

SECTION – A – (ENGLISH)

*Direction: for Q1-5: Read the given passage carefully and answer the questions that follow.*

As local fishermen tell it, the deep blue “Dragon hole” in the Paracel Islands, called the “eye” of the South China Sea, is where the monkey king in “Journey to the West” acquired his famous golden cudgel.

The mythical tale was published in the 16<sup>th</sup> century and is among the four great classical novels of Chinese literature. Last week, the Dragon Hole earned a new claim to fame.

After nearly a year of exploration, Chinese researchers have determined that the underwater sinkhole is likely the world’s deepest, reaching about 987 below the surface and surpassing the previous record holder, Dean’s Blue Hole near the Bahamas, by more than 300 feet,

Xinhua News Agency reported.

Blue holes are named as such for their rich, dark blue colouring a stark contrast to the otherwise aqua water that surrounds them.

Best described as underwater entrances and extend below sea level, mirroring the appearance of a sinkhole.

Researchers with the Sanya Ship Research Institute for Coral Protection began exploring Dragon Hole, known as Longdong, in August 2015 and completed the project last month Xinhua reported. It measures about 426 feet wide and is almost deep enough to hold the entire Eiffel Tower.

The research team used a video ray pro 4 underwater robot to explore the sinkhole reported CCTV News, where they discovered more than 20 species of fish and marine life near the surface of the vertical cave. Researchers told the television station that after about 330 feet, the water is oxygen free and likely unable to support life.

Across the globe, blue holes have been the source of magnificent discovery. Last year, the Guardian reported that a study conducted by scientists from Rice University and Louisiana State University found that sediment samples from the ancient Great Blue Hole in Belize confirmed the theory that ‘drought and climate conditions pushed the Mayans from a regional power to a smattering of rival survivors and finally a virtually lost civilization.’

Divers flock to the Great Blue Hole, surrounded by shallow, lagoon waters and a coral island. According to Atlas Obscura reported. Cousteau also confirmed that the sinkhole had formed when a limestone cave formation collapsed after the glacial period.

Dean’s Blue Hole, located near Long Island in the Bahamas, was previously considered the world’s deepest underwater sinkhole. Also a top location for divers, Dean Blue Hole has a diameter of about 82-115 feet on the surface, report Atlas Obscura, but widens to about 330 feet as it deepens.

According to the publication, water there is very clear with visibility as far as 115 feet down. Maximum depth in other blue holes scattered throughout the Bahamas and other parts of the world hover around 360 feet, but Deans Blue Hole extends far beyond at 663 feet dep. The newly discovered Dragon Hole is even more exceptional, reaching depths of almost 1,000 feet.

1. Which of the following confirmed the theory that drought and climate conditions were responsible for pushing the mayans civilization to the level of the being virtually the lost one?
  - (A) The mythical tale published in the 16<sup>th</sup> century.
  - (B) The sediment samples from the ancient Great Blue Hole in Belize.
  - (C) The famous explorer Jacques Cousteau.
  - (D) The report of Atlas Obscura.
  - (E) None of these.
  
2. "Last week" the Dragon Hole earned a new claim to *fame.*" What is that new claim?
  - (A) World's best location for diving.
  - (B) Availability of more than 20 species of fish and marine life.
  - (C) Recognition as the? "eye" of the South China Sea.
  - (D) Deepest blue hole in the world.
  - (E) None of these.
  
3. Why the "Dragon Hole" is called a blue hole?
  - (A) Because it is located in the midst of sea or ocean.
  - (B) Because its water is very clear with the visibility as far as 115 feet down.
  - (C) It is the top location for divers.
  - (D) Because of its rich, dark blue colouring, a stark contrast to otherwise qua water that surrounds it.
  - (E) None of these.
  
4. Which of the following is true?
  - (A) Blue holes are under water caves.
  - (B) Blue holes are the mirrors of underwater marine lives.
  - (C) Blue holes are actually the passages for reaching the base of the sea.
  - (D) None of these.
  
5. "... The sinkhole had formed when a limestone cave formation collapsed after the glacial period."Which sinkhole has been referred here?

- (A) The dragon Hole
- (B) Deans Blue Hole
- (C) The Great Blue Hole
- (D) All of these
- (E) None of these.

6. Change the voice.

*We hope that we will win the match.*

- (A) Match winning is our hope.
- (B) The match is hoped to be won.
- (C) Winning the match is hoped by us.
- (D) It is hoped that the match will be won by us.
- (E) None of these.

7. Give a correct question tag.

*I'm clever, \_\_\_\_\_?*

- (A) Am I not
- (B) Aren't I
- (C) Isn't It
- (D) Am not I
- (E) None of these.

8. Identify the sentence which is grammatically incorrect.

- (A) You walk faster than I.
- (B) I have not and shall not derive pleasure from teasing girls.
- (C) He derives pleasure from testing girls.
- (D) She did nothing pleasure from teasing girls.
- (E) None of these.

