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## भारतीय विमानपत्तन प्राधिकरण

(मिनी रत्न - श्रेणी - 1 सार्वजनिक क्षेत्र का उद्गम)

## AIRPORTS AUTHORITY OF INDIA

(Schedule - 'A' Mini Ratna - Category - 1 Public Sector Enterprise)

Participant ID	
Participant Name	
Test Center Name	I/FACT ACADEMY
Test Date	25/03/2021
Test Time	12:00 PM - 2:00 PM
Subject	Jr. Executive (ATC)

### Section : General Knowledge

Q.1 Which was the first ever Indian newspaper to be printed in English?

- Ans
- A. The Times of India
  - B. The Bengal Gazette
  - C. Deccan Herald
  - D. Pioneer

Question ID : 9767558209

Status : Answered

Chosen Option : 3

Q.2 Who was the 'Pal' of the trio 'Lal, Bal and Pal' in the Swadeshi movement?

- Ans
- A. Bipin Chandra Pal
  - B. Lal Bahadur Shastri
  - C. Niranjana Pal
  - D. Rupchand Pal

Question ID : 9767558208

Status : Answered

Chosen Option : 1

Q.3 To ensure that no bank is overlending, \_\_\_\_\_ is a certain percentage of deposits that every bank must keep as reserves.

- Ans
- A. Reserve Cash Ratio (RCR)
  - B. Reserve Related Ratio (RRR)
  - C. Cash Refund Ratio (CRR)
  - D. Cash Reserve Ratio (CRR)

Question ID : 9767558203

Status : Answered

Chosen Option : 1

Q.4 India is the world's \_\_\_\_\_ most populous nation as of 2020.

- Ans
- A. first
  - B. third
  - C. second
  - D. fourth

Question ID : 9767558206  
Status : Answered  
Chosen Option : 3

Q.5 In which language were most Ashokan scripts written?

- Ans
- A. Prakrit
  - B. Sanskrit
  - C. Hindi
  - D. Pali

Question ID : 9767558202  
Status : Answered  
Chosen Option : 4

Q.6 Which hormone regulates blood sugar level?

- Ans
- A. Adrenaline
  - B. Insulin
  - C. Testosterone
  - D. Prolactin

Question ID : 9767558205  
Status : Answered  
Chosen Option : 2

Q.7 Which state leads coffee production in India as of December 2020?

- Ans
- A. Assam
  - B. Kerala
  - C. Tamil Nadu
  - D. Karnataka

Question ID : 9767558207  
Status : Answered  
Chosen Option : 4

Q.8 \_\_\_\_\_ is the value of GDP at the current market prices.

- Ans
- A. Natural GDP
  - B. Real GDP
  - C. Net GDP
  - D. Nominal GDP

Question ID : 9767558204  
Status : Answered  
Chosen Option : 1

Q.9 When do we observe National Sports day in India?

- Ans
- A. 29th December
  - B. 19th October
  - C. 19th April
  - D. 29th August

Question ID : 9767558210  
Status : Answered  
Chosen Option : 1

Q.10 Which piece of jewellery frames the face and often connects a few other pieces of jewellery together?

- Ans
- A. Shringar patti
  - B. Kalgi
  - C. Tikka
  - D. Phuli

Question ID : 9767558201  
Status : Answered  
Chosen Option : 1

Section : General Intelligence

Q.1 'P ÷ Q' means 'P is the son of Q',  
'P - Q' means 'P is the husband of Q',  
'P × Q' means 'P is the brother of Q' and  
'P + Q' means 'P is the wife of Q'.  
If 'J ÷ H + M ÷ S - F', then how is F related to J?

- Ans
- A. Mother
  - B. Grandfather
  - C. Grandson
  - D. Grandmother

Question ID : 9767558216  
Status : Answered  
Chosen Option : 4

**Q.2** In a certain code language, ABOUT is written as YYRDB, and ACUTE is written as JXXEB. How will ANGLE be written as in that language?

- Ans
- A. JPJBP
  - B. JPJPB
  - C. BPJPJ
  - D. JPJPC

Question ID : 9767558215  
Status : Answered  
Chosen Option : 2

**Q.3** How many letters are there in the following series that are not vowels and are immediately preceded by an even number?  
D 22 A G 3 B 62 O 2 N 7 M 12 L Q K 10 E 43 T 23 F 5

- Ans
- A. 3
  - B. 5
  - C. 4
  - D. 2

Question ID : 9767558225  
Status : Answered  
Chosen Option : 4

**Q.4** Select the option in which the letter-clusters share the same relationship as that shared by the given pair of letter-clusters.  
GW : WR

- Ans
- A. UT : JO
  - B. PU : ZX
  - C. DA : TV
  - D. EF : DG

Question ID : 9767558214  
Status : Answered  
Chosen Option : 2

**Q.5** Select the option that is related to the third word in the same way as the second word is related to the first word.  
Owl : Barn :: Pig : ?

- Ans
- A. Sty
  - B. Burrow
  - C. Stable
  - D. Den

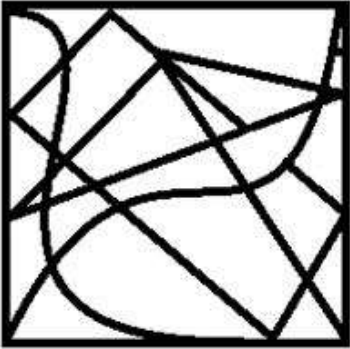
Question ID : 9767558213  
Status : Answered  
Chosen Option : 1

Q.6 Select the option in which the given figure is embedded (rotation is NOT allowed).

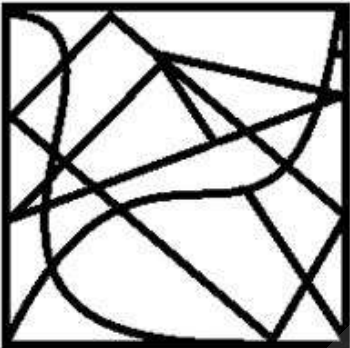


Ans

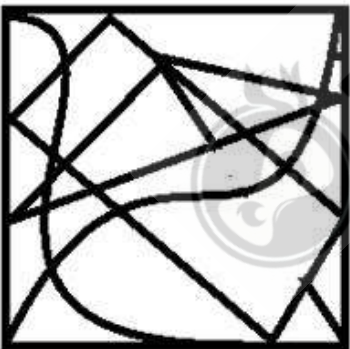
A.



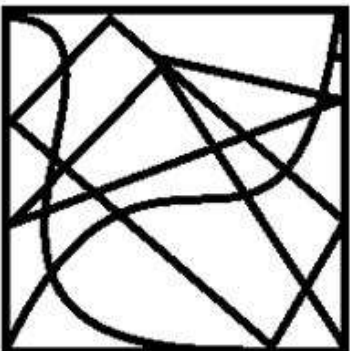
B.



C.



D.



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Question ID : 9767558224  
Status : Answered  
Chosen Option : 4

**Q.7** Seven contestants, H, I, J, K, L, M and N, have their entry on stage at the Miss World contest in a certain sequence. I enters exactly before M. J enters exactly after N. Exactly one contestant enters on stage after M and before H in the same order. L enters third. H enters last. Based on the given information, which of the following options is true?

- Ans
- A. L enters after M
  - B. J enters fourth in number
  - C. N enters first in number
  - D. I enters fifth in number

Question ID : 9767558218

Status : Answered

Chosen Option : 4

**Q.8** Read the given statements and conclusions carefully. Assuming that the information given in the statements is true, even if it appears to be at variance with commonly known facts, decide which of the given conclusions logically follow(s) from the statements.

Statements:

1. Some parrots are sparrows.
2. Some crows are parrots.

Conclusions:

- I. Some sparrows are parrots.
- II. Some crows are sparrows.

- Ans
- A. Both conclusions I and II follow
  - B. Only conclusion II follows
  - C. Neither conclusion I nor II follows
  - D. Only conclusion I follows

Question ID : 9767558217

Status : Answered

Chosen Option : 4

**Q.9** Select the correct option that indicates the arrangement of the given words in the most appropriate logical order.

