RECRUITMENT FOR VARIOUS POSTS IN OFFICIAL LANGUAGE AND AIR TRAFFIC CONTROL

ADVERTISEMENT No. 08/2022

Participant ID	
Participant Name	
Test Center Name	iON Digital Zone iDZ 2 Sector 62
Test Date	21/02/2023
Test Time	12:30 PM - 2:30 PM
Subject	Junior Executive (Air Traffic Control)

Section : General Knowledge

Q.1 In which of the following states did Micro-Finance Institutions Network (MFIN) launch a series of free Medical Health Camps in 18 flood affected districts in September 2022?

Ans   1. Meghalaya ✗

✗ 2. Bihar

✗ 3. Jharkhand

✔ 4. Assam

Question ID : 630680164376
Status : Answered
Chosen Option : 4

Q.2 Identify the cnidarian that is correctly matched with its common name.

Ans   ✗ 1. Adamsia – Sea-pen

✗ 2. Gorgonia – Sea anemone

✔ 3. Physalia – Portuguese man-of-war

✗ 4. Pennatula – Sea-fan

Question ID : 630680164380
Status : Answered
Chosen Option : 3

Q.3 In which year did the University Grants Commission Act come into force?

Ans ✗ 1. 1954

✗ 2. 1950

✔ 3. 1956

✗ 4. 1952

Question ID : 630680164374
Status : Answered
Chosen Option : 3

Q.4 Article 148 of the Constitution of India guides towards the appointment of ____ _.

Ans ✗ 1. Finance Commissioner

✗ 2. Attorney-General for India

✗ 3. Election Commissioner

✔ 4. Comptroller and Auditor-General of India

Question ID : 630680164381
Status : Answered
Chosen Option : 3

Q.5 Who is the awardee of Major Dhyan Chand Khel Ratna Award 2022?

Ans ✗ 1. Eldhose Paul

✗ 2. R Praggnanandhaa

✔ 3. Sharath Kamal Achanta

✗ 4. Avinash Mukund Sable

Question ID : 630680164382
Status : Answered
Chosen Option : 3

Q.6 Match the columns.

Rivers	Their origin
I. Indus	a) Amarkantak (Madhya Pradesh)
II. Godavari	b) Mansarovar (Tibet)
III. Cauvery	c) Nasik (Maharashtra)
IV. Narmada	d) Coorg (Karnataka)

Ans ✔ 1. I-b, II-c, III-d, IV-a

✗ 2. I-b, II-c, III-a, IV-d

✗ 3. I-a, II-c, III-b, IV-d

✗ 4. I-d, II-c, III-b, IV-a

Question ID : 630680164378
Status : Answered
Chosen Option : 1

Q.7 Which of the following leucoplasts store oils and fats?

Ans ✗ 1. Nucloeplasts

✗ 2. Amyloplasts

✔ 3. Elaioplasts

✗ 4. Aleuroplasts

Question ID : 630680164379
Status : Answered
Chosen Option : 2

Q.8 Which of the following Harappan sites was excavated in the 1960s under the guidance of BK Thapar?

Ans ✗ 1. Harappa

✔ 2. Kalibangan

✗ 3. Lothal

✗ 4. Mohenjodaro

Question ID : 630680164375
Status : Answered
Chosen Option : 3

Q.9 The reformer Henry Vivian Derozio was associated with ___ _ .

Ans ✗ 1. Akali Movement

✗ 2. Ahmadiya Movement

✔ 3. Young Bengal Movement

✗ 4. Suddhi Movement

Question ID : 630680164373
Status : Answered
Chosen Option : 3

Q.10 Which of the following is NOT one of the three major types of indigenous wild silks produced in Assam?

Ans ✗ 1. Warm Eri Silk

✔ 2. Kausheya Pat

✗ 3. White Pat

✗ 4. Golden Muga Silk

Question ID : 630680164377
Status : Answered
Chosen Option : 2

Section : General Intelligence

Q.1 Two men stepped out of an apartment but walked in different directions to reach different destinations. The first man walked 92 m towards west and took a left turn. He then walked 100 m and took a left turn. He then walked 240 m and took a right turn. Finally, he walked for 100 m to reach a point D. The second man walked 80 m towards east and took a right turn. He then walked 110 m to reach a point B. In which direction is point B from point D?

Ans ✘ 1. South-West

✘ 2. North-East

✘ 3. South-East

✔ 4. North-West

Question ID : 630680164391
Status : Answered
Chosen Option : 4

Q.2 Given below are pairs of events (i) and (ii). You have to read them and decide their nature of relationship. You have to assume that the information given in both (i) and (ii) is true and not assume anything beyond the given information in deciding the answer.
Event (i) Many people visited the Taj Mahal during the weekend.
Event (ii) Few foreigners visited the Taj Mahal during the weekdays.

Ans ✘ 1. Both the events are effects of some common cause.

✔ 2. Both the events are effects of some independent causes.

✘ 3. Event (ii) is the effect and event (i) is its immediate and principal cause.

✘ 4. Event (i) is the effect and event (ii) is its immediate and principal cause.

Question ID : 630680164396
Status : Answered
Chosen Option : 2

Q.3 Given below are pairs of events (i) and (ii). You have to read them and decide their nature of relationship. You have to assume that the information given in both (i) and (ii) is true and not assume anything beyond the given information in deciding the answer.
Event (i) The prices of imported goods dropped significantly this year.
Event (ii) The government reduced the tax on importing goods.

Ans ✘ 1. Both the events are effects of some independent causes.

✘ 2. Event (ii) is the effect and event (i) is its immediate and principal cause.

✘ 3. Both the events are effects of some common cause.

✔ 4. Event (i) is the effect and event (ii) is its immediate and principal cause.