9. Give the synonym of the word written in capital letters below:

L A R G E S S E

- (A) Splendid
- (B) Write-off
- (C) Bride
- (D) Extravagant
- (E) None of these.

10. Identify the miss spelt word.

- (A) Promissory
- (B) Cursory

- (C) Preparatory
- (D) Emissary
- (E) None of these.

SECTION – B (MENTAL ABILITY & REASONING)

1. If "LOVE" is related to "VELO" and 'HATE' is related to 'TEHA' in the same way as 'LIKE' is related to ' \_\_\_\_ '.

  - A. IELK
  - B. KELI
  - C. KLEI
  - D. ILEK
  - E. None of these.

  
2. Among A,B,C,D and E each having a different height  
B is taller than D. E. Is shorter than A.C is taller than B but shorter than E. Who among them is the taller?

  - A. A
  - B. B
  - C. C
  - D. D
  - E. None of these.

  
3. A,B,C,D,E,F and G are the members of a family consisting of four adults and three children, two of whom (F and G) are girls. A and D are brothers and A is a lawyer. E is Professor Married to one of the brothers and two children. B is married to D and G is their child. C is:

  - A. G's brother
  - B. F's father
  - C. E's daughter
  - D. A's Son
  - E. None of these.

  
4. Choose the correct number in place of the sing of interrogation?

  - A. 6
  - B. 8
  - C. 7
  - D. 3
  - E. None of these.

5. Choose correct option in place of the question mark (?)
- A. 16
  - B. 28
  - C. 49
  - D. 54
  - E. None of these.
6. Two buses start from the opposite points of a main road, 150 km apart. The first bus runs for 25 km and takes a right turn and then runs for 15 km. It then turns left and runs for another 25 km then it takes left again to reach the main road. In the meantime, due to a minor breakdown, the other bus has run only 35 km along the main road. What would be the distance between the two buses at the point?
- A. 60 km
  - B. 65 km
  - C. 75 km
  - D. 85 km
  - E. None of these.
7. Which is the number that should come next in the given below series?
- A. 123
  - B. 112
  - C. 96
  - D. 75
  - E. None of these.
8. Among 6 persons, Ravi is elder than Mohan but younger than Rohit. Arpit is elder than only 1 person. Sachin is younger than Deepak, who is third eldest among them while Mohan is not the youngest. If they are arranged in descending order of their age then how many persons are there between Rohit and Sachin ?
- A. One
  - B. Two
  - C. Three
  - D. Four
  - E. None of these.

9. Which one set of letters when sequentially placed at the gaps in the given letter series shall complete it?

- A. Daabbc
- B. bdbcba
- C. adabcd
- D. adbcbb
- E. None of these.

10. Find the missing term in the series:

PMD, SLF, VKH,

- A. YJJ
- B. XIJ
- C. YJK
- D. SOWS
- E. None of these.

SECTION – (SCIENCE)

1. The muscles of the iris control the:
  - A. Focal length of eye lens
  - B. Amount of light entering the eye.
  - C. Shape of crystalline lens
  - D. Movement of optic nerves
  - E. None of these.
  
2. An element X is in group no. 13 of the periodic table. What is the formula of its oxide?
  - A.  $X_3 O_2$
  - B.  $XO_3$
  - C.  $X_2 O_3$
  - D.  $X_2 O_5$
  - E. None of these.
  
3. Which of the following is not a part of a nephron?
  - A. Henle's loop
  - B. Glomerulus
  - C. Proximal convoluted tubule
  - D. Distal convoluted tubule
  - E. None of these.
  
4. Which among the following is an artificial ecosystem ?
  - A. River
  - B. Ocean
  - C. Lake
  - D. Forest
  - E. None of these.
  
5. Which of the following parts of brain is known as centre of smell?
  - A. Cerebral cortex
  - B. Optic lobes
  - C. Olfactory lobes
  - D. Pons
  - E. None of these.



6. How long a chain reaction will take for fission of all nuclei present in 1kg of U-235?
- A. One hour
  - B. One day
  - C. Between 3 and 5 minutes
  - D. Less than 1 minutes
  - E. None of these.
7. Which among the following is an example of unsaturated cyclic hydrocarbon?
- A. Benzene
  - B. Cyclopentane
  - C. Cyclohexane
  - D. All the above
  - E. None of these.
8. Which of the following gas is produced when acid reacts with metal carbonate?
- A. Hydrogen
  - B. Oxygen
  - C. Carbon Dioxide
  - D. All of these.
  - E. None of these.
9. Pineal gland is found in which of the following organs in our body?
- A. Heart
  - B. Lung
  - C. Liver
  - D. Kidney
  - E. None of these.
10. A wire of resistance  $R$  is cut into five equal parts. These five parts are then connected in parallel, if the equivalent resistance of this combination be  $R'$  then calculate the ratio  $R/R'$
- A. 5
  - B. 1
  - C. 25
  - D. 7
  - E. None of these.