1. Cow
2. Parrot
3. Fly
4. Goat
5. Cat

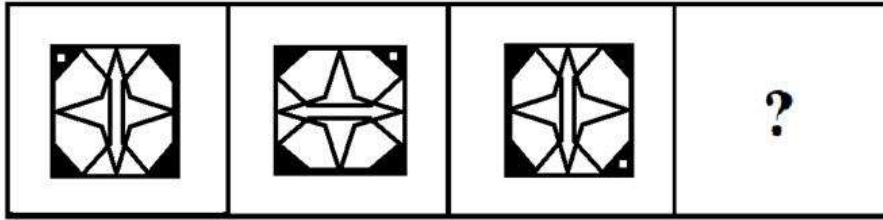
- Ans
- A. 1, 4, 5, 3, 2
  - B. 3, 2, 4, 5, 1
  - C. 2, 3, 4, 5, 1
  - D. 1, 4, 5, 2, 3

Question ID : 9767558219

Status : Answered

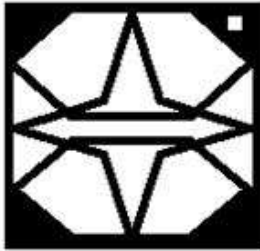
Chosen Option : 3

Q.10 Select the figure from among the given options that can replace the question mark (?) in the following series.



Ans

A.



B.



C.



D.



Question ID : 9767558221

Status : Answered

Chosen Option : 2



**Q.11** Select the alphanumeric-cluster from among the given options that can replace the question mark (?) in the following series.  
F5, J8, R14, D23, ?

- Ans  A. T35  
 B. T38  
 C. U35  
 D. S35

Question ID : 9767558212  
Status : Answered  
Chosen Option : 4

**Q.12** Select the number from among the given options that can replace the question mark (?) in the following series.  
5, 6, 10, 19, 35, 60, ?

- Ans  A. 96  
 B. 75  
 C. 86  
 D. 72

Question ID : 9767558220  
Status : Answered  
Chosen Option : 1

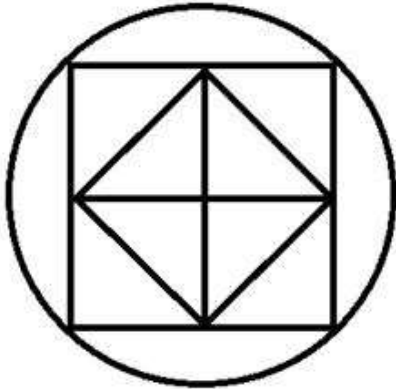
**Q.13** Arjun travels a distance of 10 km from a cafeteria towards the north. He turns left and walks 6 km. Then he turns right and walks 4 km. Finally he turns right and walks 6 km to reach the railway station. What is the distance between the cafeteria and railway station?

- Ans  A. 16 km  
 B. 14 km  
 C. 26 km  
 D. 20 km

Question ID : 9767558222  
Status : Answered  
Chosen Option : 2



Q.14 What is the maximum number of triangles in the given figure?



- Ans
- A. 24
  - B. 8
  - C. 12
  - D. 4

Question ID : 9767558223

Status : Answered

Chosen Option : 3

Q.15 Select the letter-cluster from among the given options that can replace the question mark (?) in the following series.  
XY, RT, LO, FJ, ?

- Ans
- A. YE
  - B. ZE
  - C. ZF
  - D. AE

Question ID : 9767558211

Status : Answered

Chosen Option : 2

Section : General Aptitude

Q.1  $\frac{6}{73} \left( 5\frac{2}{3} \times 3\frac{1}{6} + 2\frac{1}{3} \right)$

Evaluate above equation.

- Ans
- A.  $\frac{5}{3}$
  - B.  $\frac{3}{5}$
  - C.  $\frac{10}{9}$
  - D.  $\frac{9}{10}$

Question ID : 9767558228

Status : Answered

Chosen Option : 1

**Q.2** A student was asked to divide a number by 4 and add 28 to the quotient. He, however, first added 28 to the number and then divided it by 4, getting 227 as the answer. The correct answer, as per original ask, should have been:

- Ans
- A. 250
  - B. 246
  - C. 248
  - D. 242

Question ID : 9767558239  
Status : Answered  
Chosen Option : 3

**Q.3** A batsman makes a score of 79 runs in the 18<sup>th</sup> inning and thus increases his average by 2. Find his average after 18<sup>th</sup> inning.

- Ans
- A. 48
  - B. 45
  - C. 39
  - D. 42

Question ID : 9767558236  
Status : Answered  
Chosen Option : 2

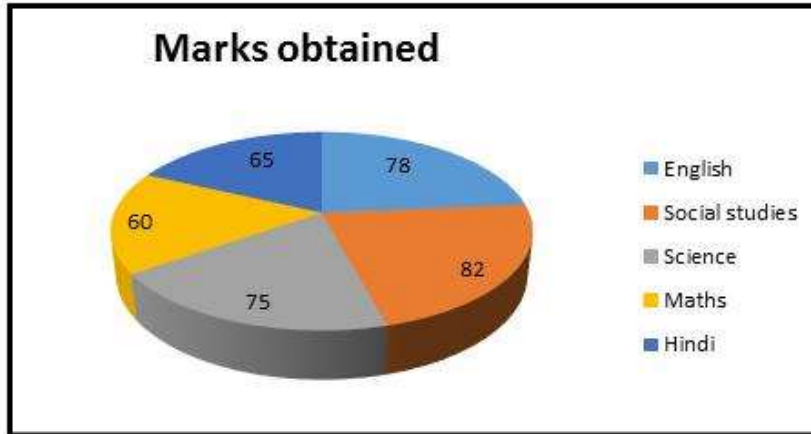
**Q.4** The greatest number of four digits that is divisible by 30, 36, 45 and 75 is:

- Ans
- A. 9990
  - B. 9900
  - C. 9930
  - D. 9936

Question ID : 9767558227  
Status : Answered  
Chosen Option : 2



Q.5



Marks obtained by a student in various subjects are shown in the given pie diagram, figures being given in terms of the angles formed by the sectors at the centre of the circle.

If the total marks obtained were 1440, then the student's marks in science would be:

- Ans  A. 300  
 B. 328  
 C. 312  
 D. 320

Question ID : 9767558240

Status : Answered

Chosen Option : 1

Q.6 The compound interest and the simple interest for two years on a certain sum at a certain rate of interest are Rs. 1,230 and Rs. 1,200 respectively. Find principal.

- Ans  A. Rs. 12,000  
 B. Rs. 10,000  
 C. Rs. 12,600  
 D. Rs. 10,600

Question ID : 9767558237

Status : Answered

Chosen Option : 1

Q.7 A labour gets Rs. 4800 for 16 days' work. How many days should he work to get Rs. 8400?

- Ans  A. 28 days  
 B. 32 days  
 C. 30 days  
 D. 25 days

Question ID : 9767558233

Status : Answered

Chosen Option : 1

Q.8 If the cost of 16 bananas is Rs. 80, then find out the cost of 5 dozen bananas.

- Ans  A. Rs. 300  
 B. Rs. 260  
 C. Rs. 240  
 D. Rs. 320

Question ID : 9767558232  
Status : Answered  
Chosen Option : 1

Q.9 A tank 8 ft. x 5 ft. x 3 ft. has a supply pipe pouring in  $480 \text{ in}^3$  of water in a minute and an exhaust pipe emptying it in 4 hours. If the tank is full and both pipes are open, how many hours will it take to empty it?

- Ans  A. 9 hrs  
 B. 8 hrs  
 C. 7 hrs  
 D. 6 hrs

Question ID : 9767558235  
Status : Answered  
Chosen Option : 4

Q.10 If  $a : b = c : d = e : f = 2 : 3$ , then  $(xa + yc + ze) : (xb + yd + zf) = \underline{\hspace{2cm}}$ .

- Ans  A. 3 : 2  
 B. 2 : 3  
 C. 6 : 5  
 D. 5 : 6

Question ID : 9767558231  
Status : Answered  
Chosen Option : 2

Q.11 If  $x$  and  $y$  are the two digits of the number 3212xy such that this number is divisible by 90, then  $(x + y)$  is equal to:

- Ans  A. 0  
 B. 2  
 C. 3  
 D. 1

Question ID : 9767558226  
Status : Answered  
Chosen Option : 4

Q.12 The perimeter of one square is 52 metre and that of another is 20 metre. What is the perimeter of the square whose area is equal to the difference of the areas of the two squares?

