MBA & MCA: Sections

Section 1 – Language Comprehension

Directions for Question 1 -5:

Read the passage and answer the questions that follow on the basis of the information provided in the passage.

An ambitious new NASA research project aims to answer perhaps the most vexing and profound of scientific mysteries: How did life on Earth begin?

The multimillion-dollar undertaking, led by the NASA Goddard Space Flight Center in Greenbelt, Maryland, brings together an interdisciplinary team of scientists from around the world to study how organic molecules are created in interstellar clouds and delivered to planets as they form.

The research will focus on the role of comets. Many scientists believe there is increasing evidence that comets supplied at least part of the raw material for the origin of life on Earth. The theory is changing the way scientists think about life in the universe and raises the possibility of alien worlds.

"Our mission is to gain a greater understanding of the origin and evolution of organic material on Earth," said Michael Mumma, a comet expert and director of the Goddard Center for Astrobiology, NASA Astrobiology Institute, who is leading the research. "The key question is: Were water and organic molecules delivered to Earth by cometary impact and does that process extend to planets elsewhere?"

Astronomers believe that stars, planets, and comets form in a massive chain reaction that begins when a cloud of interstellar material collapses under its own gravity. Some of the material forms the star—like our sun—and some of it gets spread out in a disk around the nascent star.

Some material in this disk later aggregates and forms planets. Close to the sun, where it's warm, leftover debris (rocky material) turns into asteroids. In the outer regions, where it's cold, icy chunks of rock and dust turn into comets.

It is generally believed that organic molecules, which contain carbon atoms and are present in all life forms known to science, are trapped in large amounts in both interstellar clouds and comets.

"We have definite evidence from our radio observations that there's quite an array of organic molecules in interstellar space," said Bill Irvine, a professor of astronomy at the University of Massachusetts in Amherst, who is measuring radio waves from celestial objects as part of the research effort.

There's other evidence that comets contain organic material. When European spacecraft analyzed dust particles from the Halley comet in 1986, it turned out to be some of the most organic-rich material measured in the solar system. Meteorites that have hit Earth contain a whole suite of molecules, including amino acids, which play an important role in terrestrial biology.

"If such material exists in meteorites, which come from a class of asteroids, there's every reason to think it must also exist in comets," Irvine said.

1) The new NASA research project:

A) Aims to find out how life on Earth began
B) Focuses on the role of comets
C) Has a mission to gain a greater understanding of the origin and evolution of organic material on Earth
D) All the options

2) Which of the following is TRUE?

A) Astronomers believe that stars, planets and comets form in a massive chain reaction.
B) Research has confirmed that life was brought on Earth by the comets.
C) Research has confirmed that life was brought to Earth by asteroids.
D) Research shows that our solar system is quite abnormal.

3) Comets are formed from the:

A) Leftover debris near the sun
B) Leftover debris farther away from the sun
C) Organic molecules in the interstellar region
D) Interstellar clouds and comets

4) Which of the following is TRUE about the Halley's comet?

A) It appeared in 1886
B) Dust particles from the Halley's comet had organic-rich material.
C) Halley's comet was visible for 72 hours from a part of the Earth.
D) Halley's comet is the largest comet discovered.

5) Michael Mumma is a:

A) Comet   B) Comet expert   C) Publisher   D) Solar radiation expert

Identify the CORRECT statement in the following question.

6)
i) John has been having a very difficult time in his office recently.
ii) The strategy of the Indian team is beginning to pay off; they are winning more matches now.
iii) It's time somebody woke him up; he is sleeping for the last three hours.
iv) Sheila is intending to study medicine after she finishes her 12th grade.

A) i, ii   B) ii, iii   C) i, iii   D) ii, iv

Fill in the blanks with the correct option.

7) The magazine provides season-ending features _____ its all-Star Rookie team along with Player and Pitcher of the Year ratings.

