

DSSSB JULY 2018

Participant ID:	
Participant Name:	
Test Center Name:	
Test Date:	04/07/2018
Test Time:	9:00 AM - 12:00 PM
Subject:	PGT MATHS FEMALE

Section : Mental Ability

Q.1 Find the odd one from the following.

Question ID : 7230531546

- Ans 1. Flood
 2. Explosion
 3. Tsunami
 4. Earthquake

Q.2 Read the following information carefully and answer the question given below.

Question ID : 7230531551

Rajiv is the son of Shiva's father's sister. Shyam is the son of Deepa who is the mother of Ganesh and grandmother of Shiva. Kumar is the father of Dhanya and grandfather of Rajiv. Deepa is Kumar's wife.

How is Deepa related to Rajiv?

- Ans 1. Grandmother
 2. Aunt
 3. Mother
 4. Sister

Q.3 Choose the correct alternative for the following.

Question ID : 7230531541

Substitute : Replace :: Vacant

- Ans 1. Full
 2. Queue
 3. Empty
 4. Line

Q.4 The age of a mother is twice that of the elder daughter. Ten years hence, the age of the mother will be three-times that of the younger daughter. If the difference of ages of the two daughters is 15 years, the age of the mother is:

Question ID : 7230531545

- Ans 1. 50 years
 2. 48 years
 3. 52 years
 4. 40 years

Q.5 Choose the similar pair for the following.

Question ID : 7230531550

8 : 448 :: _____ : _____

- Ans 1. 7 : 293

2. 6 : 216

3. 10 : 900

4. 9 : 100

- Q.6** You and your friend have been exchanging gifts quite regularly. But she has not sent you any gift for the last eight months. You would:

Question ID : 7230531552

(Instruction: Choose most appropriate option)

Ans 1.

ask your friend the reason for not sending any gifts now.

2.

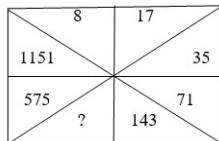
understand it as a termination of your relationship.

3. send your friend the gift as before.

4. stop sending gifts to your friend.

- Q.7** Replace the question mark by choosing the correct response from amongst the alternatives given.

Question ID : 7230531554



Ans 1. 287

2. 289

3. 297

4. 285

- Q.8** You are given two statements and four conclusions. Choose the comment about conclusions from the given options below.

Question ID : 7230531549

Statements:

Some papers are pens.

No pen is eraser.

Conclusions:

I. Some pens are papers.

II. Some erasers are papers.

III. Some papers are not erasers.

IV. All erasers are papers.

Ans 1. Only conclusion I follows

2. Only conclusion IV follows

3. Only conclusion I and III follow

4. Only conclusion II and III follow

- Q.9** Sindhu walks 1 km towards east and then she turns to south and walks 5 km. Again she turns to east and walks 2 km, after this she turns to north and walks 9 km. Now, how far is she from her starting point?

Question ID : 7230531556

Ans 1. 3 km

2. 5 km

3. 2.5 km

4. 2 km

- Q.10** Anitha is standing to the west of Benita and north of Reshma, and Seema is to the west of Reshma and south of Saru. Seema is in which direction from Benita?

Question ID : 7230531547

Ans 1. South-west

2. South

3. North-west

 4. North

Q.11 Select the option that is related to the third letter cluster in the same way as the second one is related to the first letter cluster.
BDqrSH : HSrqDB :: UWpqME: _____

Question ID : 7230531557

- Ans**  1. WUpqEM
 2. EMqpWU
 3. EMpqWU
 4. WUqpEM

Q.12 Standing on the playground, Mala told Smitha that Anitha was more than 20 m but less than 25 m from there. Smitha knew that it was more than 21 m but less than 23 m from there. If both of them were correct, which of the following could be the distance of Anitha from the playground?

Question ID : 7230531544

- Ans**  1. 23 m
 2. 22 m
 3. 24 m
 4. 21 m

Q.13 In a village, 65% people drink tea, 40% people drink coffee and 25% drink both tea and coffee. What percentage of people drink neither tea nor coffee?

Question ID : 7230531553

- Ans**  1. 15
 2. 18
 3. 25
 4. 20

Q.14 Read the following information carefully and answer the question that give below.

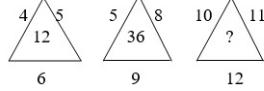
Question ID : 7230531539

Five girls – Tincy, Swathi, Neena, Anjali and Pranavi and five boys – Ajith, Karthi, Pradeep, Sunil and Deepak sat on the two long sides of a rectangular table. The girls sat alternating with and opposite to the boys. Sunil sat in the central position. Anjali sat opposite Ajith. Swathi sat next to Sunil and three places from Ajith. Pranavi sat two places to the left of Anjali. Neena sat two places from Swathi and Pradeep sat opposite Swathi. Karthi sat three places from Pranavi. Who sat opposite Tincy?

- Ans**  1. Deepak
 2. Karthi
 3. Pranavi
 4. Sunil

Q.15 Replace the question mark by choosing the correct response from amongst the alternatives given.

Question ID : 7230531542



- Ans**  1. 123
 2. 120
 3. 134
 4. 132

Q.16 In the question given below, there are two statements labelled as Assertion and Reason. Mark your answer as per the codes provided below.

Question ID : 7230531540

Assertion (A):
Sprouting should be done before consuming the grains.

Reason (R):
Sprouting kills many vital vitamins.

- Ans**  1. A is true but R is false
 2. A is false but R is true

3.

Both A and R are true but R is not the correct explanation of A

 4.

Both A and R are true and R is the correct explanation of A

Q.17 Number of letters skipped in between adjacent letters in the series is two. Which of the following series observes the given rule?

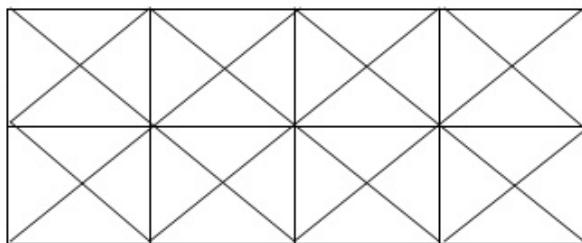
Question ID : 7230531555

Ans 1. SVYZCFH

 2. TVZCGJN 3. YBGKMPR 4. MPSVYBE

Q.18 Find the number of squares in the following figure.

Question ID : 7230531538



Ans 1. 16

 2. 24 3. 48 4. 32

Q.19 If $A = 2$, $D = 8$, $Z = 52$, then STUDENT =

Question ID : 7230531548

Ans 1. 204

 2. 212 3. 216 4. 206

Q.20 Read the following information carefully and answer the question given below.

Question ID : 7230531543

' $U \alpha V$ ' means ' U is not greater than V ';

' $U \beta V$ ' means ' U is greater than or equal to V ';

' $U \gamma V$ ' means ' U is less than V ';

' $U \delta V$ ' means ' U is neither greater than nor equal to V ';

' $U \emptyset V$ ' means ' U is neither less than nor equal to V ';

Statements:

$A \delta B$, $B \emptyset C$, $D \alpha C$

Conclusions:

I. $A \emptyset D$

II. $D \gamma B$

III. $A \beta C$

Ans 1. Only II is true

 2. Only I is true 3. Only II and III are true

4. All are true

Section : General Awareness

Q.1 Which of the following will show the Tyndall effect?

Question ID : 7230531573

- Ans 1. Salt solution
 2. Milk
 3. Copper solution
 4. Sugar Solution

Q.2 Panna in Madhya Pradesh is famous for which of the following mines?

Question ID : 7230531561

- Ans 1. Diamond
 2. Iron ore
 3. Coal
 4. Gold

Q.3 India's first gold medal at Commonwealth Games 2018 was won by:

Question ID : 7230531571

- Ans 1. Vikas Gowda
 2. Mirabai Chanu
 3. Deepak Lather
 4. Sini Jose

Q.4 The Harappan site Rangpur is situated in the present Indian state of:

Question ID : 7230531560

- Ans 1. Jammu & Kashmir
 2. Punjab
 3. Haryana
 4. Gujarat

Q.5 What was GDP of India at market price for 2016-17? (In Rupees)

Question ID : 7230531566

- Ans 1. 102 trillion
 2. 152 trillion
 3. 252 trillion
 4. 202 trillion

Q.6 Which among the following was India's highest produced cereal in 2016-17?

Question ID : 7230531567

- Ans 1. Rice
 2. Wheat
 3. Bajra
 4. Jowar

Q.7 2020 edition of ICC T20 cricket world cup for men would be held in:

Question ID : 7230531572

- Ans

- 1. Australia
- 2. South Africa
- 3. Bangladesh
- 4. Sri Lanka

Q.8 In which state is the Bhagwan Mahavir Wildlife Sanctuary situated?

Question ID : 7230531562

- Ans
- 1. Rajasthan
 - 2. Goa
 - 3. Gujarat
 - 4. Bihar

Q.9 With which folk art form is the painter Jai Prakash Lekhiwal associated?

Question ID : 7230531569

- Ans
- 1. Kalamkari painting
 - 2. Warli painting
 - 3. Madhubani painting
 - 4. Miniature painting

Q.10 What is the total number of members in National Committee for commemoration of 150th birth anniversary of Mahatma Gandhi in 2019?

Question ID : 7230531577

- Ans
- 1. 85
 - 2. 203
 - 3. 125
 - 4. 127

Q.11 The first Anglo-Mysore war was fought between:

Question ID : 7230531559

- Ans
- 1. Saadat Ali Khan and British
 - 2. Tipu Sultan and British
 - 3. Farrukhsiyar and British
 - 4. Hyder Ali and British

Q.12 To who does the judge of Supreme Court submit his resignation?

Question ID : 7230531564

- Ans
- 1. Attorney-General of India
 - 2. A Vice-President of India
 - 3. Prime Minister of India
 - 4. President of India

Q.13 Where was Asia Pacific Regional Workshop of United Nations Convention to Combat Desertification (UNCCD) held?

Question ID : 7230531575

- Ans
- 1. Chennai
 - 2. New Delhi
 - 3. Chandigarh
 - 4. Mumbai

Q.14 With which form of folk songs is the Uttarakhand folk singer Basanti Devi Bisht associated?

Question ID : 7230531570

- Ans 1. Jagar
 2. Bajuband
 3. Chhopati
 4. Chhura

Q.15 Who among the following administers the oath of office to the Home Minister of India?

Question ID : 7230531563

- Ans 1. The President of India
 2. The Prime Minister of India
 3. The Attorney-General of India
 4. The Vice-President of India

Q.16 The Advocate-General of a State holds office during the pleasure of:

Question ID : 7230531565

- Ans 1. The Prime Minister of India
 2. The Chief Minister of the concerned State
 3. The Governor of the concerned State
 4. The Attorney-General of India

Q.17 What is the number of self-help groups of tribal gatherers constituted under Van Dhan Yojana?

Question ID : 7230531576

- Ans 1. 20
 2. 10
 3. 150
 4. 221

Q.18 Pattachitra style of painting is a popular art form of which of the following states?

Question ID : 7230531568

- Ans 1. Uttar Pradesh
 2. Odisha
 3. Bihar
 4. Rajasthan

Q.19 When was the Gandhi-Irwin pact signed between Mahatma Gandhi and Lord Irwin?

Question ID : 7230531558

- Ans 1. 1931
 2. 1942
 3. 1941
 4. 1932

Q.20 What is the motto of ASEAN?

Question ID : 7230531574

- Ans 1. One Vision, One Purpose, One Community
 2. One Vision, One Identity, One Purpose
 3. One Vision, One Identity, One Community
 4. One Boundary, One Identity, One Community

Section : Arithmetic Ability

Q.1 In a class, the ratio of boys to girls is 3 : 1. If 16 boys leave and 6 more girls join the class, the ratio of boys to girls becomes 10 : 9. What was the total number of students in the class initially?

Question ID : 7230531584

- Ans 1. 52
 2. 48
 3. 56
 4. 40

Q.2 The sum of four consecutive odd numbers and four consecutive even numbers is 396. The smallest odd number is 39 less than the smallest even number. What is the sum of the largest odd number and the largest even number?

Question ID : 7230531578

- Ans 1. 109
 2. 101
 3. 97
 4. 105

Q.3 A person bought an article after getting a 20% discount on its marked price. He sold the article at an 8% profit on the marked price. What was his profit percent on the price he bought?