- Ans
- A. 40 m
  - B. 52 m
  - C. 44 m
  - D. 48 m

Question ID : 9767558238

Status : Answered

Chosen Option : 4

Q.13  $\frac{17}{60} =$  \_\_\_\_\_.

Ans

- A.  $3 + \frac{1}{1 + \frac{1}{16}}$
- B.  $3 + \frac{1}{1 + \frac{1}{2 + \frac{1}{4}}}$
- C.  $3 + \frac{1}{1 + \frac{1}{1 + \frac{1}{8}}}$
- D.  $2 + \frac{1}{1 + \frac{1}{8}}$



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Question ID : 9767558230

Status : Answered

Chosen Option : 3

Q.14 Naveen spends 80.5% of his income. His income increases by 40% and expenditure increases by 60%. Find his percentage decrease in savings.

- Ans
- A.  $\frac{1660}{41}$
- B.  $\frac{1680}{39}$
- C.  $\frac{1680}{41}$
- D.  $\frac{1660}{39}$

Question ID : 9767558234

Status : Answered

Chosen Option : 1

Q.15  $\left(\frac{27}{64} - \frac{8}{27}\right) \div \left(\frac{9}{16} + \frac{1}{2} + \frac{4}{9}\right)$

Evaluate the above equation.

- Ans
- A.  $\frac{1}{12}$
- B.  $\frac{5}{16}$
- C.  $\frac{5}{12}$
- D.  $\frac{1}{16}$

Question ID : 9767558229

Status : Answered

Chosen Option : 1

Section : General English

Q.1 Select the most appropriate option to fill in the blank.  
Hydroponics is a type of horticulture and a subset of hydroculture, \_\_\_\_\_ usually crops, without soil by using mineral nutrient solutions in an aqueous solvent.

- Ans
- A. that has a method of growing plants
- B. which is a method of growing plants
- C. which method has been used for growing plants
- D. this is a method of growing plants

Question ID : 9767558256

Status : Answered

Chosen Option : 2

**Q.2 Identify the most appropriate transformation of the following sentence in direct speech.**

The doctor advised his patient to take complete bed rest for a week.

- Ans
- A. The doctor said, "I think you need complete bed rest for a week.
  - B. The doctor advised his patient, "You had to take complete bed rest for a week.
  - C. The doctor told to his patient, " don't rest for a week."
  - D. The doctor said to his patient, " You need to take complete bed rest for a week."

Question ID : 9767558250

Status : Answered

Chosen Option : 4

**Q.3 Select the most appropriate ANTONYM of the given word.  
DETONATE**

- Ans
- A. Dismantle
  - B. Discharge
  - C. Explode
  - D. Burst

Question ID : 9767558242

Status : Answered

Chosen Option : 2

**Q.4 Select the most appropriate option that can substitute the underlined words in the given sentence.**

Two volcanoes on the most populous island, Java, are throwing out large quantities of ash into the air, with hundreds of people evacuated from the slopes of Mount Merapi in recent weeks.

- Ans
- A. spewing
  - B. expelling
  - C. belching
  - D. exhausting

Question ID : 9767558255

Status : Answered

Chosen Option : 2

**Q.5 Parts of a sentence are given below in jumbled order. Arrange the parts in the right order to form a meaningful sentence.**

- (A) to prepare them for practical exams
- (B) several states and cities have decided to resume classes
- (C) as coronavirus cases have seen a dip in the last few weeks
- (D) for students appearing for their board exam this year

- Ans
- A. C, D, A, B
  - B. A, C, B, D
  - C. B, D, C, A
  - D. C, B, D, A

Question ID : 9767558254

Status : Answered

Chosen Option : 4



**Q.6 Identify the sentence which is not written in passive voice.**

- Ans  A. The midnight silence was broken by a sudden blaring of sirens.
- B. The taxi arrived sharp at 8 am.
- C. Mr Babbar was rushed to the nearest hospital by a passer by who saw him fainting on the road.
- D. No foreign dignitary has been invited as Chief guest for Republic Day parade this year.

Question ID : 9767558252

Status : Answered

Chosen Option : 2

**Q.7 The following sentence has been divided into parts. One of them may contain an error. Select the part that contains the error from the given options. The King tried his best to groom his foolish son / to prepare him for his future role, / but the young prince only go / from bad to worse.**

- Ans  A. but the young prince only go
- B. The King tried his best to groom his foolish son
- C. from bad to worse
- D. to prepare him for his future role

Question ID : 9767558248

Status : Answered

Chosen Option : 1

**Q.8 Select the option that expresses the given sentence in indirect speech. The newly elected Chief Minister said, "I plan to create more jobs for the youth of my state."**

- Ans  A. The newly elected Chief Minister said that he would plan to create more jobs for the youth of his state.
- B. The newly elected Chief Minister announced that he was going to create more jobs for the youth in his state.
- C. The newly elected Chief Minister told us that he had planned to create more jobs for the youth of my state.
- D. The newly elected Chief Minister said that he planned to create more jobs for the youth of his state.

Question ID : 9767558249

Status : Answered

Chosen Option : 4

**Q.9** Sentences of a paragraph are given below in jumbled order. Arrange the sentences in the right order to form a meaningful and coherent paragraph.

A. It was decided to ride from 4 in the morning to 11 a.m each day and then log on to work from any roadside dhaba or tea shop to finish their office work.

B Alan, a young digital marketing executive and an adventure buff found work from home get terribly boring during the Covid-19 lockdown.

C. Alan discussed his idea of riding down 2000 km across three states with two of his close friends who became equally excited.

D. He was wondering how to combine work with adventure and then one day a bright idea came to his mind.

- Ans
- A. C, D, B, A
  - B. A, C, D, B
  - C. B, D, C, A
  - D. B, A, D, C

Question ID : 9767558253

Status : Answered

Chosen Option : 3

**Q.10** Select the option that expresses the given sentence in passive voice.  
Lata saw the missing earring under the bed next day.

- Ans
- A. The missing earring was found by Lata.
  - B. The missing earring was found under the bed the next day.
  - C. The missing earring was saw under the bed the next day.
  - D. The missing earring was seen by Lata under the bed the next day.

Question ID : 9767558251

Status : Answered

Chosen Option : 4

**Q.11** Select the most appropriate ANTONYM of the given word.  
**GROTESQUE**

- Ans
- A. Normal
  - B. Bizarre
  - C. Hideous
  - D. Deformed

Question ID : 9767558241

Status : Answered

Chosen Option : 1

**Q.12** Select the most appropriate idiom to fill in the blank.  
As soon as the decision to raise the price of petrol and diesel was announced \_\_\_\_\_ in the Parliament.

- Ans
- A. all hell broke loose
  - B. all hell is going to break loose
  - C. all hell will be let loose
  - D. all hell will have broken loose

Question ID : 9767558243

Status : Answered

Chosen Option : 1

Q.13 Select the most appropriate option to fill in the blanks.

Kindness \_\_\_\_\_ as the ability to be \_\_\_\_\_ everyone including one's enemies.

- Ans
- A. is defined; consideration towards
  - B. will be defined; considerate to
  - C. has been defined; considerate with
  - D. can be defined; considerate towards

Question ID : 9767558246

Status : Answered

Chosen Option : 4

Q.14 The following sentence has been divided into parts. One of them may contain an error.

Select the part that contains the error from the given options.

Nature have its own way / of teaching us through different life experiences / that may seem unwelcome / but eventually cure us of our arrogance and vanity.

- Ans
- A. that may seem unwelcome
  - B. Nature have its own way
  - C. but eventually cure us of our arrogance and vanity
  - D. of teaching us through different life experiences

Question ID : 9767558247

Status : Answered

Chosen Option : 2

Q.15 Select the most appropriate phrase to fill in the blank.

Anil wanted to make up with Shikha after the argument so at the party in the evening he tried desperately \_\_\_\_\_ but she chose to ignore him.

- Ans
- A. keep an eye on her
  - B. set eyes on her
  - C. cast an eye upon her
  - D. to catch her eye

Question ID : 9767558244

Status : Answered

Chosen Option : 4

Q.16 Select the most appropriate option to fill in the blanks.

