :-

- $\dfrac{3}{p^2} + \dfrac{2}{q^2} = 1$ [Option ID = 42051]

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5) If the system of linear equations
x-3y+4z=3
2x-5y+6z=6
3x-8y+λz=μ
has infinitely many solutions, then λ/μ is equal to

[Question ID = 25474]

1. 6 / 5 [Option ID = 41893]
2. 9 / 10 [Option ID = 41891]

3. 5 / 6 [Option ID = 41894]
4. 10 / 9 [Option ID = 41892]

Correct Answer :-

- 9 / 10 [Option ID = 41891]

6) $\lim_{x \to 0^+} (\cot x)^{\frac{1}{\log x}}$ is equal to

[Question ID = 25510]

1. e^2 [Option ID = 42037]
2. e [Option ID = 42036]
3. 1/ e [Option ID = 42035]
4. 1/ e^2 [Option ID = 42038]

Correct Answer :-

- 1/ e [Option ID = 42035]

7) For two events A and B, if $P(A|B) = \frac{4}{5}$ and $P(B|A) = \frac{1}{2}$; then $P(A|A \cup B)$ is equal to

[Question ID = 25519]

1. 6 / 7 [Option ID = 42072]
2. 5 / 6 [Option ID = 42071]
3. 7 / 8 [Option ID = 42073]
4. 8 / 9 [Option ID = 42074]

Correct Answer :-

- 5 / 6 [Option ID = 42071]

8)
. The eigen values of the matrix $A = \begin{bmatrix} 2 & 2 & 1 \\ 1 & 3 & 1 \\ 1 & 2 & 2 \end{bmatrix}$ are

[Question ID = 25518]

1. all real and distinct [Option ID = 42067]
2. all real and all are equal [Option ID = 42069]
3. all real and two of them are equal [Option ID = 42068]
4. all complex [Option ID = 42070]

Correct Answer :-

- all real and distinct [Option ID = 42067]

9) The integral $\int \cot^{-1} \left(\sqrt{\frac{1+x}{1-x}} \right) dx$ is equal to

(where *k* is the constant of integration)

[Question ID = 25512]

1. $x \cos^{-1} x + \sqrt{1-x^2} + k$ [Option ID = 42044]
2. $x \cos^{-1} x - \sqrt{1-x^2} + k$ [Option ID = 42043]
3. $\frac{1}{2}(x \cos^{-1} x + \sqrt{1-x^2}) + k$ [Option ID = 42045]
4. $\frac{1}{2}(x \cos^{-1} x - \sqrt{1-x^2}) + k$ [Option ID = 42046]

Correct Answer :-

- $x \cos^{-1} x - \sqrt{1-x^2} + k$ [Option ID = 42043]

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10) If for four vectors $\vec{a}$, $\vec{b}, \vec{c}$ and $\vec{d}$

$$\vec{a} \times \vec{b} = \vec{c} \times \vec{d} \quad \text{and} \quad \vec{a} \times \vec{c} = \vec{b} \times \vec{d}$$

then which of the following pairs of vectors are parallel?

[Question ID = 25516]

1. $\vec{a} - \vec{d}$ and $\vec{b} - \vec{c}$ [Option ID = 42059]
2. $\vec{a} - \vec{c}$ and $\vec{b} - \vec{d}$ [Option ID = 42060]
3. $\vec{b} - \vec{d}$ and $\vec{c} - \vec{b}$ [Option ID = 42062]
4. $\vec{a} - \vec{b}$ and $\vec{c} - \vec{d}$ [Option ID = 42061]

Correct Answer :-

- $\vec{a} - \vec{d}$ and $\vec{b} - \vec{c}$ [Option ID = 42059]

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11) If $y = \frac{\sin^{-1} x}{\sqrt{1-x^2}}$ $(x \neq \pm 1)$, then y_{n+2} is equal to

[Question ID = 25511]

1. $(1-x^2)^{-1}\{(2n+3)xy_{n+1}-(n+1)^2 y_n\}$ [Option ID = 42040]
2. $(1-x^2)^{-1}\{(2n+3)xy_{n+1}+(n+1)^2 y_n\}$ [Option ID = 42039]
3. $(2n+3)xy_{n+1}+(n-1)^2 y_n$ [Option ID = 42042]
4. $(2n+3)xy_{n+1}+(n+1)^2 y_n$ [Option ID = 42041]

Correct Answer :-

- $(1-x^2)^{-1}\{(2n+3)xy_{n+1}+(n+1)^2 y_n\}$ [Option ID = 42039]

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12)

If $y = y(x)$ is the solution of the differential equation, $(x+y)^2 \frac{dy}{dx} = 4$ such that $y(0) = 2$, then the value of x, when $y = 0$, is

[Question ID = 25513]

1. $\cot\left(\frac{\pi}{4} - 1\right)$ [Option ID = 42049]

2. $2\tan\left(\frac{\pi}{4}+1\right)$ [Option ID = 42047]

3. $\cot\left(\frac{\pi}{4}+1\right)$ [Option ID = 42050]

4. $2\tan\left(\frac{\pi}{4}-1\right)$ [Option ID = 42048]

Correct Answer :-

- $2\tan\left(\frac{\pi}{4}+1\right)$ [Option ID = 42047]

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13) If cosα+ 3 cos β+ 5 cos γ = 0 = sin α + 3 sin β + 5 sin γ and sin3 α+ 27 sin 3β + 125 sin3γ=k sin (α+β+γ), then k is equal to

[Question ID = 25475]

1. 10 [Option ID = 41895]
2. 15 [Option ID = 41896]
3. 45 [Option ID = 41898]
4. 30 [Option ID = 41897]

Correct Answer :-

- 10 [Option ID = 41895]

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14) Let R denote the set of real numbers and Z denote the set of integers. Then which of the following is a group, w.r.t composition mentioned against it?

[Question ID = 25517]

1. $\langle \mathbb{Z}, * \rangle$ with $a * b = \max\{a, b\}$ [Option ID = 42065]
2. $\langle \mathbb{R}, * \rangle$ with $a * b = a + b - ab$ [Option ID = 42063]
3. $\langle \mathbb{Z}, * \rangle$ with $a * b = a + b + 1$ [Option ID = 42066]
4. $\langle \mathbb{R}, * \rangle$ with $a * b = \min\{a, b\}$ [Option ID = 42064]

Correct Answer :-

- $\langle \mathbb{R}, * \rangle$ with $a * b = a + b - ab$ [Option ID = 42063]

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15) The area (in sq. units) bounded by the curve, x=4 cos³θ and y=4 sin³θ in the first quadrant is

[Question ID = 25479]

1. 2π [Option ID = 41914]
2. π/2 [Option ID = 41911]
3. π [Option ID = 41912]
4. 3π / 2 [Option ID = 41913]

Correct Answer :-

- π/2 [Option ID = 41911]