Question ID : 7230531585

- Ans 1. 28
 2. 36
 3. 35
 4. 32

Q.4 When 11280, 8988 and 7651 are divided by the greatest number x, the remainder in each case is y. What is the value of $(x - y)$?

Question ID : 7230531589

- Ans 1. 188
 2. 182
 3. 180
 4. 192

Q.5 A's income is 60% of that of B and A's expenditure is 70% of that of B. If A's income is 75% of B's expenditure, then the ratio of A's saving to that of B is:

Question ID : 7230531583

- Ans 1. 2 : 5
 2. 1 : 5
 3. 1 : 4
 4. 3 : 8

Q.6 The compound interest on a certain sum for 2 years at a rate of 10% per annum is ₹ 1,260. What will the same sum be at the same rate of interest after $3\frac{2}{5}$ years (nearest to an integer)?

Question ID : 7230531586

- Ans 1. ₹ 8,305
 2. ₹ 8,408
 3. ₹ 8,358
 4. ₹ 8,385

Q.7 After travelling 60 km, a train experiences some technical difficulty, after which it proceeds at $66\frac{2}{3}\%$ of its former speed to arrive at its destination 40 minutes late. If the technical glitch had occurred 30 km further, the train would have reached the destination only 20 minutes late. The original speed (in km/h) of the train is:

Question ID : 7230531590

- Ans 1. 48
 2. 50

3. 60
 4. 45

Q.8 The value of $\frac{\frac{2}{3} \text{ of } \frac{4}{9} \div (3 \times \frac{3}{5} \text{ of } \frac{4}{9}) + 3 \times \frac{9}{25} \text{ of } \frac{2}{3} \div \frac{3}{5} \text{ of } \frac{9}{25}}{\frac{4}{9} \div 2 \text{ of } (\frac{3}{5} \times \frac{2}{3}) \times \frac{9}{25}}$ is:

Question ID : 7230531581

- Ans 1. $18\frac{14}{27}$
 2. $3\frac{11}{27}$
 3. $10\frac{11}{27}$
 4. $4\frac{14}{27}$

Q.9 If $\frac{\frac{2}{3} + 0.75 \text{ of } \frac{5}{6}}{\frac{2}{3} + 0.75 \times \frac{5}{6}} - \frac{2}{3} \times 1.24 \div 2.4 \text{ of } \left(\frac{1}{2} + \frac{1}{3}\right) = 1+k$, then the value of k is:

Question ID : 7230531580

- Ans 1. $\frac{1}{75}$
 2. $\frac{2}{25}$
 3. $\frac{1}{25}$
 4. $\frac{2}{75}$

Q.10 A student was asked to simplify the following:

Question ID : 7230531579

$$\frac{0.00016 \times 0.25}{0.4 \times 0.0325 \times 0.5} \div \frac{0.01216 \times 0.105 \times 0.02}{0.8512 \times 0.0625 \times 0.39}$$

His answer was 0.25. What is the difference between the correct answer and his answer?

- Ans 1. 4.75
 2. 3.75
 3. 3.25
 4. 4.65

Q.11 A can complete a task in 30 days. He started the task and then B joined him after 4 days. The task was completed in a total of 20 days. Had A and B worked together from the beginning, they would have finished the same task in:

Question ID : 7230531591

- Ans 1. 20 days
 2. 15 days
 3. $18\frac{3}{13}$ days
 4. $18\frac{6}{13}$ days

Q.12 A circle is inscribed in an equilateral triangle of side 'a' cm. What will be the area (in unit) of a square inscribed in the circle?

Question ID : 7230531587

- Ans 1. $\frac{a^2}{8}$
 2. $\frac{a^2}{6}$

3. $\frac{a^2}{3}$

4. $\frac{a^2}{4}$

Q.13 The LCM of two numbers is 667 times their HCF. The sum of the LCM and the HCF is 44756. If one of the numbers is 1943, then the sum of the digits of the other number is:

Question ID : 7230531588

Ans 1. 16

2. 11

3. 14

4. 9

Q.14 In a class, $\frac{1}{4}$ of the number of boys and $\frac{3}{8}$ of the number of girls participated in annual sports. If the number of boys who participated is equal to $\frac{2}{5}$ of the number of girls who participated in sports, then what fractional part of the total number of students participated?

Question ID : 7230531582

Ans 1. $\frac{15}{32}$

2. $\frac{21}{32}$

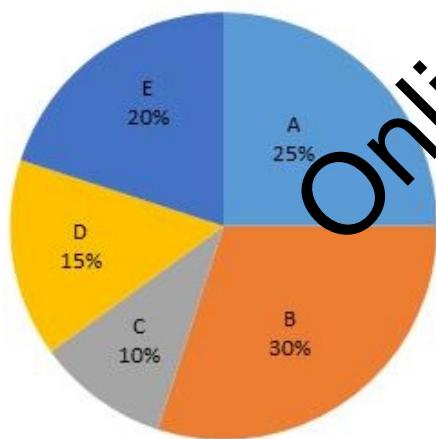
3. $\frac{21}{64}$

4. $\frac{15}{64}$

Comprehension:

Study the following pie-chart and table and answer the following questions that follows:

percentage break up of students in the different schools



Ratio between Boys and Girls

School	Boys : Girls
A	14 : 11
B	7 : 8
C	9 : 11
D	3 : 2
E	7 : 9

SubQuestion No : 15

Q.15 Total number of girls in schools B, C and D is what percent of total students in five schools?

Question ID : 7230531594

Ans 1. 24.6

2. 27.5

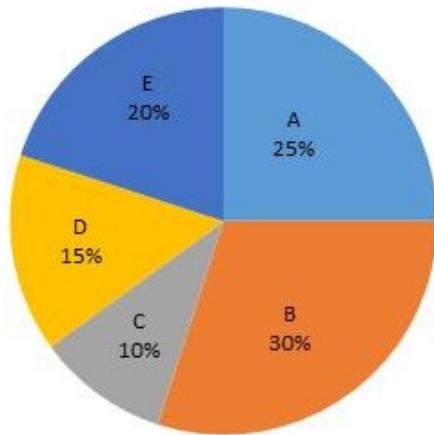
3. 24.9

4. 27.8

Comprehension:

Study the following pie-chart and table and answer the following questions that follows:

percentage break up of students in the different schools



Ratio between Boys and Girls

School	Boys : Girls
A	14 : 11
B	7 : 8
C	9 : 11
D	3 : 2
E	7 : 9

SubQuestion No : 16

- Q.1 6 What is the ratio of the total number of boys in schools A and D to the total number of girls in schools B and C?

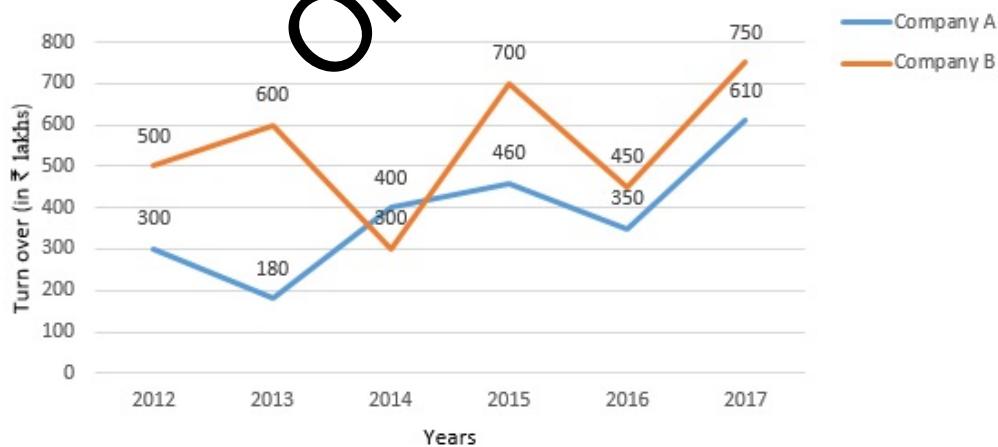
Question ID : 7230531593

- An s
 1. 23 : 27
 2. 46 : 33
 3. 23 : 22
 4. 46 : 43

Comprehension:

Study the following graph and answer the questions that follows:

Annual Turn Over of Companies A and B over the Years
(in ₹ lakhs)

**SubQuestion No : 17**

- Q.1 7 Total turnover of company A in 2012, 2014 and 2017 is approximately what percent less than the total turnover of company B in 2013, 2015 and 2016?

Question ID : 7230531597

- An

- s 1. 26.6
 2. 19.6
 3. 25.1
 4. 18.8

Comprehension:

Study the following graph and answer the questions that follows:

Annual Turn Over of Companies A and B over the Years
(in ₹ lakhs)

**SubQuestion No : 18**

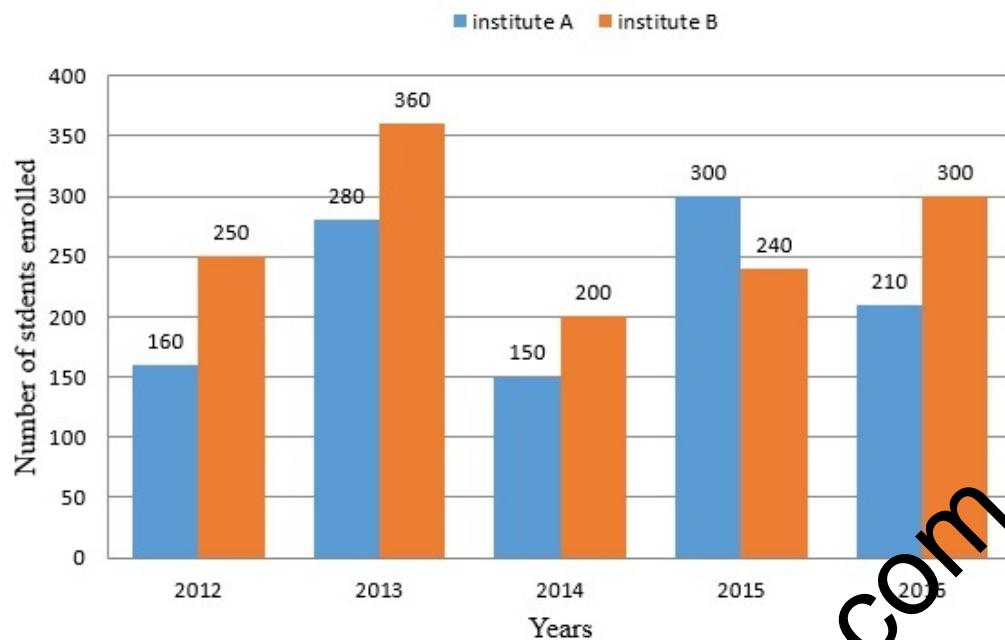
- Q.1 8 The number of years in which turnover of company B was more than the average turnover of company A over the given years is?

Question ID : 7230531596

- An s 1. 2
 2. 5
 3. 3
 4. 4

Comprehension:

Study the following Bar graph which shows the number of students enrolled for a vocational course in institutes A and B during 5 years and answer the questions that follows:



SubQuestion No : 19

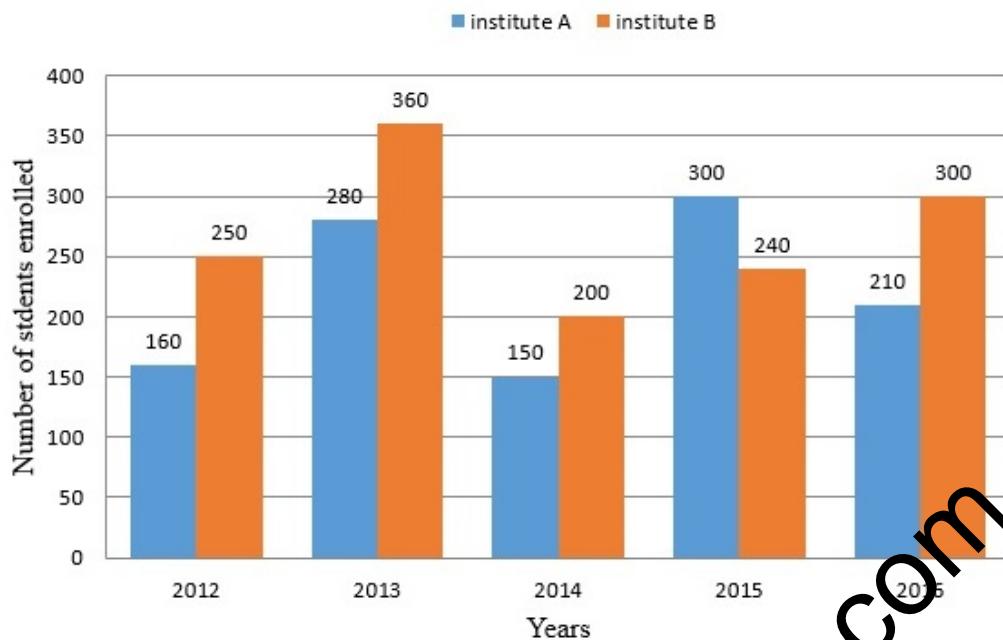
- Q.1
9 If the number of enrolled students in institute A in 2016 is 25% less than that in 2017, the number of students enrolled in A in 2017 would be less than the number of student enrolled in B in 2016 is?