If you are a foodie, then nothing like visiting Singapore where every street is \_\_\_\_\_ with restaurants and eatery joints serving a \_\_\_\_\_ of international cuisines.

- Ans
- A. bursting; platter
  - B. crowded; mouth watering
  - C. bustling; variety
  - D. roaring; variation

Question ID : 9767558245

Status : Answered

Chosen Option : 3

**Comprehension:**

Read the given passage and answer the following questions.

Dr. Snow, father of epidemiology, was an obstetrician with an interest in many aspects of medical science. He had long believed that water contaminated by sewage was the cause of cholera. Snow published an article in 1849 outlining his theory, but doctors and scientists thought he was on the wrong track and stuck with the established belief that cholera was caused by breathing vapours or a 'miasma in the atmosphere'.

The first cases of cholera in England were reported in 1831. Between 1831 and 1854 thousands of people in England died of cholera. Dr. Snow who was then experimenting with a new technique, called anaesthesia, now became curious to find out how cholera was spread. Dr. Snow believed sewage dumped into the river or into cesspools near town wells could contaminate the water supply, leading to a rapid spread of the disease.

In 1854, Soho, a suburb of London, where Snow lived was struck by a terrible outbreak of cholera. Snow immediately set out to prove his theory that contaminated water was the cause of the outbreak.

He found that nearly 500 deaths had taken place in a span of ten days in the vicinity of a spot where Cambridge Street joined Broad Street. As soon as he realised the extent of this eruption, he suspected contamination of water from the much-frequented street-pump in Broad Street.

Dr. Snow then gathered information from hospital and public records on when the outbreak began and whether the victims drank water from the Broad Street pump. His investigations gave him positive proof.

Taking his findings with him, Snow approached the town officials and convinced them to remove the handle of the pump. As soon as this was done the outbreak trickled to a stop. Then, Reverend Henry Whitehead, a minister, who believed that the outbreak was due to divine intervention and not contamination of water, interviewed a woman whose child had contracted cholera from another source. During his talks he discovered that the mother used to wash the baby's diapers in water which was dumped into a leaky cesspool just three feet from the Broad Street pump.

This information upheld and also supplemented Dr Snow's findings.

On the basis of your reading of the passage answer the following questions by choosing the best option.

**SubQuestion No : 17**

**Q.17 Which trait of Snow is NOT very relevant to the findings of cholera outbreak?**

- Ans
- A. He was determined to get to the root of the problem.
  - B. He took great interest in other fields of medicine.
  - C. He had a scientific approach.
  - D. He was a critical thinker and a keen observer.

Question ID : 9767558261

Status : Answered

Chosen Option : 3

**Comprehension:**

Read the given passage and answer the following questions.

Dr. Snow, father of epidemiology, was an obstetrician with an interest in many aspects of medical science. He had long believed that water contaminated by sewage was the cause of cholera. Snow published an article in 1849 outlining his theory, but doctors and scientists thought he was on the wrong track and stuck with the established belief that cholera was caused by breathing vapours or a 'miasma in the atmosphere'.

The first cases of cholera in England were reported in 1831. Between 1831 and 1854 thousands of people in England died of cholera. Dr. Snow who was then experimenting with a new technique, called anaesthesia, now became curious to find out how cholera was spread. Dr. Snow believed sewage dumped into the river or into cesspools near town wells could contaminate the water supply, leading to a rapid spread of the disease.

In 1854, Soho, a suburb of London, where Snow lived was struck by a terrible outbreak of cholera. Snow immediately set out to prove his theory that contaminated water was the cause of the outbreak.

He found that nearly 500 deaths had taken place in a span of ten days in the vicinity of a spot where Cambridge Street joined Broad Street. As soon as he realised the extent of this eruption, he suspected contamination of water from the much-frequented street-pump in Broad Street.

Dr. Snow then gathered information from hospital and public records on when the outbreak began and whether the victims drank water from the Broad Street pump. His investigations gave him positive proof.

Taking his findings with him, Snow approached the town officials and convinced them to remove the handle of the pump. As soon as this was done the outbreak trickled to a stop. Then, Reverend Henry Whitehead, a minister, who believed that the outbreak was due to divine intervention and not contamination of water, interviewed a woman whose child had contracted cholera from another source. During his talks he discovered that the mother used to wash the baby's diapers in water which was dumped into a leaky cesspool just three feet from the Broad Street pump.

This information upheld and also supplemented Dr Snow's findings.

On the basis of your reading of the passage answer the following questions by choosing the best option.

**SubQuestion No : 18**

**Q.18 Which chance finding helped endorse Snow's theory?**

- Ans
- A. the proximity of cesspool to the source of drinking water
  - B. a cleric's assertion that cholera was due to divine intervention
  - C. 500 residents of a particular area died in ten days
  - D. statement of scientists that cholera was due to miasma in the air.

Question ID : 9767558260

Status : Answered

Chosen Option : 1

**Comprehension:**

Read the given passage and answer the following questions.

Dr. Snow, father of epidemiology, was an obstetrician with an interest in many aspects of medical science. He had long believed that water contaminated by sewage was the cause of cholera. Snow published an article in 1849 outlining his theory, but doctors and scientists thought he was on the wrong track and stuck with the established belief that cholera was caused by breathing vapours or a 'miasma in the atmosphere'.

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This information upheld and also supplemented Dr Snow's findings.

On the basis of your reading of the passage answer the following questions by choosing the best option.

**SubQuestion No : 19**

**Q.19 Two words used in the passage which are synonymous with each other are:**

- Ans
- A. cholera and miasma
  - B. contamination and cesspool
  - C. eruption and outbreak
  - D. epidemiology and obstetrician

Question ID : 9767558258

Status : Answered

Chosen Option : 3

**Comprehension:**

Read the given passage and answer the following questions.

Dr. Snow, father of epidemiology, was an obstetrician with an interest in many aspects of medical science. He had long believed that water contaminated by sewage was the cause of cholera. Snow published an article in 1849 outlining his theory, but doctors and scientists thought he was on the wrong track and stuck with the established belief that cholera was caused by breathing vapours or a 'miasma in the atmosphere'.

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This information upheld and also supplemented Dr Snow's findings.

On the basis of your reading of the passage answer the following questions by choosing the best option.

**SubQuestion No : 20**

**Q.20** Read the sentences below. Choose the option that best traces the sequence of events in the correct order.

- A: Suspects contamination of drinking water.**
- B: Tries to convince local authorities to seal hand pump**
- C:Collects data and plots location of the patients**
- D:Snow sets out to find the cause of cholera outbreak**
- E: Observes that maximum deaths occurred in a particular area**
- F: Instant drop in cholera cases ----Snow is convinced of his findings**

Ans  A. D, E, A, C, B, F

B. D, A, E, F, C, B

C. F, D, A, C, B, E

D. E, A, C, D, F, B



Question ID : 9767558259

Status : Answered

Chosen Option : 1

Section : Domain Questions

Q.1 Figure-out the value of  $\alpha$  and  $\beta$  if  $(2\hat{i}+6\hat{j}+27\hat{k}) \times (\hat{i}+\alpha\hat{j}+\beta\hat{k}) = \vec{0}$ ?

- Ans
- A.  $\alpha = 3, \beta = \frac{27}{2}$
  - B.  $\alpha = 3, \beta = \frac{13}{2}$
  - C.  $\alpha = 6, \beta = \frac{27}{2}$
  - D.  $\alpha = 6, \beta = \frac{13}{2}$

Question ID : 9767558264

Status : Answered

Chosen Option : 1

Q.2 Which of the following is true, if none of the angles  $x, y$  and  $(x \pm y)$  is a multiple of  $\pi$ ?

- Ans
- A.  $\tan(x + y) = \frac{\tan x + \tan y}{1 - \tan x \tan y}$
  - B.  $\tan(x + y) = \frac{1 - \tan x \tan y}{\tan x + \tan y}$
  - C.  $\cot(x + y) = \frac{\cot x \cot y - 1}{\cot y + \cot x}$
  - D.  $\cot(x + y) = \frac{1 - \cot x \cot y}{\cot y + \cot x}$

Question ID : 9767558288

Status : Answered

Chosen Option : 1

Q.3 Determine the value of  $\tan \frac{\pi}{8}$ ?