Question ID : 630680164397
Status : Answered
Chosen Option : 2

Q.4 F, K, W, C, U, B and D are seven family members attending an economics fair. D is the brother of B. C is wife of W. F is K's husband. B is U's wife. K is the mother of U and daughter of W. How is D related to U?

Ans ✔ 1. Wife's brother

✘ 2. Father

✘ 3. Brother

✘ 4. Husband

Question ID : 630680164392
Status : Answered
Chosen Option : 1

Q.5 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:
Few sheep are chimpanzees.
No chimpanzee is a gorilla.
All gorillas are bears.
Conclusions:
(I) Some bears are not chimpanzees.
(II) All chimpanzees are sheep.
(III) All bears are gorillas.

Ans ✗ 1. None of the conclusions follow

✗ 2. Either conclusion I or conclusion III follow

✗ 3. Only conclusion II follows

✓ 4. Only conclusion I follows

Question ID : 630680164388
Status : Answered
Chosen Option : 1

Q.6 A certain number of people are sitting in a row, facing south. Naresh sits fourth to the right of Sita. Only four people sit between Naresh and Kumar. Raju sits to the immediate right of Kumar. Only two people sit between Kumar and Anuj. Amit sits third to the right of Anuj. If no other person is sitting in the row, what is the total number of people seated?

Ans ✓ 1. 16

✗ 2. 15

✗ 3. 14

✗ 4. 17

Question ID : 630680164386
Status : Answered
Chosen Option : 1

Q.7 Each of the five persons among M, N, O, P and Q like different drinks among coffee, tea, hot chocolate, iced tea and energy drink, not necessarily in the same order. They all have different professions - Teacher, Librarian, Technician, Accountant and Acrobat.
N does not like tea. M likes coffee and is a librarian. N and P like neither energy drink nor iced tea. O likes energy drink but he is neither a teacher nor an accountant. Q is a technician. The one who likes tea is a teacher. Which of the following is correct?

Ans ✗ 1. Q is an acrobat and likes energy drink.

✗ 2. P is an accountant and likes iced tea.

✗ 3. O likes energy drink and is a technician.

✓ 4. P is a teacher and likes tea.

Question ID : 630680164387
Status : Not Attempted and Marked For Review
Chosen Option : --

Q.8 Seven teachers P, Q, R, S, T, U and V are sitting in a straight row, facing north. Only Q sits between V and U. Only R sits to the right of T. P is to the immediate left of T. Only P sits between T and S. V does not sit at any of the extreme ends of the row. Who sits to the immediate left of Q?

Ans ✗ 1. P

✗ 2. T

✔ 3. U

✗ 4. V

Question ID : 630680164384
Status : Answered
Chosen Option : 3

Q.9 If
'P & Q' means 'P is the brother of Q's mother',
'P Ø Q' means 'P is the father of Q',
'P * Q' means 'P is the mother of Q',
'P = Q' means 'P is the wife of Q',
'P % Q' means 'P is the husband of Q', then how is M related to S in the following expression?
S = Q Ø O % N * M

Ans ✗ 1. Daughter's husband

✗ 2. Brother

✔ 3. Son's child

✗ 4. Brother's child

Question ID : 630680164393
Status : Answered
Chosen Option : 3

Q.10 Each of M, N, O, P, Q, R and S has birthdays on a different day of a week starting from Monday and ending on Sunday of the same week.
Only N has birthday before Q who has birthday on Tuesday. R has birthday on Thursday. P has birthday immediately after S, but not on Sunday. M has birthday on one of the days before O. Who has birthday on Sunday?

Ans ✔ 1. O

✗ 2. Q

✗ 3. M

✗ 4. S

Question ID : 630680164385
Status : Answered
Chosen Option : 4

Q.11 Study the given information carefully and answer the question that follows.
A group of 8 classmates, 4 boys H, I, J and K and 4 girls D, E, F and G decided to sit at a
round table to have coffee, during the lunch break. They are sitting in such a way that:
1. all of them are facing each other
2. no two girls or two boys are sitting side by side
3. J is between D and G and is facing I
4. E, who is sitting between K and I, is facing D
5. H is to the immediate right of F.
Who is sitting in front of K?

Ans ✗ 1. D

　　 ✔ 2. H

　　 ✗ 3. I

　　 ✗ 4. F

Question ID : 630680164383
Status : Answered
Chosen Option : 2

Q.12 If in a certain coding language, 'flowers go black' is written as 'la vo mu', 'black panther
died' is written as 'zi mu be' and 'panther go red' is written as 'be la ho', how will 'panther' be
written in that language?

Ans ✗ 1. zi

　　 ✗ 2. ho

　　 ✔ 3. be

　　 ✗ 4. la

Question ID : 630680164389
Status : Answered
Chosen Option : 3

Q.13 Select an option that is true regarding the following two statements labelled Assertion (A)
and Reason (R).
A. Sun is a star.
R. Stars are space objects that produces their own energy through fusion reaction of gases.

Ans ✗ 1. 'A' is true but 'R' is false.

　　 ✗ 2. Both 'A' and 'R' are false.

　　 ✔ 3. Both 'A' and 'R' are true and 'R' is the correct explanation of 'A'.

　　 ✗ 4. Both 'A' and 'R' are true but 'R' is not the correct explanation of 'A'.

Question ID : 630680164395
Status : Answered
Chosen Option : 3

Q.14 A question is given, two statements labelled I and II. Identify which of the statements is/are sufficient/necessary to answer the question.
Question:
On what day of the week does Punit's birthday fall?
Statements:
I. Arjun correctly remembers that Punit's birthday comes before Thursday but after Monday.
II. Bhushan correctly remembers that Punit's birthday comes after Tuesday but before Saturday.