Question ID : 7230531600

- An
s
X 1. 24
X 2. 16
X 3. 18
✓ 4. 20

Comprehension:

Study the following Bar graph which shows the number of students enrolled for a vocational course in institutes A and B during 5 years and answer the questions that follows:



SubQuestion No : 20

- Q.2** What is the difference between the average number of students enrolled in institute A in 2012 and 2014 and that in institute B in 2013, 2015 and 2016?

Question ID : 7230531599

- Ans**
- 1. 125
 - 2. 145
 - 3. 150
 - 4. 155

Section : General English

- Q.1** Choose the option that best combines the two given sentences.

Question ID : 7230531611

You may have already received a copy of the notice. In that case, please ignore this one.

- Ans**
- 1.

If you have already received a copy of the notice, please ignore this one.

- 2.

As you have already received a copy of the notice, you may ignore this one.

- 3.

Unless you have already received a copy of the notice, please ignore this one.

- 4.

Although you have received a copy of the notice, in that case please ignore this one.

- Q.2** Fill in the blank with the appropriate idiom/phrase.

Though one person made the mistake, the entire staff had to _____ for the blunder.

Question ID : 7230531615

- Ans**
- 1. fall short of

- 2. face the music

3. lose heart

4. cry over spilt milk

Q.3 Fill in the blank with the appropriate word.

Question ID : 7230531605

_____ they sell beetrots in this shop?

Ans 1. Were

2. Was

3. Do

4. Does

Q.4 Fill in the blank with the appropriate word.

Question ID : 7230531606

Your plan is great. It is _____ going to benefit all of us.

Ans 1. fully

2. certainly

3. hardly

4. nearly

Q.5 In the following sentence four words or phrases have been underlined. One of them is incorrect. Choose the incorrect word or phrase from the given options.

Question ID : 7230531607

When you present a talk or have a conversation on a controversial topic, you must remember to choice your approach carefully, otherwise you may land yourself in hostile reactions.

Ans 1. present a talk

2. may land yourself

3. to choice

4. on a

Q.6 Fill in the blank with the correct word.

Question ID : 7230531604

I love _____ vibrant colours of the flowers in your garden.

Ans 1. the

2. a

3. any

4. none

Q.7 Choose the correct antonym of the underlined word to fill in the blank.

Question ID : 7230531603

The colossal statue appeared very odd compared to the _____ figure of the dead king lying next to it.

Ans 1. huge

2. gigantic

3. tiny

4. terrible

Q.8

Question ID : 7230531601

Choose the correct synonym of:

phony

- Ans 1. covered
 2. similar
 3. heavy
 4. fake

Q.9 Fill in the blank with the appropriate word.

Question ID : 7230531614

You are putting on weight. You must _____ on your consumption of fat.

- Ans 1. cut down
 2. cut out
 3. drop down
 4. cut off

Q.10 In the following sentence four words or phrases have been underlined. One of them is incorrect. Choose the incorrect word or phrase from the given options.

Question ID : 7230531608

The most important thing for you is to remember that all player must play according to his full potential.

- Ans 1. The most important
 2. all player
 3. his full potential
 4. to remember

Q.11 Choose the word that is correctly spelt.

Question ID : 7230531613

- Ans 1. embarrassment
 2. comission
 3. palatial
 4. coleague

Q.12 Choose the most appropriate indirect speech form for the following sentence.

Question ID : 7230531610

Monika said to me, "What a pity you missed my sister's wedding!"

- Ans 1.
 Monika asked why it was a great pity that I had missed her sister's wedding.
 2.
 Monika said to me that it was a great pity that I have missed her sister's wedding.
 3.
 Monika exclaimed that it was a great pity that I had missed her sister's wedding.
 4.
 Monika asked her friend that it was a great pity that I had missed her sister's wedding.

Q.13 Choose the passive voice form of the given sentence.

Question ID : 7230531609

During the school audit the auditors observed that some of the teachers had great teaching skills.

- Ans 1.
 The school auditors had observed during the school audit that some of the teachers had great teaching skills.
 2.

It was observed by the auditors during the school audit that some of the teachers had great teaching skills.

3.

It was is observed by the auditors during the school audit that some of the teachers had great teaching skills.

4.

It was being observed by the auditors during the school audit that some of the teachers were having great teaching skills.

Q.14 Choose the correct antonym of:

Question ID : 7230531602

resume

- Ans 1. discontinue
 2. develop
 3. continue
 4. disturb

Q.15 Choose the passage that is correctly punctuated.

Question ID : 7230531612

- Ans 1.

"All our crops have run dry, wailed Rampal and Suraj." "We have nothing to eat."

2.

"All our crops have run dry," Wailed rampal And Suraj. "We have nothing to eat."

3.

"All our crops have run dry," wailed Rampal and Suraj. "We have nothing to eat."

4.

All our crops have run dry," wailed rampal and suraj. " We have nothing to eat."

Comprehension:

Read the following passage and answer the questions that follow on the basis of your reading.

The obsessive search for complete happiness has its utopian value. But in life, it is that little sorrow in your heart, which is so much your own that it actually makes you who you are. People tell us how a sorrowful experience made them see the larger picture. It made them realise that sorrow is but a creation of the mind and that the wise are those who face joy and sorrow with equanimity. There are others who believe that if happiness is a gift of God, so is sorrow. In the Mahabharata, Kunti is believed to have said to Krishna that the only boon she desired was everlasting sorrow and misery so that the name of God could always be on her lips. We fear sorrow and find it in many experiences — the inconvenient idea of a power cut in the scorching heat of summer or the loss of a loved one or a dreaded disease — the gamut is large.

Sorrow is not easy to bear, but bear it we must. It lies in a corner of your storeroom and does not come with options. Not located in the best part of the house, not dusted so often, the storeroom, however, has that piece of rope when you are searching for it; the duffle bag, when you have to travel — that long forgotten pan which is coming in handy now.

Empathy and compassion are the first manifestations of universal love for all living beings. These essential traits of humanness find their source in that little bundle of sorrow you have, hidden within your heart. It tones down aggressiveness, making you gentler. Treasure it as the lesson for living a compassionate and humane life. The storeroom in your heart needs to be without self-pity, hatred and revenge, only then your finer sentiments are able to find expression.

SubQuestion No : 16

Q.1
6 Which of these experiences is NOT a manifestation
of sorrow?

Question ID : 7230531618

An
s 1. Poor health

2. Someone cheating or deceiving you

3. Death of a loved one

4. A dark store room

Comprehension:

Read the following passage and answer the questions that follow on the basis of your reading.

The obsessive search for complete happiness has its utopian value. But in life, it is that little sorrow in your heart, which is so much your own that it actually makes you who you are. People tell us how a sorrowful experience made them see the larger picture. It made them realise that sorrow is but a creation of the mind and that the wise are those who face joy and sorrow with equanimity. There are others who believe that if happiness is a gift of God, so is sorrow. In the Mahabharata, Kunti is believed to have said to Krishna that the only boon she desired was everlasting sorrow and misery so that the name of God could always be on her lips. We fear sorrow and find it in many experiences — the inconvenient idea of a power cut in the scorching heat of summer or the loss of a loved one or a dreaded disease — the gamut is large.

Sorrow is not easy to bear, but bear it we must. It lies in a corner of your storeroom and does not come with options. Not located in the best part of the house, not dusted so often, the storeroom, however, has that piece of rope when you are searching for it; the duffle bag, when you have to travel — that long forgotten pan which is coming in handy now.

Empathy and compassion are the first manifestations of universal love for all living beings. These essential traits of humanness find their source in that little bundle of sorrow you have, hidden within your heart. It tones down aggressiveness, making you gentler. Treasure it as the lesson for living a compassionate and humane life. The storeroom in your heart needs to be without self-pity, hatred and revenge, only then your finer sentiments are able to find expression.

SubQuestion No : 17

- Q.1 7 Choose the option that completes the meaning of the sentence.

Question ID : 7230531617

Sorrow, though a dreadful experience, is valuable as it:

- An s 1. is a utopian idea.
 2. brings happiness.
 3. teaches us important lessons of life.
 4. is a universal goal of life.

Comprehension:

Read the following passage and answer the questions that follow on the basis of your reading.

The obsessive search for complete happiness has its utopian value. But in life, it is that little sorrow in your heart, which is so much your own that it actually makes you who you are. People tell us how a sorrowful experience made them see the larger picture. It made them realise that sorrow is but a creation of the mind and that the wise are those who face joy and sorrow with equanimity. There are others who believe that if happiness is a gift of God, so is sorrow. In the Mahabharata, Kunti is believed to have said to Krishna that the only boon she desired was everlasting sorrow and misery so that the name of God could always be on her lips. We fear sorrow and find it in many experiences — the inconvenient idea of a power cut in the scorching heat of summer or the loss of a loved one or a dreaded disease — the gamut is large.

Sorrow is not easy to bear, but bear it we must. It lies in a corner of your storeroom and does not come with options. Not located in the best part of the house, not dusted so often, the storeroom, however, has that piece of rope when you are searching for it; the duffle bag, when you have to travel — that long forgotten pan which is coming in handy now.

Empathy and compassion are the first manifestations of universal love for all living beings. These essential traits of humanness find their source in that little bundle of sorrow you have, hidden within your heart. It tones down aggressiveness, making you gentler. Treasure it as the lesson for living a compassionate and humane life. The storeroom in your heart needs to be without self-pity, hatred and revenge, only then your finer sentiments are able to find expression.

SubQuestion No : 18

Q.1
8 Sorrow is compared with a long forgotten pan in the store room because:

Question ID : 7230531619

- Ans
- 1. they have a sentimental value.
 - 2. they are useful in an emergency.
 - 3. you don't care for both of them.
 - 4. both are covered with dust.

Comprehension:

Read the following passage and answer the questions that follow on the basis of your reading.

The obsessive search for complete happiness has its utopian value. But in life, it is that little sorrow in your heart, which is so much your own that it actually makes you who you are. People tell us how a sorrowful experience made them see the larger picture. It made them realise that sorrow is but a creation of the mind and that the wise are those who face joy and sorrow with equanimity. There are others who believe that if happiness is a gift of God, so is sorrow. In the Mahabharata, Kunti is believed to have said to Krishna that the only boon she desired was everlasting sorrow and misery so that the name of God could always be on her lips. We fear sorrow and find it in many experiences — the inconvenient idea of a power cut in the scorching heat of summer or the loss of a loved one or a dreaded disease — the gamut is large.

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SubQuestion No : 19

Q.1 How does sorrow make you a better person?
9

Question ID : 7230531620

An s 1. It teaches you compassion and gentleness

2.

It enables you to give expression to your innermost feelings

3. It makes you aggressive

4. It fills you with self-pity

Comprehension:

Read the following passage and answer the questions that follow on the basis of your reading.

The obsessive search for complete happiness has its utopian value. But in life, it is that little sorrow in your heart, which is so much your own that it actually makes you who you are. People tell us how a sorrowful experience made them see the larger picture. It made them realise that sorrow is but a creation of the mind and that the wise are those who face joy and sorrow with equanimity. There are others who believe that if happiness is a gift of God, so is sorrow. In the Mahabharata, Kunti is believed to have said to Krishna that the only boon she desired was everlasting sorrow and misery so that the name of God could always be on her lips. We fear sorrow and find it in many experiences — the inconvenient idea of a power cut in the scorching heat of summer or the loss of a loved one or a dreaded disease — the gamut is large.