- Ans
- A.  $\sqrt{2} - 1$
  - B.  $\sqrt{3} - 1$
  - C.  $\sqrt{3}$
  - D.  $\sqrt{2}$

Question ID : 9767558291

Status : Answered

Chosen Option : 2



Q.4

What is the principal solutions of the equation  $\tan x = -\frac{1}{\sqrt{3}}$ ?

Ans

A.  $\frac{9\pi}{3}, \frac{7\pi}{3}$

B.  $\frac{2\pi}{3}, \frac{2\pi}{3}$

C.  $\frac{3\pi}{6}, \frac{2\pi}{6}$

D.  $\frac{11\pi}{6}, \frac{5\pi}{6}$

Question ID : 9767558290

Status : Answered

Chosen Option : 4

Q.5

Determine the direction cosines of the unit vector perpendicular to the plane  $\vec{r} \cdot (2\hat{i} - 6\hat{j} - 3\hat{k}) + 1 = 0$  passing through the origin?

Ans

A.  $-\frac{6}{7}, \frac{3}{7}, \frac{2}{7}$

B.  $-\frac{2}{7}, \frac{6}{7}, \frac{3}{7}$

C.  $-\frac{2}{7}, \frac{3}{7}, \frac{6}{7}$

D.  $-\frac{2}{7}, \frac{3}{7}, -\frac{6}{7}$

Question ID : 9767558283

Status : Answered

Chosen Option : 2

Q.6

Determine a unit vector perpendicular to each of the vector  $\vec{a} + \vec{b}$  and  $\vec{a} - \vec{b}$ , where  $\vec{a} = 3\hat{i} + 2\hat{j} + 2\hat{k}$  and  $\vec{b} = \hat{i} + 2\hat{j} - 2\hat{k}$ ?

Ans

A.  $\pm \frac{2\hat{i} - 2\hat{j} - \hat{k}}{3}$

B.  $\pm \frac{2\hat{i} - 2\hat{j} - \hat{k}}{9}$

C.  $\pm \frac{2\hat{i} - \hat{j} - 2\hat{k}}{3}$

D.  $\pm \frac{2\hat{i} - \hat{j} - \hat{k}}{9}$

Question ID : 9767558263

Status : Answered

Chosen Option : 2

**Q.7** Determine the vector equation of the plane passing through the intersection of the planes  $\vec{r} \cdot (\hat{i} + \hat{j} + \hat{k}) = 6$  and  $\vec{r} \cdot (2\hat{i} + 3\hat{j} + 4\hat{k}) = -5$ , and the point  $(1, 1, 1)$ ?

- Ans
- A.  $\vec{r} \cdot (10\hat{i} + 13\hat{j} + 23\hat{k}) = 69$
- B.  $\vec{r} \cdot (20\hat{i} + 23\hat{j} + 26\hat{k}) = 69$
- C.  $\vec{r} \cdot (30\hat{i} + 23\hat{j} + 13\hat{k}) = 69$
- D.  $\vec{r} \cdot (10\hat{i} + 23\hat{j} + 13\hat{k}) = 69$

Question ID : 9767558286  
Status : Answered  
Chosen Option : 2

**Q.8** Determine the angle between the pair of lines given by

$$\vec{r} = 3\hat{i} + 2\hat{j} - 4\hat{k} + \lambda(2\hat{i} + 2\hat{j} + \hat{k})$$

And  $\vec{r} = 5\hat{i} - 2\hat{j} + \mu(6\hat{i} + 2\hat{j} + 3\hat{k})$

- Ans
- A.  $\text{Cos-1} \left( \frac{21}{19} \right)$
- B.  $\text{Cos-1} \left( \frac{17}{23} \right)$
- C.  $\text{Cos-1} \left( \frac{19}{21} \right)$
- D.  $\text{Cos-1} \left( \frac{23}{17} \right)$

Question ID : 9767558281  
Status : Answered  
Chosen Option : 2

**Q.9** Find the probability that they speak the same fact if A speaks truth in 60 % cases and B speaks truth in 75 % cases?

- Ans
- A. 62 %
- B. 64 %
- C. 72 %
- D. 55 %

Question ID : 9767558280  
Status : Answered  
Chosen Option : 2

Q.10 Determine the co-ordinates of the foot of the perpendicular drawn from the origin to the plane  $4x - 2y + 3z - 6 = 0$

- Ans
- A.  $\frac{12}{\sqrt{45}}, -\frac{18}{\sqrt{45}}, \frac{24}{\sqrt{45}}$
- B.  $\frac{24}{45}, -\frac{18}{45}, \frac{12}{45}$
- C.  $\frac{24}{29}, -\frac{12}{29}, \frac{18}{29}$
- D.  $\frac{18}{\sqrt{29}}, -\frac{12}{\sqrt{29}}, \frac{24}{\sqrt{29}}$

Question ID : 9767558284

Status : Answered

Chosen Option : 4

Q.11 A man is known to speak truth 2 out of 3 times. He throws a die and reports that it is a six. Find the probability that it is actually a six?

- Ans
- A.  $\frac{2}{3}$
- B.  $\frac{3}{4}$
- C.  $\frac{3}{8}$
- D.  $\frac{2}{7}$

Question ID : 9767558276

Status : Answered

Chosen Option : 1

Q.12 Determine the shortest distance between the lines  $l_1$  and  $l_2$  whose vector equations are

$$\vec{r} = 2\hat{i} + \hat{j} + \lambda(2\hat{i} - \hat{j} + \hat{k}) \dots (1)$$

$$\vec{r} = 3\hat{i} + \hat{j} - \hat{k} + \mu(3\hat{i} - 5\hat{j} + 2\hat{k}) \dots (2)$$

- Ans
- A.  $\frac{10}{\sqrt{59}}$
- B.  $\frac{4}{\sqrt{59}}$
- C.  $\frac{10}{\sqrt{47}}$
- D.  $\frac{4}{\sqrt{47}}$

Question ID : 9767558282

Status : Answered

Chosen Option : 1

Q.13 What will be the total number of permutations of  $n$  different things taken  $r$  at a time, where repetition is allowed and where  $0 \leq r \leq n$ ?

- Ans
- A.  $\frac{n!}{r!(n-r)!}$
- B.  $\frac{n!}{(n-r)!}$
- C.  $n!$
- D.  $\frac{n!}{(r)!}$

Question ID : 9767558270

Status : Answered

Chosen Option : 4

Q.14 Which of the following vectors forms the vertices of a right angled triangle?

- Ans
- A.  $2\hat{i} - \hat{j} + 2\hat{k}$ ,  $\hat{i} - 3\hat{j} - 5\hat{k}$  and  $3\hat{i} - 4\hat{j} - 4\hat{k}$
- B.  $2\hat{i} - \hat{j} + \hat{k}$ ,  $\hat{i} - 3\hat{j} - 5\hat{k}$  and  $3\hat{i} - 4\hat{j} - 2\hat{k}$
- C.  $2\hat{i} - \hat{j} + \hat{k}$ ,  $\hat{i} - 3\hat{j} - 5\hat{k}$  and  $3\hat{i} - 4\hat{j} - 4\hat{k}$
- D.  $2\hat{i} - \hat{j} + \hat{k}$ ,  $\hat{i} - 3\hat{j} - 4\hat{k}$  and  $3\hat{i} - 4\hat{j} - 4\hat{k}$

Question ID : 9767558262

Status : Answered

Chosen Option : 3

Q.15 A point is moving with a velocity of 10 metres per second, and at a subsequent instant it is moving at the same rate in a direction inclined at  $30^\circ$  to the former direction, find the change of velocity?

- Ans
- A. 1.232 m/s
- B. 3.288 m/s
- C. 5.176 m/s
- D. 7.128 m/s

Question ID : 9767558267

Status : Answered

Chosen Option : 3

Q.16

If  $\tan x = \frac{3}{4}$ ,  $\pi < x < \frac{3\pi}{2}$ , determine the value of  $\sin \frac{x}{2}$ ,  $\cos \frac{x}{2}$  and  $\tan \frac{x}{2}$  respectively ?