Ans ✗ 1. The data either in statement I alone or statement II alone are sufficient to answer the question.

✗ 2. The data in statement I alone is sufficient to answer the question, while the data in statement II alone is not sufficient to answer the question.

✗ 3. The data in statement II alone is sufficient to answer the question, while the data in statement I alone is not sufficient to answer the question.

✔ 4. The data given in both statements I and II together are necessary to answer the question.

Question ID : 630680164394
Status : Answered
Chosen Option : 4

Q.15 Mr. Pandey and Mr. Gupta stepped out of the same office and walked towards West. Mr. Pandey walked 300 m and took a right turn. He walked 200 m and took a left turn. He walked 90 m and reached the bank. Meanwhile, Mr. Gupta walked 650 m to reach the bus stop. In which direction is the bus stop from the bank?

Ans ✗ 1. South-East

✗ 2. North

✔ 3. South-West

✗ 4. North-West

Question ID : 630680164390
Status : Answered
Chosen Option : 3

Section : General Aptitude

Q.1 A sum of ₹7,560 is divided between A, B and C such that the ratio of the share of A to the combined share of B and C is 5 : 9 and the ratio of the share of C to the combined share of A and B is 3 : 7. What is the share of B?

Ans ✗ 1. ₹2,590

✗ 2. ₹2,480

✔ 3. ₹2,592

✗ 4. ₹2,482

Question ID : 630680164405
Status : Answered
Chosen Option : 2

Q.2 The marked price of an article is ₹450. It is sold for ₹348.48, after giving two successive discounts each of x% on the marked price. If a single discount of 2x% is given on the same marked price, then what will be its selling price?

Ans ✗ 1. ₹315

✔ 2. ₹342

✗ 3. ₹306

✗ 4. ₹360

Question ID : 630680164404
Status : Answered
Chosen Option : 2

Q.3 A and B enter into a partnership with capitals in the ratio $\frac{4}{3} : \frac{5}{6}$. After 6-months, A reduces his capital by 25% and B increases his capital by 50%. What is the share of B in the profit of ₹63.6 lakhs, at the end of a year?

Ans ✗ 1. 32.5

✔ 2. 30

✗ 3. 32

✗ 4. 33.6

Question ID : 630680164406
Status : Answered
Chosen Option : 2

Q.4 Rashid borrowed a sum of ₹30,240 at 10% p.a., interest compounded annually. If the amount is to be paid back in two equal annual instalments, then the interest paid by him is:

Ans ✔ 1. ₹4,608

✗ 2. ₹4,590

✗ 3. ₹4,518

✗ 4. ₹4,600

Question ID : 630680164408
Status : Answered
Chosen Option : 1

Q.5 The diameter of a solid metallic spherical bullet is 3.5 cm. 96 such bullets are melted and recast into a solid right circular cylinder of height 56 cm. What is the curved surface area (in cm^2) of the cylinder?

Ans ✗ 1. 448π

✗ 2. 280π

✔ 3. 392π

✗ 4. 336π

Question ID : 630680164412
Status : Answered
Chosen Option : 1

Q.6 The ratio of alcohol and water in solution A is 3 : 5 and it is 7 : 3 in solution B. Six litres of A and 5 litres of B are mixed in a vessel and one litre water is also added to this mixture. What is the ratio of alcohol and water in the resulting mixture?

Ans ✔ 1. 23 : 25

✘ 2. 22 : 23

✘ 3. 21 : 22

✘ 4. 23 : 29

Question ID : 630680164401
Status : Answered
Chosen Option : 1

Q.7 If a 8-digit number 43x259y2 is divisible by 88, then the largest possible value of (5x+2y) is:

Ans ✔ 1. 63

✘ 2. 56

✘ 3. 64

✘ 4. 52

Question ID : 630680164399
Status : Answered
Chosen Option : 1

Q.8 In finding HCF of two positive integers by division method, the last divisor is 28 and the respective quotients from the beginning are 30, 1 and 3. What is the sum of the two integers?

Ans ✔ 1. 3556

✘ 2. 3566

✘ 3. 3554

✘ 4. 3564

Question ID : 630680164400
Status : Answered
Chosen Option : 1

Q.9 A car travelling at a speed of 70 km/h overtakes a bus travelling in the same direction and leaves it 170 m behind in 18 seconds. What is the speed (in km/h) of the bus?

Ans ✘ 1. 45

✔ 2. 36

✘ 3. 42

✘ 4. 40

Question ID : 630680164409
Status : Answered
Chosen Option : 2

Q.10 The simple interest on a certain sum for $12\frac{1}{2}$ years at 15 % p.a. exceeds the amount of the same sum at simple interest for $6\frac{1}{2}$ years at 12 % p.a. by ₹1197. The sum (in ₹) is:

Ans
✘ 1. 13,000

✘ 2. 12,800

✔ 3. 12,600

✘ 4. 12,500

Question ID : 630680164407
Status : Answered
Chosen Option : 4

Q.11 The cost price of item A is ₹500 more than that of item B. When A is sold at a loss of 10% and B is sold at a profit of 25%, then there is a profit of 4% in the entire transaction. What is the selling price of item A?

Ans
✘ 1. ₹1,620

✘ 2. ₹1,440

✘ 3. ₹1,260

✔ 4. ₹1,350

Question ID : 630680164403
Status : Answered
Chosen Option : 4

Q.12 Pipes A and B can fill a tank in 12 hours and 15 hours, respectively. Pipe C is an emptying pipe. Pipes A and B are opened together for 5 hours and then B is closed and C is opened. A and C together filled the remaining part of the tank in 10 hours. Pipe C alone can empty $\frac{7}{15}$ th part of the tank in:

Ans

✘ 1. $7\frac{1}{2}$ hours

✘ 2. $8\frac{1}{2}$ hours

3. 7 hours

✔ 4. 8 hours

Question ID : 630680164411
Status : Answered
Chosen Option : 3

Q.13 The time taken by a boat to cover a certain distance upstream is equal to $\frac{4}{7}$ of the time taken by it to cover three times the same distance downstream. The speed of the stream is 7.5 km/h. How many (total) hours will the boat take to go 42 km upstream and 54 km downstream?