Sorrow is not easy to bear, but bear it we must. It lies in a corner of your storeroom and does not come with options. Not located in the best part of the house, not dusted so often, the storeroom, however, has that piece of rope when you are searching for it; the duffle bag, when you have to travel — that long forgotten pan which is coming in handy now.

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SubQuestion No : 20

Q.2 0 The passage highlights:

Question ID : 7230531621

An s 1. that sad experiences are invaluable.

2. the elusiveness of happiness.

3.

the importance of being loving and kind-hearted.

4. that misery and sadness are everlasting.

Section : General Hindi

Comprehension:

निम्नलिखित गद्यांशको पढ़कर पूछे गए प्रश्नों के उत्तर लिखिए।

घपलों और घोटालों की भेट बड़ी सरकारी योजनाओं ने.....

सनसनी फैलाने के अतिरिक्त कुछ नहीं किया! सरकार बच्चों के हमदर्द होने का चाहे कितना ही ढोल पीटले, मगर सच्चाई यही है कि सरकार की संवेदनशीलता और लापरवाही की सबसे बड़ी कीमत देश का भविष्य माने जाने वाले नौनिहाल ही अपनी जान देकर चुकाते आ रहे हैं।

सन् 1995 में हरियाणा के डबवाली के एक स्कूल में लगी आग में 400 से अधिक बच्चों के जलकर भस्म होने में आखिर कौन ज़िम्मेदार था? सैकड़ों अभिभावकों की सूनी बगिया को उजाड़ उनकी आँखों में असहनीय तड़प के आँसू भरने के बावजूद भी सरकार द्वारा उचित कदम उठाना तो दूर, बल्कि और अधिक लापरवाही बढ़ती गई। जिस कारण अनेक छोटी-मोटी घटनाओं के अतिरिक्त कई भयानक हात्तों में मासूमों की बलिदी जाती रही। 16 जुलाई, 05 को तमिलनाडु के तजावुर जिले के कुंभकोणमशहर के एक प्राइमरी स्कूल में आग की-

प्रलयांकारीलपटों द्वारा 90 से अधिक बच्चों को भस्म कर दिया जाना इसका प्रत्यक्ष उदाहरण है। जून 2004 में दिल्ली के ही एक अस्पताल में भर्ती 1175 बच्चों में से 142 बच्चों की हात्तागेज मौत क्या स्वास्थ्य अधिकारीयों की कार्यशैली पर ध्येय चिह्न नहीं था?

SubQuestion No : 1

Q.1 142 बच्चों की मौत की ज़िम्मेदारी है:

Question ID : 7230531627

- An s
- 1. फायर ब्रिगेड पर
 - 2. माता-पिता पर
 - 3. पुलिस पर
 - 4. स्वास्थ्य अधिकारीयों पर

Comprehension:

निम्नलिखित गद्यांशको पढ़कर पूछे गए प्रश्नों के उत्तर लिखिए।

घपलों और घोटालों की भेट बड़ी सरकारी योजनाओं ने.....

सनसनी फैलाने के अतिरिक्त कुछ नहीं किया! सरकार बच्चों के हमदर्द होने का चाहे कितना ही ढोल पीटले, मगर सच्चाई यही है कि सरकार की संवेदनशीलता और लापरवाही की सबसे बड़ी कीमत देश का भविष्य माने जाने वाले नौनिहाल ही अपनी जान देकर चुकाते आ रहे हैं।

सन् 1995 में हरियाणा के डबवाली के एक स्कूल में लगी आग में 400 से अधिक बच्चों के जलकर भस्म होने में आखिर कौन ज़िम्मेदार था? सैकड़ों अभिभावकों की सूनी बगिया को उजाड़ उनकी आँखों में असहनीय तड़प के आँसू भरने के बावजूद भी सरकार द्वारा उचित कदम उठाना तो दूर, बल्कि और अधिक लापरवाही बढ़ती गई। जिस कारण अनेक छोटी-मोटी घटनाओं के अतिरिक्त कई भयानक हात्तों में मासूमों की बलिदी जाती रही। 16 जुलाई, 05 को तमिलनाडु के तजावुर जिले के कुंभकोणमशहर के एक प्राइमरी स्कूल में आग की-

प्रलयांकारीलपटों द्वारा 90 से अधिक बच्चों को भस्म कर दिया जाना इसका प्रत्यक्ष उदाहरण है। जून 2004 में दिल्ली के ही एक अस्पताल में भर्ती 1175 बच्चों में से 142 बच्चों की हात्तगेज मौत क्या स्वास्थ्य अधिकारीयों की कार्यशैली पर ध्येय चिह्न नहीं था?

SubQuestion No : 2

Q.2 डबवाली आदि के हादसे प्रमाण हैं सरकार की

Question ID : 7230531624

An
s

- 1. संवेदनशीलता के
- 2. संवेदनशीलता के
- 3. सरकार की कार्य निष्ठा के
- 4. दायित्वा बोध के

Comprehension:

निम्नलिखित गद्यांशको पढ़कर पूछे गए प्रश्नों के उत्तर लिखिए।

घपलों और घोटालों की भेट बड़ी सरकारी योजनाओं ने.....

सनसनी फैलाने के अतिरिक्त कुछ नहीं किया! सरकार बच्चों के हमदर्द होने का चाहे कितना ही ढोल पीटले, मगर सच्चाई यही है कि सरकार की संवेदनशीलता और लापरवाही की सबसे बड़ी कीमत देश का भविष्य माने जाने वाले नौनिहाल ही अपनी जान देकर चुकाते आ रहे हैं।

सन् 1995 में हरियाणा के डबवाली के एक स्कूल में लगी आग में 400 से अधिक बच्चों के जलकर भस्म होने में आखिर कौन ज़िम्मेदार था? सैकड़ों अभिभावकों की सूनी बगिया को उजाड़ उनकी आँखों में असहनीय तड़प के आँसू भरने के बावजूद भी सरकार द्वारा उचित कदम उठाना तो दूर, बल्कि और अधिक लापरवाही बढ़ती गई। जिस कारण अनेक छोटी-मोटी घटनाओं के अतिरिक्त कई भयानक हात्तों में मासूमों की बलिदी जाती रही। 16 जुलाई, 05 को तमिलनाडु के तजावुर जिले के कुंभकोणमशहर के एक प्राइमरी स्कूल में आग ली।

प्रलयांकारीलपटों द्वारा 90 से अधिक बच्चों को भस्म कर दिया जाना इसका प्रत्यक्ष उदाहरण है। जून 2004 में दिल्ली के ही एक अस्पताल में भर्ती 1175 बच्चों में से 142 बच्चों की हात्तगेज मौत क्या स्वास्थ्य अधिकारीयों की कार्यशैली पर ध्येय चिह्न नहीं था?

SubQuestion No : 3

Q.3 सरकारी योजनाएँ फेल हो गई।

Question ID : 7230531623

- An s
- 1. घोटालों-घपलों के कारण
 - 2. जनता द्वारा उपकार से
 - 3. अफसरशाही के कारण
 - 4. राजनेताओं के कारण

Comprehension:

निम्नलिखित गद्यांशको पढ़कर पूछे गए प्रश्नों के उत्तर लिखिए।

घपलों और घोटालों की भेट बड़ी सरकारी योजनाओं ने.....

सनसनी फैलाने के अतिरिक्त कुछ नहीं किया! सरकार बच्चों के हमदर्द होने का चाहे कितना ही ढोल पीटले, मगर सच्चाई यही है कि सरकार की संवेदनशीलता और लापरवाही की सबसे बड़ी कीमत देश का भविष्य माने जाने वाले नौनिहाल ही अपनी जान देकर चुकाते आ रहे हैं।

सन् 1995 में हरियाणा के डबवाली के एक स्कूल में लगी आग में 400 से अधिक बच्चों के जलकर भस्म होने में आखिर कौन ज़िम्मेदार था? सैकड़ों अभिभावकों की सूनी बगिया को उजाड़ उनकी आँखों में असहनीय तड़प के आँसू भरने के बावजूद भी सरकार द्वारा उचित कदम उठाना तो दूर, बल्कि और अधिक लापरवाही बढ़ती गई। जिस कारण अनेक छोटी-मोटी घटनाओं के अतिरिक्त कई भयानक हात्तों में मासूमों की बलिदी जाती रही। 16 जुलाई, 05 को तमिलनाडु के तजावुर जिले के कुंभकोणमशहर के एक प्राइमरी स्कूल में आग की-

प्रलयांकारीलपटों द्वारा 90 से अधिक बच्चों को भस्म कर दिया जाना इसका प्रत्यक्ष उदाहरण है। जून 2004 में दिल्ली के ही एक अस्पताल में भर्ती 1175 बच्चों में से 142 बच्चों की हात्तगेज मौत क्या स्वास्थ्य अधिकारीयों की कार्यशैली पर ध्येय चिह्न नहीं था?

SubQuestion No : 4

Q.4 90 से अधिक बच्चों का जलना इस बात का प्रमाण है कि:

Question ID : 7230531625

Ans X 1.

सरकार और अफसरों की मिली भगत रही है।

X 2. बच्चे ही सावधान नहीं थे।

✓ 3. सरकार ने कोई कदम नहीं उठाया।

X 4. सरकार ने संरक्षण की कोशिश की थी।

Comprehension:

निम्नलिखित गद्यांशको पढ़कर पूछे गए प्रश्नों के उत्तर लिखिए।

घपलों और घोटालों की भेट बड़ी सरकारी योजनाओं ने.....

सनसनी फैलाने के अतिरिक्त कुछ नहीं किया! सरकार बच्चों के हमदर्द होने का चाहे कितना ही ढोल पीटले, मगर सच्चाई यही है कि सरकार की संवेदनशीलता और लापरवाही की सबसे बड़ी कीमत देश का भविष्य माने जाने वाले नौनिहाल ही अपनी जान देकर चुकाते आ रहे हैं।

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प्रलयांकारीलपटों द्वारा 90 से अधिक बच्चों को भस्म कर दिया जाना इसका प्रत्यक्ष उदाहरण है। जून 2004 में दिल्ली के ही एक अस्पताल में भर्ती 1175 बच्चों में से 142 बच्चों की हात्तगोज मौत क्या स्वास्थ्य अधिकारीयों की कार्यशैली पर ध्येय चिह्न नहीं था?

SubQuestion No : 5

Q.5 बच्चों के जलने की ज़िम्मेदारी है:

Question ID : 7230531626

- Ans
 1. सरकार
 2. माता-पिता
 3. पूरा समाज
 4. स्वयंबच्चे

Q.6 'कम बोलने वाला' वाक्यांश के लिए एक शब्द है:

Question ID : 7230531637

- Ans
 1. न्यून वक्ता
 2. मितभाषी
 3. अमितभाषी
 4. प्रवक्ता

Q.7 निम्नलिखितमें से कौन सा शब्द पुलिंग है?

Question ID : 7230531638

Ans

- 1. बात
- 2. पर्वत
- 3. चीख़
- 4. जलन

Q.8 निम्नलिखित में से तत्सम शब्द छाँटिए।

Question ID : 7230531628

- Ans
- 1. शिक्षा
 - 2. पंख
 - 3. मोर
 - 4. नीय

Q.9 कौन सा शब्द सदा बहुवचन में ही प्रयुक्त होता है?

Question ID : 7230531633

- Ans
- 1. सभा
 - 2. समूह
 - 3. संग्रहन
 - 4. हस्ताक्षर

Q.10 सकर्मक क्रिया वाला वाक्य छाँटिए।

Question ID : 7230531640

- Ans
- 1. सभी छात्र दौड़े चले गए।
 - 2. शीला घर जाती है।
 - 3. वह सुबह छह बजे उठती है।
 - 4. विद्या प्रतिदिन एक घंटा पढ़ती है।

Q.11 अशुद्ध वाक्य कौन सा है?