A) In   B) Into   C) On   D) Onto

Section 2 – Mathematical Skills

1) For each positive number x,

$$f(x) = \frac{\left[x + \frac{1}{x}\right]^6 - \left[x^6 + \frac{1}{x^6}\right] - 2}{\left[x + \frac{1}{x}\right]^3 - \left[x^3 + \frac{1}{x^3}\right]}$$

Let the minimum value of $f(x)$ is

A) 1   B) 2   C) 4   D) 6

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2) In ΔADE, ∠ADE = 1400 points B and C lie on sides AD and AE, respectively, and points A, B, C, D, E are distinct. If lengths AB, BC, CD and DE are all equal, then the measure of ∠EAD is

A) 5^0 B) 6^0 C) 7.5^0 D) 10^0

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3) The price of a product increases by 25%, what should be the percentage of reduction in consumption so that the expenditure is constant?

A) 20%   B) 25%   C) 17.5%   D) 30%

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4) Shyam is 3 times more efficient than Ram. If Shyam takes 3 days to finish a job, then how long will it take to finish the job if Ram and Shyam work together?

A) 2 1/4 days   B) 2 days   C) 2 1/2 days   D) 2 3/4 days

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5) A invested Rs.5000 and B invested Rs.65000 to start a business. Both of them gave equal time to the work. 30% of the profit is divided equally between them. The remaining is divided in the ratio of their investment. Find the ratio of the total earnings of A and B.

A) 1:13   B) 13:1   C) 1:4   D) 4:1

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6) If $\dfrac{(13!)^{16} - (13!)^8}{(13!)^8 + (13!)^4} = a$ **. what is the units digit of** $\dfrac{a}{(13!)^4}$ **?**
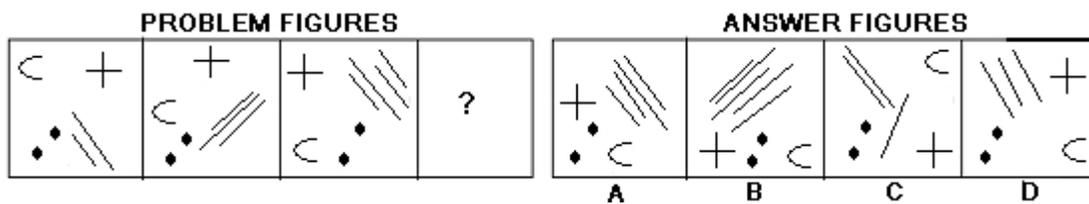
A) 0   B) 1   C) 9   D) 5

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7) If 3x - 2y - z = 32 + z and $\sqrt{3}x - \sqrt{2}y + 2z = 4$ **what is the value of x + y + z?**

A) 14   B) 9   C) 10   D) 12

Section 3 – Basic Aptitude

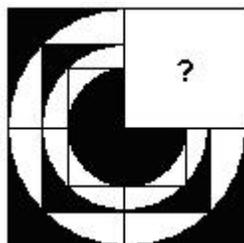**1) Complete the series:**

A) A   B) B   C) C   D) D

2) Which of the options completes the problem figure?

A)   B)   C)   D)

3) Identify the missing number in the series 1, 8, 27, 64, 125, 216, ___, 512.

A) 343   B) 313   C) 333   D) 323

Directions for Question 4:

In each question below, 2 assumptions follow a statement. Identify the assumption which is implicit in the statement. Choose

(A) If only assumption (i) is implicit.
(B) If only assumption (ii) is implicit.
(C) If both (i) and (ii) are implicit.
(D) If neither (i) nor (ii) is implicit

4) Statement: Doctors advice to eat an apple every day.

Assumptions I: The cost of an apple is less.
Assumptions II: Apple is a nutritious fruit.

A) A   B) B   C) C   D) D

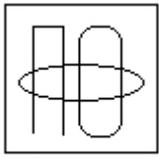**Directions for Questions 5:**

In the following questions, mark.

1, if statement I alone can help determine the conclusion
2, if statement II alone can help determine the conclusion
3, if statement I and II taken together can help determine the conclusion
4, if none of the statements, taken together or separately, can help determine the conclusion

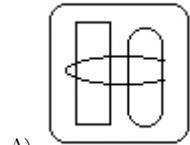**5) Conclusions: Hrithik Roshan has acted in a superhit movie.**

Statement I: Hrithik Roshan is the hero of the movie "Kaho Na Pyar Hai".
Statement II: "Kaho Na Pyar Hai" is not a superhit movie.