Ans

A.  $\frac{9}{10}$ ,  $-\frac{1}{10}$  and -3

B.  $\frac{3}{\sqrt{10}}$ ,  $-\frac{1}{\sqrt{10}}$  and -3

C.  $\frac{9}{\sqrt{10}}$ ,  $-\frac{3}{\sqrt{10}}$  and -3

D.  $\frac{1}{\sqrt{10}}$ ,  $-\frac{3}{\sqrt{10}}$  and -3

Question ID : 9767558289

Status : Answered

Chosen Option : 2

Q.17 A cage in a mine-shaft descends with 2 ft/sec units of acceleration. After it has been in motion for 10 seconds a particle is dropped on it from the top of the shaft. What time elapses before the particle hits the cage?

Ans

A.  $3\frac{1}{2}$  seconds

B. 2 seconds

C. 7 seconds

D.  $3\frac{1}{3}$  seconds

Question ID : 9767558268

Status : Answered

Chosen Option : 1

Q.18 Which of the following is INCORRECT if E and F are independent?

Ans

A.  $P(E \cap F) = P(E)P(F)$

B.  $P(F|E) = P(F)$ ,  $P(E) \neq 0$

C.  $P(E|F) = P(E)$ ,  $P(F) \neq 0$

D.  $P(F|E) = P(F)$ , where  $P(E), P(F) \neq 0$

Question ID : 9767558275

Status : Answered

Chosen Option : 4

Q.19 In a space, there are lines which are neither intersecting nor parallel. Infact, such pair of lines are \_\_\_\_\_ and are called \_\_\_\_\_.

- Ans
- A. Coplanar, skipped lines
  - B. Non coplanar, skipped lines
  - C. Coplanar, skew lines
  - D. Non coplanar, skew lines

Question ID : 9767558285  
Status : Answered  
Chosen Option : 2

Q.20 Evaluate the value of  $x$  if  $\frac{1}{8!} + \frac{1}{9!} = \frac{x}{10!}$  ?

- Ans
- A. 100
  - B. 72
  - C. 80
  - D. 90

Question ID : 9767558271  
Status : Answered  
Chosen Option : 1

Q.21 If  ${}^nC_9 = {}^nC_8$ , find  ${}^nC_{17}$ ?

- Ans
- A. 17
  - B. 9
  - C. 2
  - D. 1

Question ID : 9767558269  
Status : Answered  
Chosen Option : 4



Q.22

If  $P(A) = \frac{4}{9}$ ,  $P(B) = \frac{2}{9}$  and  $P(A \cup B) = \frac{5}{9}$ ,

Evaluate (i)  $P(A \cap B)$  (ii)  $P(A|B)$  (iii)  $P(B|A)$  respectively

Ans

A.  $\frac{1}{7}, \frac{1}{2}, \frac{1}{2}$

B.  $\frac{1}{4}, \frac{1}{5}, \frac{1}{3}$

C.  $\frac{1}{7}, \frac{1}{3}, \frac{1}{2}$

D.  $\frac{1}{9}, \frac{1}{2}, \frac{1}{4}$

Question ID : 9767558279

Status : Answered

Chosen Option : 4

Q.23 Determine the area of the triangle with vertices X(1,1,2), Y(2,3,5) and Z(1,5,5)?

Ans

A.  $\frac{\sqrt{18}}{2}$

B.  $\sqrt{18}$

C.  $\frac{\sqrt{61}}{2}$

D.  $\sqrt{61}$

Question ID : 9767558265

Status : Answered

Chosen Option : 3

Q.24 Ten coins numbered 1 to 10 are kept in a packet, merged rigorously and then one coin is taken out randomly. If it is familiar that the number on the drawn coin is more than 3, what is the probability that it is an even number?

Ans

A.  $\frac{2}{5}$

B.  $\frac{7}{4}$

C.  $\frac{4}{7}$

D.  $\frac{5}{2}$

Question ID : 9767558277

Status : Answered

Chosen Option : 3

Q.25 Evaluate  $r$ , if  ${}^4P_r = 6 {}^5P_{r-1}$ ?

- Ans
- A. 24, 11
  - B. 2, 5
  - C. 3, 5
  - D. 8, 3

Question ID : 9767558273  
Status : Answered  
Chosen Option : 2

Q.26 Determine the value of  $\tan \frac{13\pi}{12}$  and  $\sin 15^\circ$ ?

- Ans
- A.  $1 - 2\sqrt{3}, \frac{\sqrt{3}}{2\sqrt{2}}$
  - B.  $1 - \sqrt{3}, \frac{\sqrt{3}-1}{\sqrt{2}}$
  - C.  $2 - \sqrt{3}, \frac{\sqrt{3}-1}{2\sqrt{2}}$
  - D.  $3 - 2\sqrt{3}, \frac{\sqrt{3}}{\sqrt{2}}$

Question ID : 9767558287  
Status : Answered  
Chosen Option : 3

Q.27 What will be the unit vector in XY-plane, which makes an angle of  $30^\circ$  with the positive direction of x-axis?

- Ans
- A.  $\frac{1}{\sqrt{3}}\hat{i} + \frac{1}{\sqrt{2}}\hat{j}$
  - B.  $\frac{\sqrt{3}}{2}\hat{i} + \frac{1}{2}\hat{j}$
  - C.  $\frac{1}{\sqrt{3}}\hat{i} + \frac{1}{2}\hat{j}$
  - D.  $\frac{1}{\sqrt{2}}\hat{j}$

Question ID : 9767558266  
Status : Answered  
Chosen Option : 3



Q.28 The probability of a bowler in ten pin bowling hitting a target is  $\frac{3}{4}$ . How many minimum number of times must the bowler roll down so that the probability of hitting the target at least once is more than 0.99?

- Ans
- A. 2 times
  - B. 1 time
  - C. 4 times
  - D. 3 times

Question ID : 9767558274  
Status : Answered  
Chosen Option : 3

Q.29 Given that  $({}^n P_4 / {}^{n-1} P_4) = 5/3$ ,  $n > 4$ . Determine the value of  $n$ ?

- Ans
- A. 33
  - B. 14
  - C. 5/3
  - D. 10

Question ID : 9767558272  
Status : Answered  
Chosen Option : 4

Q.30 In a dog race there are 5 dogs named as A, B, C, D, and E. Find the probability that A, B and C are first 3 to finish (in any order)? Assume that all finishing orders are equally likely

- Ans
- A.  $\frac{1}{12}$
  - B.  $\frac{1}{5}$
  - C.  $\frac{1}{10}$
  - D.  $\frac{1}{15}$

Question ID : 9767558278  
Status : Answered  
Chosen Option : 4

**Q.31** A tank with a square base of area  $1.0 \text{ m}^2$  is divided by a vertical partition in the middle. The bottom of the partition has a small-hinged door of area  $10 \text{ cm}^2$ . The tank is filled with water in one compartment, and an acid (of relative density 1.7) in the other, both to a height 3.0 m. Calculate the force necessary to keep the door close?

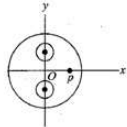
- Ans**
- A.  $2.05 \times 10^4$
  - B. 20.5 N
  - C. 55 N
  - D. 2.05 N

Question ID : 9767558301

Status : Answered

Chosen Option : 2

**Q.32** A non-conducting sphere of radius  $R = 5 \text{ cm}$  has its centre at the origin  $O$  of coordinates system as shown in figure. It has two spherical cavities of radius  $r = 1 \text{ cm}$ , whose centres are at  $(0, 3 \text{ cm})$ ,  $(0, -3 \text{ cm})$ , respectively, and solid material of the sphere has uniform positive charge density  $\rho = \frac{1}{\pi} \mu\text{Cm}^{-3}$ . Compute electric potential at point  $P$   $(4 \text{ cm}, 0)$



- Ans**
- A. 23.68 V
  - B. 42.52 V
  - C. 65.21 V
  - D. 34.92 V

Question ID : 9767558310

Status : Answered

Chosen Option : 3

**Q.33** A magnetron in a microwave oven releases electromagnetic waves with  $f = 1980 \text{ MHz}$ . Find the magnetic strength necessary for electrons to move in circular track with this frequency?