Question ID : 7230531639

- Ans
- 1. हमारे शिक्षक प्रश्न करते हैं।
 - 2. मेरा नाम आनन्द है।
 - 3. यहसब आप पर निर्भर है।
 - 4. मुझे उसका दर्शन हो गया है।

Q.12 'उल्लास' शब्द का विलोम होगा:

Question ID : 7230531636

- Ans
- 1. विषाद
 - 2. तास्य
 - 3. हर्ष
 - 4. प्रभाव

Question ID : 7230531641

Q.13 'बहाना करना' इस अर्थ को व्यक्त करनेवाला मुहावरा:

- Ans 1. बात जा धनी
 2. बात बनाना
 3. बात बढ़ाना
 4. बात तक न पूछना

Q.14 भाववाचक संज्ञा शब्द छाँटिए।

Question ID : 7230531634

- Ans 1. क्षुद्रध
 2. बुद्धिमान
 3. भूख
 4. चतुर

Q.15 'पक्षी' शब्द का पर्यायवाची नहीं है:

Question ID : 7230531635

- Ans 1. शकुन्त
 2. खग
 3. विहग
 4. पन्नग

Q.16 'भलमानस' शब्द में समास हैं:

Question ID : 7230531630

- Ans 1. अव्ययीभाव
 2. कर्मधारय
 3. तत्पुरुष
 4. बहुब्रीहि

Q.17 'काम न जानना और बहाना करना' अर्थ के लिए _____ है:

Question ID : 7230531642

- Ans 1. अधजल गगरी छलकत जाय
 2. न रहेगा बाँस न बजेगी बाँसुरी
 3. नाच न जाने आँगन टेढ़ा
 4. आगलगने झोपड़ा जो निकले सो लाभ

Q.18 'प्रत्यारोप' शब्द में संधि है:

Question ID : 7230531631

- Ans 1. यण् संधि
 2. व्यंजनसंधि
 3. दीर्घ संधि

X 4. अयादि संधि

Q.19 'कवि' शब्द का बहुवचन (अविभक्तिक) होता है:

Question ID : 7230531632

- Ans 1. कवि
 2. कविएँ
 3. कवियो
 4. कवियों

Q.20 निम्नलिखित में से तद्रव शब्द चुनिए।

Question ID : 7230531629

- Ans 1. वचन
 2. भाफ
 3. पालन
 4. पोषण

Section : Subject Related

Q.1 If $A = \{n \in \mathbb{N} : n \text{ divides } 12\}$, then find the number of elements of $\wp(A)$.

Question ID : 7230531648

- Ans 1. 32
 2. 64
 3. 8
 4. 16

Q.2 280 students travel either by train or bus or both to get to school. 140 students travel by train and 50 travel by both train and bus. Find the number of students who travel by bus.

Question ID : 7230531643

- Ans 1. 170
 2. 140
 3. 190
 4. 180

Q.3 If $f(x) = \frac{|x|}{x}$, then value of $|f(2) - f(-2)|$ is equal to:

Question ID : 7230531658

- Ans 1. 1
 2. 3
 3. 2
 4. 0

Q.4 How many number of proper subset can be formed of set $A = \{1, 5, 7, 9\}$?

Question ID : 7230531646

- Ans 1. 16
 2. 12
 3. 24
 4. 32

Question ID : 7230531657

Q.5 The domain of the function $g(x) = \sqrt{(x^2 - 3x + 2)}$ is:

- Ans 1. $(-\infty, -2]$
 2. $(-\infty, 1] \cup [2, \infty)$
 3. $(-\infty, \infty)$
 4. $[-1, \infty)$

Q.6 If the domain of the function $f(x)$ is $[0, 2]$, the domain of the function $f(2x + 1)$ is:

Question ID : 7230531661

- Ans 1. $[0, 2]$
 2. $\left[-\frac{1}{2}, \frac{1}{2}\right]$
 3. $\left[0, \frac{1}{2}\right]$
 4. $\left[-\frac{1}{2}, 0\right]$

Q.7 If A has 5 elements and B has 7 elements, then the minimum number of elements that $A \cup B$ can have is:

Question ID : 7230531652

- Ans 1. 5
 2. 7
 3. 12
 4. 2

Q.8 For the given set $A = \{0, \{1\}, 1, \emptyset\}$, identify the statement which is INCORRECT.

Question ID : 7230531645

- Ans 1. $\{1\} \in A$
 2. $0 \subset A$
 3. $\emptyset \subset A$
 4. $\emptyset \in A$

Q.9 Let X be a universal set, $A \subset X$, $B \subset X$ and $n(X) = 20$, $n(A) = 12$, $n(B) = 9$ and $n(A \cap B) = 4$. Then $n(A \setminus B)$ is:

Question ID : 7230531650

- Ans 1. 10
 2. 11
 3. 9
 4. 8

Q.10 Let $f: \mathbb{N} \rightarrow \mathbb{R}$ be defined as $f(x) = (3x - 1)$, $g: \mathbb{R} \rightarrow \mathbb{R}$ be defined as $g(x) = \frac{x^2}{2}$. Then $(g \circ f)(0) =$

Question ID : 7230531659

- Ans 1. $-\frac{1}{2}$
 2. 1
 3. $\frac{1}{2}$
 4. 0

Q.11 Let X be a universal set, $A \subset X$, $B \subset X$. Then which of following is INCORRECT?

Question ID : 7230531649

- Ans 1. $A \setminus B = (X \setminus B) \cap X$

2. $A \cup B = (A \setminus B) \cup (B \setminus A)$

3. $A \cap B = X \setminus [(A \setminus B) \cup (B \setminus A)]$

4. $A = (A \setminus B) \cup (A \cap B)$

Q.12 Find the range of the function $f(x) = |x - 1| + |x - 2|, x \in \mathbb{R}$

Question ID : 7230531662

Ans 1. $[1, 2]$

2. $(-\infty, 1]$

3. $(-\infty, \infty)$

4. $[1, \infty)$

Q.13 If $f: \mathbb{Z} \rightarrow \mathbb{Z}$ be a function defined as $f(x) = 5x + 2$ for all $x \in \mathbb{Z}$, then f is:

Question ID : 7230531656

Ans 1. onto

2. neither one-one nor onto

3. one-one

4. both one-one and onto

Q.14 Let $A = \{x \in \mathbb{R}: x^2 = 9 \text{ and } 2x = 4\}$. Then which of the following is true?

Question ID : 7230531647

Ans 1. $A = \{1\}$

2. $A = \mathbb{R}$

3. $A = \{0\}$

4. $A = \emptyset$

Q.15 Let $: \mathbb{R} \rightarrow \mathbb{R}$ be a function defined as $f(x) = \frac{x^2+1}{x+1}$. Then:

Question ID : 7230531655

Ans 1. not well-defined

2. one-one function

3. not onto

4. both one-one and onto

Q.16 Let X be a universal set, $A \subset X$, $B \subset X$ and $n(X) = 70$, $n(A) = 30$, $n(B) = 45$ and $n(A \cap B) = 10$. Then $n(A^c \cap B^c)$ is:

Question ID : 7230531651

Ans 1. 20

2. 15

3. 5

4. 10

Q.17 If $f(x) = x^n$, $n \in \mathbb{N}$ and $(g \circ f)(x) = ng(x)$, then $g(x)$ can be:

Question ID : 7230531660

Ans 1. $\log|x|$

2. $n|x|$

3. $x^{\frac{1}{3}}$

4. e^x

Question ID : 7230531653

Q.18 If $S = \{1, 2\}$ and $T = \{2, 3, 4\}$, then $(S \cup T) \times (S \cap T)$ is:

- Ans 1. $\{(1, 2), (2, 2), (3, 2), (4, 2)\}$
 2. $\{(2, 1), (3, 1), (4, 1)\}$
 3. $\{(2, 1), (3, 1), (4, 1), (2, 3), (1, 4), (2, 4)\}$
 4. $\{(1, 2), (2, 2), (1, 3), (2, 3), (1, 4), (2, 4)\}$

Q.19 The domain of the relation

Question ID : 7230531654

$\{(x, y) : y = |x - 1|, x \in \mathbb{Z}, |x| \leq 2\}$ is:

- Ans 1. $\{0, 1, 2\}$
 2. $\{-3, -2, -1, 0, 1, 2, 3\}$
 3. $\{3, 2, 1, 0\}$
 4. $\{-2, -1, 0, 1, 2\}$

Q.20 280 students travel either by train or bus or both to get to school. 140 students travel by train and 50 travel by both train and bus. Find the number of students who travel by just one of these transports.

Question ID : 7230531644

- Ans 1. 230
 2. 200
 3. 220
 4. 240

Section : Subject Related

Q.1 If $nC_{n-2} = 28$, the value of n is:

Question ID : 7230531674

- Ans 1. 7
 2. 8
 3. 9
 4. 6

Q.2 For a set of circles in a plane, the relation 'concentric' is a/an:

Question ID : 7230531666

- Ans 1. not transitive
 2. symmetric only
 3. equivalence relation
 4. reflexive only

Q.3 If $(n + 1)P_5 = 18 \times (n - 1)P_4$, then the value of n is:

Question ID : 7230531675

- Ans 1. 8 or 9
 2. 4 or 5
 3. 10 or 11
 4. 6 or 7

Q.4 If $\{x\}$ and $[x]$ represent fractional and integral part of x , then the value of $[x] + \sum_{k=1}^{1000} \frac{\{x+k\}}{1000}$ is:

Question ID : 7230531667

- Ans 1. $1000x$
 2. x
 3. 1
 4. 0

Q.5 5 balls of different colors are to be placed in 3 boxes of different sizes. Each box can hold 5 balls. In how many different ways can we place the balls so that no box remains empty?

Question ID : 7230531678

- Ans 1. 150
 2. 90
 3. 210
 4. 60

Q.6 The number of arrangements of the letters of the word BANANAS in which two N's do not appear adjacently is?

Question ID : 7230531681

- Ans 1. 300
 2. 600
 3. 400
 4. 500

Q.7 Find the values of $n \in \mathbb{N}$ for which $P(n): 2^n > n^3$

Question ID : 7230531672

- Ans 1. $n \geq 5$
 2. $n \geq 3$
 3. $n \geq 2$
 4. $n \geq 10$

Q.8 How many different words can be formed using all the letters of the word ORDINATE such that all vowels occupy odd places?

Question ID : 7230531679

- Ans 1. 576
 2. 484
 3. 400
 4. 441

Q.9 The number of terms in $(5x + 7y - 8z)^{20}$ is:

Question ID : 7230531680

- Ans 1. 231
 2. 253
 3. 276
 4. 210

Q.10 The graph of $3(x-1)^2 + 3$, then $f: \mathbb{R} \rightarrow \mathbb{R}$ is symmetric about the line:

Question ID : 7230531663

- Ans 1. $y = 1$
 2. $x = 1$
 3. $y = 0$
 4. $x = 0$

Q.11 If $f(x) = x^2$ and $g(x) = 3^x$ are two real-valued functions, then the number of solutions of $(g \circ f)(x) = (f \circ g)(x)$ is:

Question ID : 7230531664

- Ans 1. 0
 2. 1
 3. 3
 4. 2

Q.12 If $f(x) = 2^x$, then:

Question ID : 7230531665

- Ans 1. $f(xy) = f(x)f(y)$
 2. $f(2x) = 2f(x)$
 3. $f(x) + f(y) = f(x) + f(x)f(y - x)$
 4. $f(x + y) = f(x)(1 + f(y))$

Q.13 If $[x]$ represent the integral part of x , then the range of the function $y = [x^2] - [x]^2$, $x \in [0, 2]$ is:

Question ID : 7230531668

- Ans 1. $\{0, 1\}$
 2. $\{0, 1, 2\}$
 3. $\{0\}$
 4. $\{1, 2\}$

Q.14 A student tried to prove a statement by induction. She proved that $P(2)$ is true, $P(n)$ is true $\Rightarrow P(n+1)$ is true for $n \in \mathbb{N}$. Then $P(n)$ is true for all

Question ID : 7230531671

- Ans 1. $n > 2$.
 2. $n > 3$.
 3. $n \in \mathbb{N}$.
 4. $n \geq 2$.

Q.15 If $P(n): 4n + 3$ is a prime number, then which of the following is INCORRECT?

Question ID : 7230531670

- Ans 1. $P(4)$
 2. $P(1)$
 3. $P(2)$
 4. $P(3)$

Q.16 In how many ways can 5 ladies and 5 gentlemen be seated at a round table so that no two ladies are next to each other?

Question ID : 7230531677

- Ans 1. 720
 2. 24
 3. 120
 4. 2880

Q.17 Let $P(n): n(n+1)(n+2)$ is divisible by 12. Then which of the following is true?