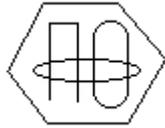A) 1   B) 2   C) 3   D) 4

6) Choose the image, which is similar to the problem image:
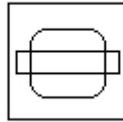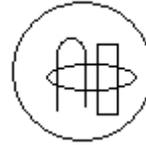

Problem

A)

B)

C)

D)

Section 4 – Logical Reasoning

Directions for Questions 1-2:

Applications are invited for the post of senior lecturers/professors in a management institute. Following are the criteria laid down for the selection. The candidate must:

i. Not be more than 50 years of age as on 1 July 2004.
ii. Have a I or II class Master's degree in the relevant subject.
iii. Have a PhD or published research work in Indian or foreign journals of repute.
iv. Have teaching experience or research guide for at least 10 years.
v. Have at least 10 years professional or administrative experience in a government college/university.
vi. Have proven merit in writing and publication work.

However, if a candidate fulfills all the requisite criteria, EXCEPT:

a. Condition (i), but is not more than 55 years of age, refer to the director.
b. Condition (vi), but has 15 years experience for condition (iv), refer to the Administrative officer.

1) Sujoy was 46 years of age as on 18th March 2002. He has more than 75% marks during his academic career. He has been teaching in a university since 1992 and proven his merit in publication work. He has a PhD.

A) Selected
C) Referred to the Administrative Officer

B) Referred to the Director
D) Data Inadequate

2) Pradip got 65% in PG. He is 53 years old and has proved his merit in both writing and publication work. He has around 13 years administrative experience in a government college. He has published several research articles and essays in Indian and foreign journals.

A) Selected
C) Referred to the Administrative Officer

B) Referred to the Director
D) Data Inadequate

Directions for Questions 3:

Read the following information and answer the questions that follow:

A bus has exactly six stops on its route. The bus first stops at Stop I, then at Stop II, then at Stop III, then at Stop IV, then at V and at Stop VI respectively. After the bus leaves Stop VI, it turns and returns to Stop I and repeats the cycle. The stops are at six buildings - L, M, N, O, P and Q, not necessarily in the same order.

Stop III is at P.
Stop VI is at M.
Building O is immediately before building Q.
Buliding N is immediately before Building L

3) If the Stop IV is at N, which among the following must be the building immediately before P?

A) O   B) Q   C) N   D) L

4) If Stop II is at L, which among the following must be the building immediately before M?

A) N   B) L   C) P   D) Q

5) In a family of six members A, B, C, D, E and F, C and D are among the married people but they are not married to each other. There is at least one unmarried person in the family. All married people are present with their respective spouses in the room. C is related to the family through marriage, and A is her father-in-law. D has one son and one daughter. F has a son but he is not E. How is B related to E?

A) Nephew   B) Aunt   C) Uncle   D) Niece

6) Assume that you are in a city with streets that go only North - South and East - West. You start from an intersection marked S and want to travel to an intersection T. How many different ways are there to go from S to T if you only travel East and South (Right and Down)?
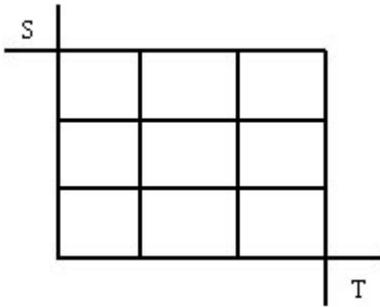
A) 15　　　　　　　　　　B) 10　　　　　　　　　C) 25　　　　　　　　　D) 20

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7) In a certain code, **"SEE ME TODAY"** is written as **"I LIKE YOU"**, **"TODAY IS FRIDAY"** is written as **"KIDS LIKE CARTOONS"**, **"GOOD FRIDAY"** is written as **"SMART KIDS"** and **"YOU KNOW ME"** is written as **"I TOLD HER"**. How is **"GOOD IS ME"** written in that code?

A) I SMART CARTOONS　　　　　　　　　B) LIKE SMART CARTOONS
C) KIDS LIKE CARTOONS　　　　　　　　D) Insufficient data