- Ans**
- A.  $7.14 \times 10^3 \text{ T}$
  - B.  $7.14 \times 10^{-3} \text{ T}$
  - C. 0.0714 T
  - D. 0.00714 T

Question ID : 9767558294

Status : Answered

Chosen Option : 2

**Q.34** Which of the following is the correct expression for cyclotron frequency?

- Ans
- A.  $v_c = \frac{qB}{2\pi m}$
  - B.  $v_c = \frac{\mu I}{2R}$
  - C.  $v_c = \frac{\mu NI}{2\pi R}$
  - D.  $v_c = \frac{2\pi m}{qB}$

Question ID : 9767558318

Status : Answered

Chosen Option : 1

**Q.35** In a chamber, a uniform magnetic field of 4.5 G ( $1G = 10^{-4}T$ ) is maintained. An electron is shot into the field with a speed of  $4.8 \times 10^6$  m/s normal to the field. Find the radius of the circular orbit? Also obtain the frequency of revolution of the electron in its circular orbit? ( $e = 1.6 \times 10^{-19}C$ ,  $m_e = 9.1 \times 10^{-31}kg$ ) choose an approximate value

- Ans
- A. 6.0 cm, 12.6 MHz
  - B. 4.8 cm, 12.6 MHz
  - C. 4.2 cm, 18 MHz
  - D. 0.6 cm, 19 MHz

Question ID : 9767558319

Status : Answered

Chosen Option : 2

**Q.36** Two capillaries whose diameters are respectively 9.0 mm and 8.0 mm, stand one by one in water. If water rises to a height 4.5 mm in the first capillary, what will be the height of water in the second capillary? (choose an approximate value)

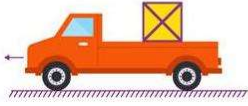
- Ans
- A.  $7.1 \times 10^{-3}$  m
  - B.  $7.35 \times 10^{-3}$  m
  - C.  $6.5 \times 10^{-3}$  m
  - D.  $5.06 \times 10^{-3}$  m

Question ID : 9767558315

Status : Answered

Chosen Option : 2

- Q.37** The rear side of a truck is open and a box of 30 kg mass is placed 4.5m away from the open end as given in diagram. The coefficient of friction between the box and the surface below it is 0.20. On a straight road, the truck starts from rest and accelerates with  $3 \text{ m/s}^2$ . At what distance from the starting point does the box fall off the truck? (ignore the size of the box) (Let  $g = 10 \text{ m/s}^2$ )



- Ans**
- A. 13.5 m
  - B. 4.5 m
  - C. 19.98 m
  - D. 16.5 m

Question ID : 9767558304

Status : Answered

Chosen Option : 2

- Q.38** Two point charges of  $2.6 \times 10^{-19} \text{ C}$  and  $-2.6 \times 10^{-19} \text{ C}$  are separated from each other by  $1.8 \times 10^{-10} \text{ m}$ . The dipole is situated in a uniform electric field of intensity  $5 \times 10^5 \text{ Vm}^{-1}$ . Find the work done in rotating the dipole by  $180^\circ$ ?

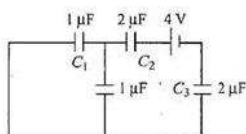
- Ans**
- A.  $46.8 \times 10^{-24} \text{ J}$
  - B.  $121.68 \times 10^{-24} \text{ J}$
  - C.  $60.84 \times 10^{-24} \text{ J}$
  - D.  $61.44 \times 10^{-24} \text{ J}$

Question ID : 9767558307

Status : Answered

Chosen Option : 1

- Q.39** Find the charge and potential difference across  $C_1$  of capacitance  $1 \mu\text{F}$  for the given circuit?



- Ans**
- A.  $\frac{2}{3} \mu\text{C}, \frac{4}{3} \text{ V}$
  - B.  $\frac{4}{3} \mu\text{C}, \frac{4}{3} \text{ V}$
  - C.  $\frac{2}{3} \mu\text{C}, \frac{2}{3} \text{ V}$
  - D.  $\frac{3}{4} \mu\text{C}, \frac{3}{4} \text{ V}$

Question ID : 9767558313

Status : Answered

Chosen Option : 1

**Q.40** A 60 kg man stands in contact against the inner wall of a hollow cylindrical drum of radius 4m rotating about its vertical axis with 180 rev./min. The coefficient of friction between the wall and his clothing is 0.20. Find the minimum rotational speed of the cylinder to enable the man to remain stuck to the wall (without falling) when the floor is suddenly removed? Assume  $g = 10 \text{ m/s}^2$

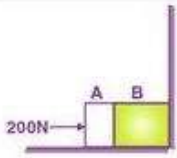
- Ans
- A.  $\sqrt{22.2}$  rad/s
  - B.  $\sqrt{12.5}$  rad/s
  - C.  $\sqrt{18.5}$  rad/s
  - D.  $\sqrt{28.5}$  rad/s

Question ID : 9767558303

Status : Answered

Chosen Option : 2

**Q.41** Two bodies A and B of masses 2 kg and 6 kg in contact with each other rest on a table against a rigid wall. The coefficient of friction between the bodies and the table is 0.20. A force of 200 N is applied horizontally to A. Find the net force on the partition?



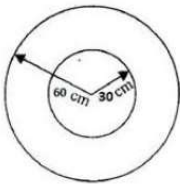
- Ans
- A. 184 N
  - B. 216 N
  - C. 16 N
  - D. 177.5 N

Question ID : 9767558305

Status : Answered

Chosen Option : 3

**Q.42** Given an isolated conducting spherical shell of radius 30 cm. Some positive charges is given to it so that resulting electric field has a maximum intensity of  $1.8 \times 10^6 \text{ NC}^{-1}$ . The same amount of negative charge is given to another isolated conducting spherical shell of radius 60 cm. Now, first shell is placed inside the second so that both are concentric as given in figure below. Find the electrostatic energy stored in the system?



- Ans
- A. 0.15
  - B. 0.06
  - C. 0.03
  - D. 0.09

Question ID : 9767558312

Status : Answered

Chosen Option : 1

**Q.43** Which of the following pair is **INCORRECT** for some transparent media with respect to air? (may consider the most approximate value)

- Ans**
- A. Substance medium: water,  
Refractive index: 1.33,  
Critical angle: 48.75.
  - B. Substance medium: crown glass,  
Refractive index: 1.12,  
Critical angle: 29.14.
  - C. Substance medium: dense flint glass,  
Refractive index: 1.62,  
Critical angle: 37.31.
  - D. Substance medium: diamond,  
Refractive index: 2.42,  
Critical angle: 24.41.

Question ID : 9767558298

Status : Answered

Chosen Option : 1

**Q.44** About 10 % of the power of a 100 W light bulb is converted to visible radiation. What is the average intensity of visible radiation?

(a) At a distance 2 m from the bulb?

(b) At a distance of 5 m?

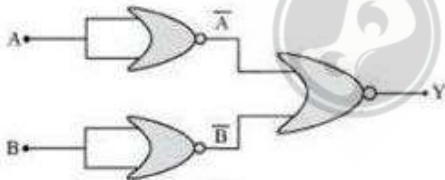
- Ans**
- A. (a) 0.19 (b) 0.0319
  - B. (a) 0.0412 (b) 0.23
  - C. (a) 0.398 (b) 0.0398
  - D. (a) 0.23 (b) 0.0412

Question ID : 9767558292

Status : Answered

Chosen Option : 4

**Q.45**



Identify the correct logic operations performed by the above circuit consisting NOR gates?

- Ans**
- A. Circuit functions as an OR gate
  - B. Circuit functions as an NAND gate
  - C. Circuit functions as an NOT gate
  - D. Circuit functions as an AND gate

Question ID : 9767558314

Status : Answered

Chosen Option : 1

**Q.46** In an experiment on the specific heat of a metal, a 0.30 kg block of the metal at 120°C is dropped in a copper calorimeter (of water equivalent 0.025kg) containing 100 cm<sup>3</sup> of water at 27°C. The final temperature is 35°C. Calculate the specific heat of the metal?