Question ID : 7230531669

- Ans 1. $P(1)$
 2. $P(5)$
 3. $P(9)$
 4. $P(4)$

Q.18 For any complex number z , the minimum value of $|z| + |z - 2i|$ is:

Question ID : 7230531682

- Ans 1. 3
 2. 1
 3. 2
 4. 0

Q.19 Let $P(n): n^2 - n + 41$ is a prime number. Then which of the following is INCORRECT?

Question ID : 7230531673

- Ans 1. $P(5)$
 2. $P(41)$
 3. $P(4)$
 4. $P(9)$

Q.20 How many diagonals are there in a polygon of 15 sides?

Question ID : 7230531676

- Ans 1. 120
 2. 105
 3. 90
 4. 135

Section : Subject Related

Q.1 If z_1, z_2, z_3 are complex number such that

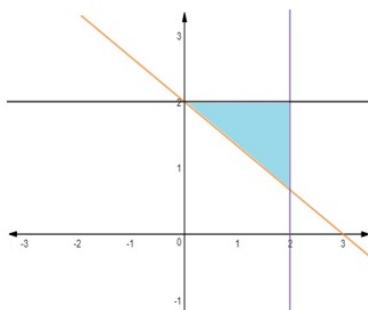
Question ID : 7230531683

$$|z_1| = |z_2| = |z_3| = \left| \frac{1}{z_1} + \frac{1}{z_2} + \frac{1}{z_3} \right| = 1, \text{ then } |z_1 + z_2 + z_3| \text{ is:}$$

- Ans 1. less than 1
 2. equal to 3
 3. equal to 1
 4. greater than 3

Q.2 The area indicated by the shaded portion in the following figure is represented by:

Question ID : 7230531693



- Ans 1. $x \leq 2, y \leq 2, 2x + 3y \geq 6, x, y \geq 0$
 2. $x \leq 2, y \geq 2, 2x + 3y \geq 6, x, y \geq 0$
 3. $x \leq 2, y \geq 2, 2x + 3y \leq 6, x, y \geq 0$

4. $x \geq 2, y \geq 2, 2x + 3y \geq 6, x, y \geq 0$

Q.3 In the binomial expansion of $(a - b)^n$, $n \geq 5$, the sum of the 5th and 6th terms is zero. Then $\frac{a}{b}$ is:

Question ID : 7230531701

Ans

- 1. $\frac{n-5}{4}$
- 2. $\frac{(n-6)}{5}$
- 3. $\frac{n-5}{6}$
- 4. $\frac{n-4}{5}$

Q.4 The square roots of the complex number $7 + 24i$ are:

Question ID : 7230531689

Ans

- 1. $-4 - 3i, 4 + 3i$
- 2. $-4 + 3i, 4 - 3i$
- 3. $-4 - 3i, -4 + 3i$
- 4. $4 - 3i, 4 + 3i$

Q.5 Solve: $2|x| - 3 \geq |x - 1|$

Question ID : 7230531696

Ans

- 1. $(-\infty, -2] \cup [4, \infty)$
- 2. $(-\infty, -4]$
- 3. $[2, \infty)$
- 4. $(-\infty, -4] \cup [2, \infty)$

Q.6 If a and b are positive, $a > b$, then which of the following is true?

Question ID : 7230531692

Ans

- 1. $\frac{b}{a+b} < \frac{1}{2}$
- 2. $\frac{a}{a+b} = \frac{1}{2}$
- 3. $\frac{b}{a+b} = \frac{1}{2}$
- 4. $\frac{b}{a+b} > \frac{1}{2}$

Q.7 The triangle formed by the points $1, \frac{(1+i)}{\sqrt{2}}, i$ as vertices in the Argand diagram is:

Question ID : 7230531686

Ans

- 1. equilateral
- 2. scalene
- 3. right-angled
- 4. isosceles

Q.8

Question ID : 7230531698

The coefficient of x^{99} in the polynomial

$(x - 1)(x - 2) \dots (x - 100)$ is:

- Ans 1. -5050
 2. 4050
 3. 5050
 4. -4050

Q.9 Consider a quadratic equation $az^2 + bz + c = 0$, where a, b, c are complex numbers. The condition in which the equation has both real roots is:

Question ID : 7230531688

- Ans 1. $-\frac{a}{\bar{a}} = \frac{b}{\bar{b}} = \frac{c}{\bar{c}}$
 2. $\frac{a}{\bar{a}} = \frac{b}{\bar{b}} = \frac{c}{\bar{c}}$
 3. $\frac{a}{\bar{a}} = \frac{b}{\bar{b}} = -\frac{c}{\bar{c}}$
 4. $\frac{a}{\bar{a}} = -\frac{b}{\bar{b}} = \frac{c}{\bar{c}}$

Q.10 If $(1 + \alpha x)^n = 1 + 8x + 24x^2 + \dots$, then α is:

Question ID : 7230531699

- Ans 1. 1
 2. 4
 3. 2
 4. 3

Q.11 If $\omega^3 = 1$ and $\omega \neq 1$, then $(1 + \omega)(1 + \omega^2)(1 + \omega^4)(1 + \omega^8) = ?$

Question ID : 7230531687

- Ans 1. 3
 2. 9
 3. 1
 4. -3

Q.12 The sum of the first 20 terms of the series $\frac{1}{i} + \frac{2}{i^2} + \frac{3}{i^3} + \dots$ is:

Question ID : 7230531690

- Ans 1. $20(1 - i)$
 2. $10(i + 1)$
 3. $20i$
 4. $10i$

Q.13 Let n be a positive integer. If the coefficients of 2nd, 3rd, and 4th terms in the expansion of $(1 + x)^n$ are in arithmetic progression, then the value of n is:

Question ID : 7230531700

- Ans 1. 5
 2. 3
 3. 7
 4. 6

Question ID : 7230531694

Q.14 The maximum of the function

 $f(x, y, z) = 5x - 6y + 7z$ on an ellipsoid

 $2x^2 + 3y^2 + 4z^2 = 1$ is

Ans

1. $\frac{\sqrt{147}}{3}$

2. $\frac{\sqrt{147}}{2}$

3. $\sqrt{147}$

4. $\frac{\sqrt{147}}{4}$

Q.15 Solve for x .

Question ID : 7230531691

$4x + 7 < 2x + 1$

Ans

1. $x < -1$

2. $x < 3$

3. $x < -3$

4. $x < 1$

Q.16 The locus represented by $|z - 1| = |z + i|$ is:

Question ID : 7230531685

Ans

 1. an ellipse with foci at $(1, 0)$ and $(0, -1)$
 2.

 a circle on the line joining $(1, 0)$, $(0, -1)$ as diameter

 3. a straight line through the origin

 4. a circle of radius 1
Q.17 If a, b, c are distinct non-negative integers and $\omega \neq 1$ is a cube root of unity, then minimum value of $x = |a + b\omega + c\omega^2| + |a + b\omega^2 + c\omega|$ is:

Question ID : 7230531684

Ans

 1. 2

 2. 3

 3. $4\sqrt{2}$
 4. $6\sqrt{2}$
Q.18 Coefficient of t^{24} in $(1 + t^2)^{12}(1 + t^{12})(1 + t^{24})$ is:

Question ID : 7230531702

Ans

 1. $12C_6 + 3$
 2. $12C_6$
 3. $12C_6 + 1$
 4. $12C_6 + 2$

Q.19

Question ID : 7230531695

Solve $|4x + 2| \leq 6$

- Ans 1. $-2 \leq x \leq 1$
 2. $-1 \leq x \leq 1$
 3. $-2 \leq x \leq 2$
 4. $-1 \leq x \leq 2$

Q.20 The sum of the coefficients of the polynomial

Question ID : 7230531697

$(1 + x - 3x^2)^{2163}$ is:

- Ans 1. -2
 2. -1
 3. 1
 4. 0

Section : Subject Related

Q.1 Let $a > 0, b > 0$ and $c > 0$. Then both the roots of the equation $ax^2 + bx + c = 0$:

Question ID : 7230531720

- Ans 1. are purely imaginary
 2. have positive real parts
 3. have negative real parts
 4. are real and negative

Q.2 What is the remainder when 16^{53} is divided by 7?

Question ID : 7230531711

- Ans 1. 3
 2. 1
 3. 2
 4. 4

Q.3 If $a, b, c \in \mathbb{R}$ and $a + b + c = 0$, then the quadratic equation $3ax^2 + 2bx + c = 0$ has:

Question ID : 7230531717

- Ans 1. at least one root in $[0, 1]$
 2. no real roots
 3. at least one root in $\left[\frac{3}{2}, 2\right]$
 4. at least one root in $[1, 2]$

Q.4 Which of the following is true?

Question ID : 7230531715

- Ans 1. $\gcd(p, p + 2) = 1$, where p is a prime number
 2. $\gcd(a, b) = \gcd(a, a - b)$
 3.

$\gcd(a, b) = 1 = \gcd(b, c)$, then $\gcd(a, c) = 1$

4. $\gcd(a, b) = \gcd(a, a - 2b)$

Q.5 Let α, β be the roots of the equation $(x - a)(x - b) = c, c \neq 0$, then the roots of the equation $(x - \alpha)(x - \beta) + c = 0$ are:

Question ID : 7230531722

Ans 1. $a + c, b + c$

2. a, b

3. a, c

4. b, c

Q.6 Find the coefficient of x^2 in the expansion of e^{2x+3}

Question ID : 7230531708

Ans 1. e^3

2. $3e^3$

3. $2e^3$

4. $3e^2$

Q.7 Which one of the following is NOT correct?

Question ID : 7230531714

Ans 1. $\gcd(42, 12) = (-5)42 + (18)12$

2. $\gcd(42, 12) = (3)42 + (-10)12$

3. $\gcd(42, 12) = (-3)42 + (11)12$

4. $\gcd(42, 12) = (-1)42 + (3)12$

Q.8 Consider the following:

Question ID : 7230531712

$P(n): 1 + 3 + 5 + \dots + (2n - 1) = (n - 2)^2$. Then $P(1)$ is true for:

Ans 1. $n = 1$ only

2. $n = 2$ only

3. all $n \geq 1$

4. all $n \geq 2$

Q.9 If three positive real numbers a, b, c are in arithmetic progression such that $abc = 4$, then the minimum possible value of b is:

Question ID : 7230531703

Ans 1. $2^{\frac{2}{3}}$

2. $2^{\frac{3}{2}}$

3. $2^{\frac{1}{3}}$

4. $2^{\frac{5}{2}}$

Q.10 The number of positive integers that are less than 18 and are relatively prime to 18 is:

Question ID : 7230531716

Ans 1. 3

2. 7

3. 4 4. 6

Q.11 If H_1, H_2, \dots, H_n are n harmonic means between a and b ($\neq a$), then the value of $\frac{H_1+a}{H_1-a} + \frac{H_n+b}{H_n-b}$ is equal to:

Question ID : 7230531705

Ans 1. $n+1$ 2. $n-1$ 3. $2n$ 4. $2n+3$

Q.12 Suppose a, b, c are in arithmetic progression and a^2, b^2, c^2 are in geometric progression. If $a < b < c$ and $a + b + c = \frac{3}{2}$, then the value of a is:

Question ID : 7230531707

Ans 1. $\frac{1}{2\sqrt{2}}$ 2. $\frac{1}{2} - \frac{1}{\sqrt{3}}$ 3. $\frac{1}{2} - \frac{1}{\sqrt{2}}$ 4. $\frac{1}{2\sqrt{3}}$

Q.13 If $a + b + c = 0$, then the quadratic equation

Question ID : 7230531721

 $3ax^2 - 2bx + c = 0$ has:Ans 1. at least one root in $(0,1)$ 2. one root in $(2,3)$ and the other in $(-2,-1)$ 3. imaginary roots 4. at least one root in $(-1,0)$

Q.14 If the product of the roots of the equation

Question ID : 7230531718

 $x^2 - 3kx + 2e^{2 \ln k} - 1 = 0$ is 7, then the roots are real for $k =$ Ans 1. 1 2. 4 3. 3 4. 2

Q.15 If the quadratic equations $x^2 + ax + b = 0$ and $x^2 + bx + a = 0$, $a \neq b$, have a common root, then the numerical value of $a + b$ is:

Question ID : 7230531719

Ans 1. 1 2. -2 3. -1 4. 0

Q.16 The number of positive integers $n \leq 2076$ and divisible by neither 4 nor 5 is:

Question ID : 7230531713

Ans 1. 1034 2. 831

3. 519 4. 103

Q.17 If three positive real numbers a, b, c ($c > a$) are in harmonic progression, then $\log(a+c) + \log(a-2b+c)$ is equal to:

Question ID : 7230531706

Ans 1. $2 \log(a+c)$ 2. $\log a + \log b + \log c$ 3. $2 \log(c-b)$ 4. $2 \log(c-a)$

Q.18 The number of solutions of $\log_4(x-1) = \log_2(x-3)$ is:

Question ID : 7230531709

Ans 1. 0 2. 1 3. 2 4. 3

Q.19 What is the remainder when $1! + 2! + \dots + 100!$ is divided by 15?