Ans
✘ 1. 4.2

✔ 2. 3.5

✘ 3. 4

✘ 4. 3

Question ID : 630680164410
Status : Answered
Chosen Option : 2

Q.14 By selling an article for ₹219.60, a shopkeeper loses 8.5%. If he sells it for ₹265.20, then his profit per cent is:

Ans ✗ 1. 12.5%

  ✓ 2. 10.5%

  ✗ 3. 9%

  ✗ 4. 10%

Question ID : 630680164402
Status : Answered
Chosen Option : 2

Q.15

The value of $\dfrac{5\frac{1}{4} \div 2\frac{1}{3}\ of\ \frac{3}{4} - \frac{3}{4} \times 1\frac{1}{2} \div 1\frac{1}{8} + \frac{2}{3}}{0.\overline{29} \div 0.3\overline{2}\ of\ (30 \div 11)}$ is:

Ans

  ✗ 1. $\dfrac{9}{8}$

  2. 9

  ✗ 3. $\dfrac{8}{9}$

  ✓ 4. 8

Question ID : 630680164398
Status : Answered
Chosen Option : 3

Section : General English

Parts of a sentence are given below in jumbled order. Arrange the parts in the correct orderto form a meaningful sentence.
  A. Shivaji's son Sambhaji grew up
  B. under the shelter and watch
  C. of his father and,
  D. more importantly, his grandmother, Jijabai

Ans ✗ 1. ABDC

  ✓ 2. ABCD

  ✗ 3. ACBD

  ✗ 4. ADCB

Question ID : 630680164431
Status : Answered
Chosen Option : 2

Q.2 Select the most appropriate option to fill in the blank.
Much of____ credit for making this school great goes to its Principal.

Ans ✘ 1. an

✘ 2. a

✘ 3. No word required

✔ 4. the

Question ID : 630680164421
Status : Answered
Chosen Option : 4

Q.3 Select the most appropriate option to fill in the blank and complete the given proverb correctly.
A journey of thousand miles begins_____ _.

Ans ✘ 1. from home

✘ 2. after finishing school

✔ 3. with a single step

✘ 4. gradually

Question ID : 630680164428
Status : Answered
Chosen Option : 3

Q.4 Select the most appropriate meaning of the given idiom.
Bag of bones

Ans ✘ 1. A bag full of trash

✔ 2. A very thin person

✘ 3. An unreliable person

✘ 4. An unsolved issue

Question ID : 630680164430
Status : Answered
Chosen Option : 4

Q.5 Select the most appropriate option to fill in the blank.
He_____ the loan he had taken from his friend within a month.

Ans ✔ 1. repaid

✘ 2. revealed

✘ 3. reserved

✘ 4. requested

Question ID : 630680164432
Status : Answered
Chosen Option : 1

Q.6 Select the most appropriate synonym of the given word.
Expedite

Ans ✔ 1. Hasten

✘ 2. Hinder

✘ 3. Hold

✘ 4. Halt

Question ID : 630680164425
Status : Answered
Chosen Option : 1

Q.7 Select the most appropriate option to fill in the blank.
We found her playing with ___ little dog in the park.

Ans ✘ 1. the

✘ 2. No word required

✔ 3. a

✘ 4. an

Question ID : 630680164419
Status : Answered
Chosen Option : 3

Q.8 Select the most appropriate option to fill in the blank.
Last year, I _____ a house in Shimla.

Ans ✘ 1. buy

✘ 2. was buying

✘ 3. have bought

✔ 4. bought

Question ID : 630680164417
Status : Answered
Chosen Option : 4

Q.9 Identify the proverb that best suits the following scenario.
As long as the outcome is good, problems on the way don't matter.

Ans ✘ 1. Every cloud has a silver lining.

✔ 2. All is well that ends well.

✘ 3. All is fair in love and war.

✘ 4. An hour in the morning is worth two in the evening.

Question ID : 630680164429
Status : Answered
Chosen Option : 2

Q.10 Select the most appropriate option to fill in the blanks.

I happily _____ to the demand of our workmen for extra bonus. After all, this year our sales had _____ all expectations.

Ans ✗ 1. exceeded, acceded

✗ 2. acceded, acceded

✗ 3. exceeded, exceeded

✔ 4. acceded, exceeded

Question ID : 630680164426
Status : Answered
Chosen Option : 4

Q.11 Select the most appropriate option to fill in the blank.

I wanted to buy some peanuts, but I didn't see anyone _____ them.

Ans ✔ 1. selling

✗ 2. sells

✗ 3. to sell

✗ 4. sold

Question ID : 630680164415
Status : Answered
Chosen Option : 1

Q.12 Select the most appropriate option to fill in the blank.

Last night, a thick fog caused a massive accident _____ the Expressway.

Ans ✔ 1. on

✗ 2. at

✗ 3. over

✗ 4. above

Question ID : 630680164413
Status : Answered
Chosen Option : 1

Q.13 Select the most appropriate option to collocate with the word 'tired' to fill in the blank.

Sometimes she _____ tired of looking after small children.