SECTION – D (MATHS)

1. Find the value of K if the points A ( $K + 3, K - 1$ ), B ( $2K - 3, K - 3$ ) and C( $5K + 1, 2K$ ) are collinear.  
  
A. 2  
B. 5  
C. 7  
D. -1  
E. None of these.
  
2. Find the value of k for which zeroes of the polynomial  $f(n) = n^3 + 12n^2 + 39n + K$  are in A.P.  
  
A. 28  
B. 45  
C. 49  
D. 60  
E. None of these.
  
3. The line joining the points (2,1) and (5,8) is trisected at the point P and Q line on the line  $2x - y + k = 0$ , Find the value of k.  
  
A. 5  
B. -6  
C. -8  
D. 12  
E. None of these.
  
4. Find the curved surface area of a bucket whose slant height is 4cm and circular ends 18cm and 6cm.  
  
A.  $46 \text{ cm}^2$   
B.  $44 \text{ cm}^2$   
C.  $48 \text{ cm}^2$   
D.  $42 \text{ cm}^2$   
E. None of these.

5. If the coefficient of  $z^2 + az + b = 0$  is taken as 18 in place of 12, then its roots were found to be  $-16$  and  $-2$ . The roots of the original equations are:
- A.  $-12$  and  $-6$
  - B.  $-16$  and  $-2$
  - C.  $-14$  and  $-4$
  - D.  $-8$  and  $-4$
  - E. None of these.
6. A tomb is constructed whose lower part is cylindrical and upper part is hemispherical. The radius of both the parts is 5.6 meters and the height of the cylindrical part is 6.3 meters. Find the inner curved surface area of the tomb.
- A.  $416.88M^2$
  - B.  $412.69M^2$
  - C.  $418.88M^2$
  - D.  $512.68M^2$
  - E. None of these.
7. If 18th term of an A.P. is 372 and 372th term of the A.P is 18, then which term of this A.P. is equal to zero?
- A. 399
  - B. 390
  - C. 400
  - D. 389
  - E. None of these.
8. What must be subtracted from  $6x^4 + 16x^3 + 15x^2 - 8x + 9$ , so that it is exactly divisible by  $3x^2 + 5x - 2$  ?
- A.  $-19x + 15$
  - B.  $19x + 16$
  - C.  $13x + 19$
  - D.  $19x - 15$
  - E. None of these.
9. The last number, which when divided by 48,60,72,108, and 140 leaves 38,50,63,98, and 130 as remainders respectively is:
- A. 11115
  - B. 15110
  - C. 15120
  - D. 15210
  - E. None of these.

10. A number  $p$  is selected from the numbers 1,3,5 and then a second number  $q$  is randomly selected from the numbers 1,6,9. What is the probability that the product  $pq$  of the two numbers will be less than 20?

- A.  $1/9$
- B.  $4/3$
- C.  $2/3$
- D.  $7/9$
- E. None of these.

**SECTION- E (GENERAL KNOWLEGE)**

1. Which of the following is not related to the astronomical theories of climatwe change?
  - A. Eccentricity of earth's rotational axis
  - B. Obliquity of earth's rotational axis
  - C. Precession of equinoxes
  - D. Solar irradiances
  - E. None of these.
  
2. Which one of the following has been recognized as a mega diverse county?
  - A. New Zealand
  - B. Australia
  - C. Nepal
  - D. Austria
  - E. None of these.
  
3. Which of the following counties has made it mandatory to blend ethanol with gasoline?
  - A. China
  - B. U.K.
  - C. Switzerland
  - D. Brazil
  - E. None of these.
  
4. A Person is unable to read a newspaper without his glasses. He is most probably suffering from
  - A. Myopia
  - B. Presbyopia
  - C. Astigmatism
  - D. Hydermetropia
  - E. None of these.
  
5. How many types of blood groups are there in the human body?
  - A. 2
  - B. 5
  - C. 3
  - D. 4
  - E. None of these.

6. The rate of change of momentum of a body is equal to the resultant:
- A. Energy
  - B. Power
  - C. Force
  - D. Impulse
  - E. None of these.
7. The 44<sup>th</sup> Amendment of the Indian constitution withdrew the fundamental right”
- A. To Freedom of religion
  - B. To constitutional remedies
  - C. To property
  - D. Against exploitation
  - E. None of these.
8. Energy is required for maintenance of life. It is obtained by a process called
- A. Metabolism
  - B. Phagocytosis
  - C. Photorespiration
  - D. Decomposition
  - E. None of these.
9. Which among the following is the largest mechanized mine in India?
- A. Ratnagiri mine
  - B. Jharia mine
  - C. Sundergarh mine
  - D. Bailadila mine
  - E. None of these.
10. NITI Aayog has devised a short term and medium – to - long term action plan to help India achieve 50 medals in summer Olympics of which year?
- A. 2020
  - B. 2024
  - C. 2020
  - D. 2028
  - E. None of these.