Question ID : 7230531710

Ans 1. 1 2. 3 3. 2 4. 4

Q.20

The value of $y = (0.64)^{\log_{0.25}\left(\frac{1}{3} + \frac{1}{3^2} + \frac{1}{3^3} + \dots\right)}$

Question ID : 7230531704

Ans 1. 0.8 2. 0.9 3. 0.25 4. 0.6

Section : Subject Related

Q.1 The system of equations

Question ID : 7230531727

$$ax + by + cz = q - r$$

$$bx + cy + az = r - p$$

$$cx + ay + bz = p - q$$

Is:

Ans 1. inconsistent if $p \neq q \neq r$ 2.inconsistent if $a = b = c$ and p, q, r are distinct 3. consistent if $p = q = r$ 4.

consistent if a, b, c are distinct and $a + b + c = 0$

- Q.2** Let M be a variable point on the ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ with foci F_1 and F_2 . If A is the area of the triangle MF_1F_2 , then the maximum value of A is:

Question ID : 7230531737

- Ans 1. $b\sqrt{(b^2 - a^2)}$
 2. $b\sqrt{(a^2 - b^2)}$
 3. $a\sqrt{(a^2 - b^2)}$
 4. $a\sqrt{(b^2 - a^2)}$

- Q.3** If $A = \begin{bmatrix} \beta & 0 \\ 1 & 1 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & 0 \\ 5 & 1 \end{bmatrix}$, then value of β for which $A^2 = B$ is:

Question ID : 7230531725

- Ans 1. -1
 2. 4
 3. 1
 4. no real values

- Q.4** If P and Q are points in the plane such that $\frac{SP}{SQ} = k$ (constant) for all S on a given circle, the value of k is:

Question ID : 7230531734

- Ans 1. 1
 2. -2
 3. 2
 4. -1

- Q.5** A hyperbola, having the transverse axis of length $2 \sin \theta$, is confocal with the ellipse $3x^2 + 4y^2 = 1$. Then its equation is:

Question ID : 7230531741

- Ans 1. $x^2 \cos^2 \theta - y^2 \sin^2 \theta = 1$
 2. $x^2 \operatorname{cosec}^2 \theta - y^2 \sec^2 \theta = 1$
 3. $x^2 \sin^2 \theta - y^2 \cos^2 \theta = 1$
 4. $x^2 \sec^2 \theta - y^2 \operatorname{cosec}^2 \theta = 1$

- Q.6** If $P = \begin{bmatrix} 3 & 2 \\ 0 & 1 \end{bmatrix}$, then P^{-3} is:

Question ID : 7230531729

- Ans 1. $\frac{1}{27} \begin{bmatrix} -1 & -26 \\ 0 & -27 \end{bmatrix}$
 2. $\frac{1}{27} \begin{bmatrix} 1 & -26 \\ 0 & 27 \end{bmatrix}$
 3. $\frac{1}{27} \begin{bmatrix} 1 & -26 \\ 0 & -27 \end{bmatrix}$
 4. $\frac{1}{27} \begin{bmatrix} -1 & 26 \\ 0 & -27 \end{bmatrix}$

- Q.7** If the circumcentre of a triangle lies at the origin and the centroid is the middle point of the line joining the points $(a^2 + 1, a^2 + 1)$ and $(2a, -2a)$, then the orthocenter lies on the line

Question ID : 7230531731

- Ans 1. $x + y = 0$
 2. $y = 2ax$

3. $y = (a^2 + 1)x$

4. $(a - 1)^2x - (a + 1)^2y = 0$

Q.8 The set of all real numbers x for which $x^2 - |x + 2| + x > 0$ is:

Question ID : 7230531724

Ans 1. $(-\infty, -\sqrt{2}) \cup (\sqrt{2}, \infty)$

2. $(-\infty, -2) \cup (2, \infty)$

3. $(-\infty, -1) \cup (1, \infty)$

4. $(\sqrt{2}, \infty)$

Q.9 If $x + y = k$ is normal to $y^2 = 12x$, then k is:

Question ID : 7230531736

Ans 1. -9

2. 9

3. -3

4. 3

Q.10 If ω is a complex cube root of unity, and $A = \begin{bmatrix} \omega & 0 \\ 0 & \omega \end{bmatrix}$, then A^{100} is equal to:

Question ID : 7230531728

Ans 1. I

2. $-A$

3. A

4. O

Q.11 $y = 10^x$ is the reflection of $y = \log_{10} x$ in the line whose equation is:

Question ID : 7230531739

Ans 1. $y = \frac{x}{10}$

2. $y = 10x$

3. $y = x$

4. $y = x + 10$

Q.12 The points $A(2, 3), B(3, 5), C(7, 7)$ and $D(4, 5)$ are such that:

Question ID : 7230531730

Ans 1. $ABCD$ is a parallelogram

2. D lies on the boundary of the triangle ABC

3. D lies inside the triangle ABC

4. A, B, C and D are collinear

Q.13 If the roots of the equation $x^2 - 2ax + a^2 + a - 3 = 0$ are real and less than 3, then:

Question ID : 7230531723

Ans 1. $3 < a \leq 4$

2. $a < 2$

3. $a > 4$

4. $2 \leq a \leq 3$

Q.14 The equation $\frac{x^2}{1-r} - \frac{y^2}{1+r} = 1, |r| < 1$ represents:

Question ID : 7230531738

- Ans 1. a pair of straight lines
 2. an ellipse
 3. a circle
 4. a hyperbola

Q.15 The equation of the line passing through the points of intersection of the circles $3x^2 + 3y^2 - 2x + 12y - 9 = 0$ and $x^2 + y^2 + 6x + 2y - 15 = 0$ is:

Question ID : 7230531735

- Ans 1. $10x - 3y + 18 = 0$
 2. $10x + 3y + 18 = 0$
 3. $10x + 3y - 18 = 0$
 4. $10x - 3y - 18 = 0$

Q.16 The points $(a, 2, -2a)$, $(-a + 1, 2a)$ and $(-4 - a, 6 - 2a)$ are collinear for:

Question ID : 7230531732

- Ans 1. $a = -1$
 2. $a = 1$
 3. all values of a
 4. no value of a

Q.17 If $A = \begin{bmatrix} \beta & 2 \\ 2 & \beta \end{bmatrix}$ and $|A^3| = 125$, then the value of β is:

Question ID : 7230531726

- Ans 1. ± 2
 2. ± 1
 3. ± 5
 4. ± 3

Q.18 The points $(p, q + r)$, $(q, r + p)$ and $(r, p + q)$ are:

Question ID : 7230531733

- Ans 1. vertices of a right angled triangle
 2. vertices of an equilateral triangle
 3. concyclic
 4. collinear

Q.19 The equation of the common tangent to the curves $y^2 = 8x$ and $xy = -1$ is:

Question ID : 7230531740

- Ans 1. $y = x + 2$
 2. $2y = x + 8$
 3. $3y = 9x + 2$
 4. $y = 2x + 1$

Q.20 The value of $\cos(60^\circ - \theta) \cos \theta \cos(60^\circ + \theta)$ is:

Question ID : 7230531742

- Ans 1. $3 \tan \theta$

2. $\left(\frac{1}{4}\right) \sin 3\theta$

3. $\left(\frac{1}{4}\right) \cos 3\theta$

4. $\tan 3\theta$

Section : Subject Related

Q.1 When $x + y = z$, then $\cos^2 x + \cos^2 y + \cos^2 z - 2\cos x \cos y \cos z = ?$

Question ID : 7230531745

Ans 1. 1

2. $\sin^2 z$

3. $\cos^2 z$

4. 0

Q.2 A ladder of length 6 m makes an angle of 45° with the floor while leaning against one wall of a room. If the foot of the ladder is kept fixed on the floor and it is made to lean against the opposite wall of the room, it makes an angle of 60° with the floor. What is the distance between these two walls of the room?

Question ID : 7230531750

Ans 1. 3 m

2. $3\sqrt{2}$ m

3. $3(1 + \sqrt{2})$ m

4. $2\sqrt{3}$ m

Q.3 If $\tan^{-1} \left(\frac{\sqrt{(1+x^2)-1}}{x} \right) = 4$, then the value of x is:

Question ID : 7230531757

Ans 1. $\tan(8)$

2. $\tan\left(\frac{1}{4}\right)$

3. $\tan(2)$

4. $\tan(4)$

Q.4 The number of positive integral pairs (a, b) satisfying the equation $\tan^{-1}(a) + \tan^{-1}(b) = \tan^{-1}(7)$ is:

Question ID : 7230531752

Ans 1. 4

2. infinite

3. 0

4. 2

Q.5 If the derivative of the function $y = f(x)$ is zero always, then y is:

Question ID : 7230531761

Ans 1. an increasing function

2.

neither an increasing function nor a decreasing function

3. a decreasing function

4. not stationary

Q.6 Using Rolle's theorem for a function $f(x) = x(x+1)(x+2)(x+3)$, $f'(x) = 0$ has:

Question ID : 7230531759

Ans ✗ 1. two real roots

✗ 2. four real roots

✓ 3. three real roots

✗ 4. two real roots and complex root

Q.7 When $\cos^{-1}(x) + \cos^{-1}(y) = \frac{\pi}{2}$ and $\tan^{-1}(x) - \tan^{-1}(y) = 0$, then $x^2 + y^2 + xy$ is:

Question ID : 7230531755

Ans ✗ 1. 0

✓ 2. $\frac{3}{2}$ ✗ 3. $\frac{1}{8}$ ✗ 4. $\frac{1}{2}$ Q.8 If $\alpha = \cos x + \cos y$, $\beta = \sin x + \sin y$ and $x - y = 2\theta$ then $\frac{\cos 3\theta}{\cos \theta} = ?$

Question ID : 7230531746

Ans ✗ 1. $\alpha^2 + \beta^2 - 1$ ✗ 2. $\frac{(\alpha^2+\beta^2)}{3}$ ✗ 3. $3 - \alpha^2 - \beta^2$ ✓ 4. $\alpha^2 + \beta^2 - 3$ Q.9 If $\alpha = \sin(\cot^{-1}(x))$ and $\beta = \cot(\sin^{-1}(x))$, where $x > 0$, then $\alpha^2 - \beta^2 = ?$

Question ID : 7230531756

Ans ✗ 1. $\frac{\beta}{(\alpha)^2}$ ✓ 2. $\left(\frac{\beta}{\alpha}\right)^2$ ✗ 3. $\left(\frac{\beta}{\alpha}\right)^{-2}$ ✗ 4. $\frac{(\beta)^2}{\alpha}$ Q.10 The angle of elevation of a stationary cloud from a point 2500 m above a lake is 15° and the angle of depression of its reflection in the lake is 45° . The height of the cloud above the lake level is:

Question ID : 7230531751

Ans ✗ 1. 7500 m

✗ 2. $\frac{2500}{\sqrt{3}}$ m✗ 3. $1250\sqrt{3}$ m✓ 4. $2500\sqrt{3}$ mQ.11 When $x + \left(\frac{1}{x}\right) = \frac{5}{2}$, then the principal value of $\sin^{-1}(x)$ is:

Question ID : 7230531753

Ans ✗ 1. $\frac{\pi}{4}$ ✗ 2. $\frac{\pi}{3}$

3. $\frac{5\pi}{6}$

4. $\frac{\pi}{6}$

Q.12 If $\tan^{-1}\left(\frac{a}{x}\right) + \tan^{-1}\left(\frac{b}{x}\right) = \frac{\pi}{2}$, then the value of x is:

Question ID : 7230531754

Ans

1. $\frac{b}{a}$

2. ab

3. $\frac{a}{b}$

4. \sqrt{ab}

Q.13 If $\alpha = \sin x + \cos y$ and $\beta = \cos x + \sin y$, then $\tan\left(\frac{x-y}{2}\right) = ?$