Ans ✔ 1. gets

✗ 2. makes

✗ 3. begins

✗ 4. goes

Question ID : 630680164424
Status : Answered
Chosen Option : 1

Q.14 Select the most appropriate ANTONYM of the given word.
Scrumptious

Ans ✗ 1. Delicious

✗ 2. Appetising

✔ 3. Tasteless

✗ 4. Satisfying

Question ID : 630680164427
Status : Answered
Chosen Option : 3

Q.15 Select the most appropriate option to fill in the blank.
Look, the children _____ such fun on this swing!

Ans ✗ 1. have

✔ 2. are having

✗ 3. had

✗ 4. have had

Question ID : 630680164416
Status : Answered
Chosen Option : 2

Q.16 Select the most appropriate option to fill in the blanks.
He ordered his soldiers to search _____ whole forest for ___ lost puppy of the boy.

Ans ✗ 1. a, a

✗ 2. a, the

✗ 3. the, a

✔ 4. the, the

Question ID : 630680164422
Status : Answered
Chosen Option : 4

Q.17 Select the most appropriate option to fill in the blank.
Tom: "What are you going to do with this laptop?"
Peter: "I _____ it."

Ans ✔ 1. will sell

✗ 2. sold

✗ 3. sell

✗ 4. was selling

Question ID : 630680164418
Status : Answered
Chosen Option : 1

Q.18 Select the most appropriate option to collocate with the word 'look' to fill in the blank.

Let's take a _____ look through this file.

Ans ✔️ 1. quick

❌ 2. swift

❌ 3. rapid

❌ 4. fast

Question ID : 630680164423

Status : Answered

Chosen Option : 1

Q.19 Select the most appropriate option to fill in the blank.

At the association's meeting, people voted by raising _____ hands.

Ans ❌ 1. them

✔️ 2. their

❌ 3. theirs

❌ 4. our

Question ID : 630680164414

Status : Answered

Chosen Option : 2

Q.20 Select the most appropriate option to fill in the blanks.

When she was hungry, she ate _____ orange and drank _____ glass of water.

Ans ✔️ 1. an, a

❌ 2. a, a

❌ 3. the, the

❌ 4. a, the

Question ID : 630680164420

Status : Answered

Chosen Option : 1

Section : Domain Knowledge

Q.1 If $\begin{vmatrix} 2x-4 & 4 & 0 \\ 2 & x-1 & 1 \\ 2 & 2 & 0 \end{vmatrix} = 0$, then $x = ?$

Ans ✔️ 1. 4

❌ 2. −4

❌ 3. −5

❌ 4. 5

Question ID : 630680164470

Status : Answered

Chosen Option : 1

Q.2

The value of $\int \dfrac{1}{2x^2 + x - 3}\, dx$ is:

Ans

✗ 1. $\log\left(\dfrac{x-1}{2x+3}\right) + c$

✗ 2. $\log\left(\dfrac{2x+3}{x-1}\right) + c$

✓ 3. $\dfrac{1}{5}\log\left(\dfrac{x-1}{2x+3}\right) + c$

✗ 4. $\dfrac{1}{5}\log\left(\dfrac{2x+3}{x-1}\right) + c$

Question ID : 630680164478
Status : Answered
Chosen Option : 4

Q.3 The electric field of a plane electromagnetic wave oscillates sinusoidally with a frequency of 2.0×10^{10} Hz and an amplitude of 60 Vm^{-1}. The wavelength (in cm) of the wave is (c = 3 $\times 10^8$ ms^{-1}):

Ans ✗ 1. 0.015

✗ 2. 0.15

✗ 3. 0.66

✓ 4. 1.5

Question ID : 630680164447
Status : Answered
Chosen Option : 1

Q.4 Consider a circuit with Resistance, Inductor and Capacitor connected in series. The phase difference between the current and the alternating voltage (at resonance) is:

Ans ✗ 1. π/4

✓ 2. 0

✗ 3. π

✗ 4. π/2

Question ID : 630680164444
Status : Answered
Chosen Option : 2

Q.5

The value of $\lim\limits_{x\to\infty}\left(\dfrac{2x-1}{2x+3}\right)^{\frac{x+1}{2}}$ is:

Ans ✗ 1. e

2. 0

✗ 3. $\dfrac{1}{e^2}$

✔ 4. $\dfrac{1}{e}$

Question ID : 630680164474
Status : Answered
Chosen Option : 4

Q.6

If $f(x)=\dfrac{1}{1+x}$, $g(x)=f\{f(x)\}$ and $h(x)=f\left[f\{f(x)\}\right]$, then the value of $f(x).g(x).h(x)$ is:

Ans

✗ 1. $\dfrac{1}{2x}$

2. $\dfrac{1}{2x-3}$

3. $\dfrac{1}{2x+3}$

4. -1

Question ID : 630680164464
Status : Answered
Chosen Option : 3

Q.7 Consider the solar system as a large atom. The quantum number (n) that characterises Earth's orbit (radius = 1.5 × 10^{11} m) with Earth moving at an orbital speed of 3 × 10^4 m/s is (mass of Earth is 6 × 10^{24} kg):

Ans ✔ 1. 2.56×10^{74}

✗ 2. 2.56×10^{39}

✗ 3. 2.56×10^{73}

✗ 4. 2.56

Question ID : 630680164452
Status : Answered
Chosen Option : 2

Q.8 If P (2, 3, 4), Q (5, 8, 7) and R (−1, −2, 1) are collinear, then R divides PQ in the ratio:

Ans
1. 2 : 1 internally

2. 1 : 2 externally

3. 1 : 2 internally

4. 2 : 1 externally

Question ID : 630680164486

Status : Answered

Chosen Option : 2

Q.9 If A = {1, 2, 3, 4, 5}, then the relation R = {(2, 3), (3, 4), (2, 4)} on A is:

Ans
1. transitive only

2. reflexive and transitive only

3. symmetric only

4. symmetric and transitive only

Question ID : 630680164463

Status : Answered

Chosen Option : 1

Q.10 The radius of the innermost orbit of hydrogen atom is 5.3×10^{-11} m. The radii of n=2 orbit is:

Ans ✗ 1. 1.06×10^{-10} m

✔ 2. 2.12×10^{-10} m

✗ 3. 10.6×10^{-10} m

✗ 4. 21.2×10^{-10} m

Question ID : 630680164451

Status : Answered

Chosen Option : 2

Q.11 The charge carriers in a p-type semiconductor are:

Ans ✗ 1. large number of electrons and a small number of holes

✗ 2. equal number of holes and electrons

✔ 3. large number of holes and a small number of electrons

✗ 4. only holes

Question ID : 630680164461

Status : Answered

Chosen Option : 3

Q.12 The ratio of the volume of an atom to the volume of the nucleus is (in terms of order of magnitude):

Ans
✗ 1. 10^{10}

✗ 2. 10^{25}

✔ 3. 10^{15}

✗ 4. 10^5

Q.13 The half life of a radioactive substance is 10 years and its initial mass is 1 g. The remaining amount after 20 years is ___ _.

Ans
✗ 1. 0.75 g

✗ 2. 1.00 g

✗ 3. 0.50 g

✔ 4. 0.25 g

Q.14 What is the length of the perpendicular drawn from point $(3, 4, 5)$ to line $\frac{x}{1} = \frac{y-1}{2} = \frac{z-2}{3}$?

Ans
✗ 1. $\dfrac{\sqrt{21}}{7}$

✔ 2. $\dfrac{3\sqrt{21}}{7}$

3. $3\sqrt{21}$

✗ 4. $\dfrac{3}{7}$

Q.15 The value of $\sin 10° - \cos 10°$ is:

Ans
1. $-\sqrt{2} \cos 35°$

2. $-\sqrt{2} \sin 35°$

3. $\sqrt{2} \cos 35°$

4. $\sqrt{2} \sin 35°$

Q.16

If $f(16) = 16$ and $f'(16) = 5$, then $\lim\limits_{x \to 16} \dfrac{\sqrt{f(x)} - 4}{\sqrt{x} - 4} = $?

Ans   ✔ 1. 5

2. 8

3. 6

4. 4

Question ID : 630680164475

Status : Answered

Chosen Option : 1

Q.17 A straight wire carries a current from north to south. The direction of the magnetic field at a point east of the wire will be:

Ans   ✘ 1. south to north

✔ 2. vertically upward

✘ 3. vertically downward

✘ 4. north to south

Question ID : 630680164439

Status : Answered

Chosen Option : 2

Q.18 If A and B are mutually exclusive events with $P(A) = \frac{1}{2} P(B)$, then $P(A) = $?

Ans   ✔ 1. $\dfrac{1}{3}$

✘ 2. $\dfrac{1}{6}$

✘ 3. $\dfrac{1}{4}$

✘ 4. $\dfrac{1}{2}$

Question ID : 630680164491

Status : Answered

Chosen Option : 1

Q.19 Consider a conductor of metal with non-uniform cross-section. The parameter that is constant is:

Ans   ✘ 1. drift velocity

✘ 2. drift speed

✔ 3. current

✘ 4. current density

Question ID : 630680164437

Status : Answered

Chosen Option : 4

Q.20 Capacitors connected in series behave like:

Ans ✗ 1. resistors connected in series

✗ 2. galavanometer

✗ 3. potentiometer

✔ 4. resistors connected in parallel

Q.21 5 apples and 6 oranges are kept in a box. If three fruits are chosen at random, then the probability that 2 apples and one orange are picked is:

Ans

✔ 1. $\dfrac{4}{11}$

✗ 2. $\dfrac{4}{13}$

✗ 3. $\dfrac{5}{11}$

✗ 4. $\dfrac{6}{11}$

Q.22 Let * be binary operation defined on R by $P*q = \dfrac{p+q}{2}, \forall p, q \in R$. The operation is:

Ans

1. commutative but not associative

2. associative but not commutative

3. commutative and associative

4. neither associative nor commutative

Q.23

The derivative of $\tan^{-1}\left(\dfrac{\sqrt{1+x^2}-1}{x}\right)$ with respect to $\tan^{-1}x$ is:

Ans

✗ 1. $\dfrac{\sqrt{1+x^2}-1}{x^2}$

✔ 2. $\dfrac{1}{2}$

✗ 3. 1

✗ 4. $\dfrac{1}{1+x^2}$

Q.24 The coordinates of the point that divides the join of (5, 6) and (−3, 6) in the ratio 3 : 5 are:

Ans

1. $(-2, 6)$

2. $(2, 6)$

✗ 3. $(2, -6)$

✗ 4. $(-2, -2)$

Q.25 The resistivity of a current-carrying conducting wire is p. If the wire is doubled in length and its area of cross-section is reduced by half, the new resistivity is:

Ans

✗ 1. half that of the old value

✔ 2. same as the old value

✗ 3. double that of the old value

✗ 4. four times that of the old value

Q.26 An electron beam with cross-section area $1.0\ mm^2$ has 6×10^{16} electrons (q = 1.6×10^{-19} C) passing per second perpendicular to any section. The current density (ampere per $metre^2$) in the beam is:

Ans
✗ 1. 9.6×10^2

✗ 2. 9.6×10^{-3}

✗ 3. 9.6

✔ 4. 9.6×10^3

Q.27 A closely wound solenoid 80 cm long has 5 layers of windings of 400 turns each. The diameter of the solenoid is 1.8 cm. If the current carried is 8.0 A, the magnitude of the magnetic field inside the solenoid (near the centre) is:

Ans
✗ 1. 2 T

✗ 2. 2.5 T

✗ 3. 2×10^{-2} T

✔ 4. 2.5×10^{-2} T

Q.28

$$\text{If } \int \frac{\sqrt{4+x^2}}{x^6}\, dx = \frac{A(4+x^2)^{3/2}(Bx^2-6)}{x^5} + C \text{, then A is:}$$

Ans
1. -120

✗ 2. $-\dfrac{1}{120}$

3. 120

✔ 4. $\dfrac{1}{120}$

Q.29 An unbiased p-n junction has holes diffusing from p-region to the n-region because:

Ans
✗ 1. holes in the p-region repel them

✔ 2. hole concentration in p-region is more compared to the n-region

✗ 3. holes move across the junction following the potential difference

✗ 4. free electrons in the n-region attracts them

Q.30 Consider gamma rays, X-rays and UV rays travelling in a vacuum. All of these are traveling with _____.

Ans ✗ 1. same frequency but different speeds

  ✔ 2. same speed but different wavelengths

  ✗ 3. same wavelength but different speeds

  ✗ 4. same speed and same frequency

Question ID : 630680164449
Status : Answered
Chosen Option : 2

Q.31 The electric flux passing through a surface of area A = 8j m^2 in an electric field vector E = 2i + 3j - 4k V/m (bold is for vectors) is:

Ans ✔ 1. 24 V-m

  ✗ 2. –32 V-m

  ✗ 3. 32 V-m

  ✗ 4. 16 V-m

Question ID : 630680164433
Status : Answered
Chosen Option : 1

Q.32 The area bound by the parabolas $y = 3x^2$ and $x^2 - y + 4 = 0$ is:

Ans 1. $16\sqrt{2}$

  ✗ 2. $\dfrac{16}{3}\sqrt{3}$

  ✗ 3. $\dfrac{16}{3}$

  ✔ 4. $\dfrac{16}{3}\sqrt{2}$

Question ID : 630680164480
Status : Answered
Chosen Option : 4

Q.33

The value of $\int \dfrac{x^{3/2}}{\sqrt{1+x^5}}\,dx$ is:

Ans

✗ 1. $\dfrac{1}{2}\log\left(\sqrt{1+x^5}\right)+c$

✗ 2. $\dfrac{2}{5}\log\left(x^{5/2}-\sqrt{1+x^5}\right)+c$

✔ 3. $\dfrac{2}{5}\log\left(x^{5/2}+\sqrt{1+x^5}\right)+c$

✗ 4. $\dfrac{1}{2}\log\left(\dfrac{1+x^5}{1-x^5}\right)+c$

Q.34 In the hydrogen atom, transition takes place from n=3 to n=2 orbit. The wavelength of the emitted radiation lies in the _____ region.

Ans ✗ 1. X-ray

✗ 2. infrared

✔ 3. visible

✗ 4. UV

Q.35 The magnitude of magnetic force per unit length (N/m) on a wire carrying a current of 8 A and making an angle of 30° with the direction of a uniform magnetic field of 0.15 T is:

Ans ✗ 1. 0.15

✗ 2. 1.2

✔ 3. 0.6

✗ 4. 0.8

Q.36 Silicon (at 300 K) has hole concentration (and equal electron concentration) of 1.5×10^{16} m^{-3}. After indium is doped, the new hole concentration is 4.5×10^{22} m^{-3}. The value of electron concentration in the doped silicon is:

Ans ✗ 1. 1.5×10^{16} m^{-3}

✗ 2. 3.0×10^{6} m^{-3}

✗ 3. 4.5×10^{22} m^{-3}

✓ 4. 5.0×10^{9} m^{-3}

Question ID : 630680164459
Status : Answered
Chosen Option : 4

Q.37 A coin is tossed n times. If the probability of getting at least two heads is greater than that of getting at least three tails by $\frac{21}{128}$, then n is:

Ans ✓ 1. 7

2. 6

3. 8

4. 5

Question ID : 630680164492
Status : Answered
Chosen Option : 1

Q.38 The frequency of the electromagnetic wave produced by an oscillating charge particle (oscillating with frequency ν) is:

Ans ✗ 1. 0

✓ 2. ν

✗ 3. 2ν

✗ 4. $\nu/2$

Question ID : 630680164446
Status : Answered
Chosen Option : 2

Q.39 Isotopes have the same number of:

Ans ✓ 1. protons

✗ 2. nucleons

✗ 3. deuterons

✗ 4. neutrons

Question ID : 630680164455
Status : Answered
Chosen Option : 1

Q.40

The number of solutions of the matrix equation $A^2 = \begin{bmatrix} 1 & 1 \\ 2 & 3 \end{bmatrix}$ is:

Ans
1. no solution
✓ 2. more than 2
3. less than 2
4. exactly 2

Question ID : 630680164473
Status : Answered
Chosen Option : 4

Q.41

If $a\sin^2\theta + b\cos^2\theta = c$, then $\tan^2\theta = ?$

Ans

✗ 1. $\dfrac{b-c}{a-c}$

✓ 2. $\dfrac{c-b}{a-c}$

✗ 3. $\dfrac{a-c}{c-b}$

✗ 4. $\dfrac{a-c}{b-c}$

Question ID : 630680164468
Status : Answered
Chosen Option : 2

Q.42 Electric conduction in a semiconductor takes place due to:

Ans ✗ 1. only electrons

✗ 2. only holes

✗ 3. neither holes nor electrons

✓ 4. both holes and electrons

Question ID : 630680164460
Status : Answered
Chosen Option : 4

Q.43 A 100 W light bulb is able to convert 10% of its power to visible radiation. The average intensity of the visible radiation at a distance of 1 m from the bulb is:

Ans ✗ 1. 0.08 W/m^2

✓ 2. 0.8 W/m^2

✗ 3. 10 W

✗ 4. 8 W/m^2

Question ID : 630680164448
Status : Answered
Chosen Option : 2

Q.44 If $\mathbf{a} = \vec{i} - 2\vec{j} + \vec{k}$, $\mathbf{b} = \vec{i} + \vec{k}$, $\mathbf{c} = 2\vec{j} - \vec{k}$, then the area (in sq. units) of a parallelogram with diagonals

a + b and b + c will be:

Ans
1. $2\sqrt{14}$

2. 14

✗ 3. $\dfrac{\sqrt{14}}{2}$

4. $\sqrt{14}$

Q.45

The value of the determinant $\begin{vmatrix} b^2 - ab & b - c & bc - ac \\ ab - a^2 & a - b & b^2 - ab \\ bc - ac & c - a & ab - a^2 \end{vmatrix} = $?

Ans
1. abc

✔ 2. 0

3. a + b + c

4. ab + bc + ca

Q.46 The angle between the lines $3x = 3y = -2z$ and $2x = -y = -3z$ is:

Ans
✔ 1. 90°

2. 30°

3. 45°

4. 60°

Q.47 The average value of alternating current during a full cycle is (i_0 is the peak value):

Ans
✗ 1. i_0

✔ 2. 0

✗ 3. $2 i_0 / \pi$

✗ 4. $i_0 / 2\pi$

Q.48 A parallel plate capacitor has a capacitance of 'C'. If the distance between the plates is reduced by half and the space between the plates is filled with a medium having dielectric constant 6, the new capacitance is:

Ans ✗ 1. 6C

✓ 2. 12C

✗ 3. C/3

✗ 4. 2C

Q.49

If $a = m\vec{i} + 16\vec{j}$ and $|a| = 20$, then find the value of m.

Ans 1. 14

2. 10

3. 11

✓ 4. 12

Q.50 When the length of a microscope tube is increased, its magnifying power:

Ans ✗ 1. remains the same

✓ 2. decreases

✗ 3. increases

✗ 4. becomes zero

Q.51 Consider three vectors p = 2i + 3j + 4k, q = i + 4 j − k and r = 2i + 3j + k. If p, q and r denote the position vector of three non-collinear points, then the equation of the plane containing these points is:

Ans 1. $x + y + 5 = 0$

2. $x + y - 5 = 0$

3. $x - y + 5 = 0$

4. $x - y - 5 = 0$

Q.52 The instrument that is based on the principle that when an electric current flows in a coil placed in a magnetic field, a deflecting torque acts upon the coil is:

Ans ✗ 1. moving coil flywheel

✗ 2. current carrying conductor

✔ 3. moving coil galvanometer

✗ 4. rheostat

Question ID : 630680164442
Status : Answered
Chosen Option : 2

Q.53 The source of energy in stars is:

Ans ✗ 1. nuclear fission reaction

✗ 2. electron degeneracy

✗ 3. dissociation of atoms

✔ 4. nuclear fusion reaction

Question ID : 630680164458
Status : Answered
Chosen Option : 4

Q.54 If $3\sin x + 3\sin 4x = \sin y$ and $3\cos x + 3\cos 4x = \cos y$, then $\cos 3x = ?$

Ans 1. $17/18$

✔ 2. $-17/18$

3. $-1/18$

4. $1/18$

Question ID : 630680164469
Status : Answered
Chosen Option : 2

Q.55 If $x = a\left(t + \dfrac{1}{t}\right)$ and $y = a\left(t - \dfrac{1}{t}\right)$, then $\dfrac{dx}{dy}$ is:

Ans ✗ 1. $\dfrac{x}{y}$

✔ 2. $\dfrac{y}{x}$

✗ 3. $\dfrac{1}{x}$

4. 1

Question ID : 630680164477
Status : Answered
Chosen Option : 2

Q.56 A radioactive nucleus emits 3 alpha particles and 2 positrons. For the resultant nucleus, the ratio of neutrons to protons is (consider the initial nucleus to have atomic number Z and atomic mass A):

Ans ✔ 1. (A – Z - 4) / (Z - 8)

✗ 2. (A – Z - 12) / (Z - 4)

✗ 3. (A - Z - 8) / (Z - 4)

✗ 4. (A - Z - 4) / (Z - 2)

Question ID : 630680164456

Status : Answered

Chosen Option : 3

Q.57 If $f(x) = 6 - 5x, f : \mathbf{R} \to \mathbf{R}$, where $\mathbf{R}$ is a set of all real numbers, then f is:

Ans
1. only function

2. only one to one function

✔ 3. one to one and onto function

4. only onto function

Question ID : 630680164465

Status : Answered

Chosen Option : 3

Q.58 Let $A = \begin{pmatrix} \alpha & 1 \\ 0 & -1 \end{pmatrix}$ and $B = \begin{pmatrix} 4 & 1 \\ 0 & 1 \end{pmatrix}$, such that $A^2 = B$, then the value of α is:

Ans
1. -1

2. 1

✔ 3. 2

4. -2

Question ID : 630680164472

Status : Answered

Chosen Option : 3

Q.59 For a 100 ohm resistor connected to a 220 V, 50 Hz AC supply, the net power consumed over a full cycle is:

Ans ✗ 1. 220 W

✔ 2. 484 W

✗ 3. 4.84 W

✗ 4. 2.20 W

Question ID : 630680164443

Status : Answered

Chosen Option : 2

Q.60 The value of k for which straight line $x + y + 3z - 2 = 0 = 2x + y - z - 3$ is parallel to the plane $3x + 2y + kz - 4 = 0$ is:

Ans ✗ 1. -1

✔ 2. 2

✗ 3. 1

✗ 4. 3