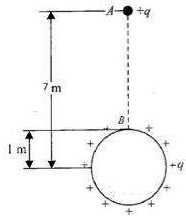
- Ans
- A. 0.144 Jg<sup>-1</sup>K<sup>-1</sup>
  - B. 0.434 Jg<sup>-1</sup>K<sup>-1</sup>
  - C. 0.282 Jg<sup>-1</sup>K<sup>-1</sup>
  - D. 0.636 Jg<sup>-1</sup>K<sup>-1</sup>

Question ID : 9767558321

Status : Answered

Chosen Option : 1

**Q.47** A very small sphere of mass 60 g having a charge  $q$  is held at a height of 7m vertically above the center of a fixed conducting sphere of radius 1m, carrying an equal charge  $q$ . When released, it falls until it is repelled back just before it comes in contact with the sphere as shown in given figure. Find the charge? ( $g=10 \text{ m/s}^2$ )



- Ans
- A.  $25\sqrt{1.5}$
  - B.  $20\sqrt{1.5}$
  - C.  $20\sqrt{3}$
  - D.  $20\sqrt{2}$

Question ID : 9767558308

Status : Answered

Chosen Option : 3

**Q.48** Static friction is a self-adjusting force up to its limit \_\_\_\_\_. Do not put \_\_\_\_\_ without being sure that the maximum value of static friction is coming into play.

- Ans
- A.  $\mu_s N$  ( $fs \geq \mu_s N$ ),  $fs < \mu_s N$
  - B.  $\mu_s N$  ( $fs \geq \mu_s N$ ),  $fs = \mu_s N$
  - C.  $\mu_s N$  ( $fs = \mu_s N$ ),  $fs = \mu_s N$
  - D.  $\mu_s N$  ( $fs \leq \mu_s N$ ),  $fs = \mu_s N$

Question ID : 9767558302

Status : Answered

Chosen Option : 1

**Q.49** An object of size 2 cm is placed 18 cm in front of concave lens of focal length 27 cm. Find the height of the image produced by the lens?

- Ans
- A. 8.4 cm
  - B. 1.2 cm
  - C. 1.8 cm
  - D. 10.8 cm

Question ID : 9767558297  
Status : Answered  
Chosen Option : 3

**Q.50** Calculate the speed of the electromagnetic wave in a medium if the amplitude of electric and magnetic fields are  $2.4 \times 10^2 \text{ N C}^{-1}$  and  $4 \times 10^{-3} \text{ T}$ , respectively?

- Ans
- A.  $0.6 \times 10^{-5}$
  - B.  $0.5 \times 10^{-5}$
  - C.  $0.5 \times 10^5$
  - D.  $0.6 \times 10^3$

Question ID : 9767558295  
Status : Answered  
Chosen Option : 1

**Q.51** A circular coil of 50 turns and radius 10 cm carrying a current of 5.0 A is suspended vertically in a uniform horizontal magnetic field of magnitude 1.0 T. The field lines make an angle of  $90^\circ$  with the normal of the coil. Calculate the magnitude of the counter torque that must be applied to prevent the coil from turning?

- Ans
- A. 3.13 Nm
  - B. 7.85 Nm
  - C. 2.83 Nm
  - D. 6.32 Nm

Question ID : 9767558317  
Status : Answered  
Chosen Option : 2

**Q.52** Let the electric field amplitude of an electromagnetic wave is  $E_0=90 \text{ N/C}$  and that its frequency is  $\nu = 50.0 \text{ MHz}$ . find  $B_0$ ,  $k$ , and  $\lambda$ ?

- Ans
- A.  $B_0=300 \text{ nT}$ ,  $k = 1.02 \text{ rad/m}$ ,  $\lambda = 3.0 \text{ m}$
  - B.  $B_0=300 \text{ nT}$ ,  $k = 1.05 \text{ rad/m}$ ,  $\lambda = 6.0 \text{ m}$
  - C.  $B_0=400 \text{ nT}$ ,  $k = 1.05 \text{ rad/m}$ ,  $\lambda = 6.0 \text{ m}$
  - D.  $B_0=400 \text{ nT}$ ,  $k = 1.02 \text{ rad/m}$ ,  $\lambda = 3.0 \text{ m}$

Question ID : 9767558293  
Status : Answered  
Chosen Option : 4



**Q.53** When a  $3 \mu\text{C}$  of charge is carried from point A to point B, the amount of work done by electric field is  $75 \mu\text{J}$ . Determine the potential difference?

- Ans
- A. 100 V
  - B. 2.5 V
  - C. 225 V
  - D. 25 V

Question ID : 9767558311

Status : Answered

Chosen Option : 4

**Q.54** Compute the cartesian components of the electric field at the point if the potential at any point is given by  $V = x(y^2 - 4x^2)$ ?

- Ans
- A.  $(12x^2 - y^2), (-4xy)$
  - B.  $(12x^2 - 2y^2), (-2xy)$
  - C.  $(12x^2 - y^2), (-2xy)$
  - D.  $(6x^2 - y^2), (-2xy)$

Question ID : 9767558309

Status : Answered

Chosen Option : 3

**Q.55** Which of the following is the correct expression for maximum possible speed of a car on a banked road?

- Ans
- A.  $v_{\max} = \left( Rg \frac{\mu_s + \tan \theta}{1 - \mu_s \tan \theta} \right)^{1/2}$
  - B.  $v_{\max} = \left( Rg \frac{\sqrt{\mu_s + \tan \theta}}{\sqrt{1 - \mu_s \tan \theta}} \right)$
  - C.  $v_{\max} = \left( Rg \frac{\mu_s + \tan \theta}{1 - \mu_s \tan \theta} \right)$
  - D.  $v_{\max} = \sqrt{\mu_s Rg}$

Question ID : 9767558306

Status : Answered

Chosen Option : 1

**Q.56** Double-convex lens are to be manufactured from a glass of refractive index 1.55, with both faces of the same radius of curvature. Find the radius of curvature required if the focal length is to be 30 cm?

- Ans
- A. 22 cm
  - B. 33 cm
  - C. 44 cm
  - D. 55 cm

Question ID : 9767558299

Status : Answered

Chosen Option : 2

**Q.57** A thermacole cubical icebox of side 20 cm has a thickness of 4.0 cm. If 5.0 kg of ice is put in the box, estimate the amount of ice remaining after 5h. The outside temperature is  $35^\circ\text{C}$ , and coefficient of thermal conductivity of thermacole is  $0.01 \text{ J s}^{-1} \text{ m}^{-1} \text{ K}^{-1}$ . (Heat of fusion of water =  $335 \times 10^3 \text{ J kg}^{-1}$ )

- Ans**
- A. 4.8 kg
  - B. 3.7 kg
  - C. 4.2 kg
  - D. 3.1 kg

Question ID : 9767558320  
Status : Answered  
Chosen Option : 3

**Q.58** The amplitude of the magnetic field part of a harmonic electromagnetic wave in vacuum is  $B_0 = 480 \text{ nT}$ . Find the amplitude of the electric field part of the wave?

- Ans**
- A. 144 N/C
  - B. 440 N/C
  - C. 153 N/C
  - D. 48 N/C

Question ID : 9767558296  
Status : Answered  
Chosen Option : 1

**Q.59** What is the largest average velocity of blood flow in an artery of radius  $4 \times 10^{-3} \text{ m}$  if the flow must remain laminar? Also determine the corresponding flow rate?

(Consider viscosity of blood to be  $2.084 \times 10^{-3} \text{ pa s}$ .)

- Ans**
- A.  $0.49, 2.46 \times 10^{-5} \text{ m}^3/\text{s}$
  - B.  $0.49, 24.6 \times 10^{-5} \text{ m}^3/\text{s}$
  - C.  $0.98, 24.6 \times 10^{-5} \text{ m}^3/\text{s}$
  - D.  $0.98, 24.6 \times 10^{-6} \text{ m}^3/\text{s}$

Question ID : 9767558300  
Status : Answered  
Chosen Option : 2

**Q.60** A uniform magnetic field of 2 T exists in a cylindrical region of radius 10 cm, its direction parallel to the axis along east to west. A wire carrying current 6 A in the north to south direction passes through the region. What is the magnitude of the force on the wire if

(a) the wire intersects the axis

(b) the wire in the N-S direction is lowered from the axis by a distance of 6 cm?

- Ans
- A. 2.1 N, 1.92 N respectively
  - B. 2.1 N, 1.54 N respectively
  - C. 2.4 N, 1.92 N respectively
  - D. 2.4 N, 1.54 N respectively

Question ID : 9767558316

Status : Answered

Chosen Option : 3



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