Question ID : 7230531744

Ans

1. $\frac{(\alpha+\beta)}{(\alpha-\beta)}$

2. $\frac{(\alpha-\beta)}{(\alpha+\beta)}$

3. $\alpha - \beta$

4. $\alpha + \beta$

Q.14 If $\lim_{x \rightarrow 0} \frac{a \sin x - \sin 2x}{\tan^2 x} = b$, then the values of a and b are respectively:

Question ID : 7230531758

Ans

1. 1 and 3

2. 2 and 3

3. -1 and 2

4. 2 and 1

Q.15 If the normal to the curve $y^2 = 5x - 1$ at the point $(1, -2)$ is in the form $ax - 5y + b = 0$, then the values of a and b are respectively:

Question ID : 7230531762

Ans

1. -4, -14

2. -4, 14

3. 4, -14

4. 4, 14

Q.16 If $\frac{2 \sin x}{1 + \cos x + \sin x} = \alpha$, then $\frac{\cos x}{1 + \sin x} = ?$

Question ID : 7230531743

Ans

1. $1 - \alpha$

2. $\alpha - 1$

3. $1 + \alpha$

4. $\frac{1}{\alpha}$

Q.17 In a triangle ABC, if $\cos A \cos B + \sin A \sin B \sin C = 1$, then the triangle is a/an:

Question ID : 7230531748

Ans

- 1. obtuse-angled isosceles
- 2. right-angled isosceles
- 3. equilateral
- 4. isosceles

Q.18 Applying Lagrange's Mean Value theorem to the function $f(x) = x + \left(\frac{1}{x}\right)$ in $[0.5, 3]$, the value of c between 0.5 and 3 is:

Question ID : 7230531760

- Ans
- 1. $\sqrt{1.5}$
 - 2. $\sqrt{0.5}$
 - 3. 2
 - 4. $\sqrt{1.25}$

Q.19 If in a triangle ABC, sines of angles A and B satisfy the equation $4x^2 - (2\sqrt{6})x + 1 = 0$, then $\cos(A - B)$ is:

Question ID : 7230531749

- Ans
- 1. $\frac{1}{2}$
 - 2. $\frac{1}{\sqrt{2}}$
 - 3. $\frac{\sqrt{3}}{2}$
 - 4. $\sqrt{2}$

Q.20 The relation $\sin x + 2 \sin 2x = 3 + \sin 3x$, $0 \leq x \leq 2\pi$ has:

Question ID : 7230531747

- Ans
- 1. two solutions in the first quadrant
 - 2. one solution in each quadrant
 - 3. no solution in any quadrant
 - 4. one solution in the second quadrant

Section : Subject Related

Q.1 If $\vec{a} = 2\hat{i} - \hat{j} - 8\hat{k}$ and $\vec{b} = \hat{i} + 3\hat{j} - 4\hat{k}$, then the direction cosines of the vector $\vec{a} - 2\vec{b}$ is given by:

Question ID : 7230531777

- Ans
- 1. $\frac{3}{13}, \frac{4}{13}, -\frac{12}{13}$
 - 2. 1, 0, 1
 - 3. 0, 0, 1
 - 4. 0, -1, 0

Q.2 The volume of the solid generated by revolving the region between the y-axis and the curve $x = \frac{2}{y}$, $1 \leq y \leq 4$ about the y-axis is:

Question ID : 7230531768

- Ans
- 1. 2π
 - 2. 3
 - 3. 3π
 - 4. π

Q.3 The solution of the equation $(x+1)\left(\frac{dy}{dx}\right) - y = e^x(x+1)^2$ is:

Question ID : 7230531773

Ans

- 1. $\frac{y}{1-x} = e^x + C$
- 2. $\frac{y}{x+1} = e^x + C$
- 3. $\frac{y}{x-1} = e^x + C$
- 4. $\frac{y}{x+1} = e^{-x} + C$

Q.4 Using the Fundamental theorem, determine the value of the integral $\int_1^{x^2} \cos t \, dt$.

Question ID : 7230531767

Ans

- 1. $2x \cos x^2$
- 2. $2x \cos x$
- 3. $x \cos x^2$
- 4. $3x \cos x^2$

Q.5 The solution of the differential equation $(y^2 - xy)dx + x^2 dy$ is:

Question ID : 7230531771

Ans

- 1. $\frac{y}{x} = \ln(y) + C$
- 2. $\frac{y}{x} = \ln(x) + C$
- 3. $\frac{x}{y} = \ln(x) + C$
- 4. $\frac{x}{y} = \ln(y) + C$

Q.6 The solution of the equation $\cos(x+y)dy = dx$ is given by:

Question ID : 7230531772

Ans

- 1. $y = \tan\left(\frac{x+y}{2}\right) + C$
- 2. $y = \cot\left(\frac{x+y}{2}\right) + C$
- 3. $y = \tan\left(\frac{x+y}{4}\right) + C$
- 4. $y = \tan\left(\frac{x+y}{3}\right) + C$

Q.7

The value of the integral $\int_0^{\frac{\pi}{2}} \frac{\sqrt{\sin x}}{\sqrt{\sin x + \sqrt{\cos x}}} dx$ is:

Question ID : 7230531769

Ans

- 1. 0
- 2. $\frac{\pi}{4}$
- 3. $\frac{\pi}{2}$
- 4. 1

Q.8

The projection of the vector $\hat{i} - 2\hat{j} + \hat{k}$ on $4\hat{i} - 4\hat{j} + 7\hat{k}$ is:

Question ID : 7230531778

Ans

1. $\frac{4}{9}$

2. $\frac{19}{9}$

3. $\frac{7}{9}$

4. $\frac{8}{9}$

Q.9

The value of the integral $\int_{-1}^1 (2 - |x|) dx$ is:

Question ID : 7230531764

Ans

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

2. $\frac{3}{2}$

3. 3

4. $\frac{1}{3}$

Q.10

The average value of $f(x) = \sqrt{4 - x^2}$ on $[-2, 2]$ is:

Question ID : 7230531765

Ans

1. $\frac{\pi}{2}$

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

3. $\frac{\pi}{4}$

4. $\frac{3\pi}{2}$

Q.11

If $|\vec{a} + \vec{b}| = 60$, $|\vec{a} - \vec{b}| = 40$ and $|\vec{b}| = 46$, then $|\vec{a}|$ is equal to:

Question ID : 7230531782

Ans

1. 22

2. 12

3. 21

4. 24

Q.12

The order and degree of the differential equation $\left(\frac{d^2y}{dx^2}\right)^{\frac{3}{2}} = \left[1 + \left(\frac{dy}{dx}\right)^2\right]^{\frac{3}{2}}$ are respectively:

Question ID : 7230531770

Ans

1. 2 and 1

2. 1 and 2

3. 2 and 2

4. 2 and 3

Q.13 If $\left(\frac{dy}{dx}\right) + 2y \tan x = \sin x$, $y\left(\frac{\pi}{3}\right) = 0$ then the maximum value of y is:

Question ID : 7230531775

Ans

1. $\frac{1}{8}$

2. $\frac{1}{4}$

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

4. $\frac{2}{9}$

Q.14 The solution of the differential equation $(xy \sin xy + \cos xy)y dx + (xy \sin xy - \cos xy)x dy = 0$ is:

Question ID : 7230531774

Ans

1. $x \cos xy = Cyx$

2. $y \cos xy = C + x$

3. $y \cos xy = Cx$

4. $x \cos xy = y + C$

Q.15 The area of the region enclosed by the parabola $y = 2 - x^2$ and the straight line $y = -x$ is equal to:

Question ID : 7230531766

Ans

1. 5

2. 4

3. 4.5

4. 3.5

Q.16 The unit vector perpendicular to both the vectors $2\hat{i} + \hat{j} - \hat{k}$ and $\hat{i} + \hat{j} + 2\hat{k}$ is:

Question ID : 7230531780

Ans

1. $\left(\frac{1}{35}\right)(\hat{i} + 5\hat{j} - 3\hat{k})$

2. $\left(\frac{1}{35}\right)(\hat{i} - 5\hat{j} + 3\hat{k})$

3. $\left(\frac{1}{35}\right)(\hat{i} - 5\hat{j} - 3\hat{k})$

4. $\left(\frac{1}{35}\right)(\hat{i} + 5\hat{j} + 3\hat{k})$

Q.17 If the vectors $\vec{a} = \hat{i} + \hat{j} + \hat{k}$, $\vec{b} = 2\hat{i} - 4\hat{k}$ and $\vec{c} = \hat{i} + \lambda\hat{j} + 3\hat{k}$ are coplanar, then the value of λ is:

Question ID : 7230531781

Ans

1. $\frac{5}{7}$

2. $\frac{3}{5}$

3. -4

4. $\frac{5}{3}$

Ans

The extreme value of $f(x) = (x)^{\frac{1}{x}}$ is:

Question ID : 7230531763

1. $\left(\frac{1}{e}\right)^e$

2. 1

3. $(e)^{\frac{1}{e}}$

4. e

Q.19 The differential equation $(ay^2 + x + x^3)dx + (y^3 - y + bxy)dy = 0$ is exact if:

Question ID : 7230531776

- Ans 1. $a = b$
2. $a = 1, b = 3$
3. $b = 2a$
4. $a = 2, b = 1$

Q.20 The angle between the vectors $2\hat{i} + 6\hat{j} + 3\hat{k}$ and $12\hat{i} - 4\hat{j} + 3\hat{k}$ is:

Question ID : 7230531779

- Ans 1. $\cos^{-1}\left(\frac{9}{91}\right)$
2. $\cos^{-1}\left(\frac{7}{19}\right)$
3. $\cos^{-1}\left(\frac{9}{19}\right)$
4. $\cos^{-1}\left(\frac{3}{19}\right)$

Section : Subject Related

Q.1 The weight of 11 forty-year-old men is 148, 154, 158, 160, 161, 162, 166, 170, 182, 185 and 236 pounds. If the weight of the heaviest man is omitted, then the percentage change in the range is:

Question ID : 7230531797

- Ans 1. 52%
2. 42%
3. 44%
4. 47%

Q.2 What are the co-ordinates of a point which divides the line joining the points $(2, -4, 3)$ and $(-4, 5, -6)$ in the ratio $1 : -4$?

Question ID : 7230531785

- Ans 1. $(3, 3, 5)$
2. $(-2, 2, -3)$
3. $(2, 4, 5)$
4. $(4, -7, 6)$

Q.3 If the distance between two points $(x, -8, 4)$ and $(3, -5, 4)$ is 5, then the positive value of x is:

Question ID : 7230531784

- Ans 1. 2
2. 3
3. 4
4. 7

Q.4

The perpendicular distance from the point $(1, 0, -3)$ to the straight line $\frac{x-2}{3} = \frac{y-3}{4} = \frac{z-4}{5}$ is:

Question ID : 7230531788

- Ans 1. 4
 2. 3
 3. 1
 4. 2

Q.5 The numbers 3.2, 5.8, 7.9 and 4.5 have frequencies x , $x+2$, $x-3$ and $x+6$. If the arithmetic mean is 4.876, then the value of x is:

Question ID : 7230531796

- Ans 1. 4
 2. 7
 3. 5
 4. 3

Q.6 The equation straight line $y = 0, z = 0$ in symmetrical form is:

Question ID : 7230531790

- Ans 1. $\frac{x}{1} = \frac{y}{1} = \frac{z}{0}$
 2. $\frac{x-1}{1} = \frac{y-1}{0} = \frac{z-1}{0}$
 3. $\frac{x}{1} = \frac{y}{0} = \frac{z}{0}$
 4. $\frac{x}{0} = \frac{y}{1} = \frac{z}{1}$

Q.7 The equation of the sphere on the join of $(1, 1, 1)$ and $(-1, -1, -1)$ as diameter

Question ID : 7230531794

- Ans 1. $x^2 + y^2 + z^2 = 1$
 2. $x^2 + y^2 + z^2 + 3 = 0$
 3. $x^2 + y^2 + z^2 = 3$
 4. $x^2 + y^2 + z^2 + 1 = 0$

Q.8 The shortest distance between the lines $\frac{x-1}{3} = \frac{y-8}{-1} = \frac{z-3}{1}$ and $\frac{x-3}{-3} = \frac{y+7}{2} = \frac{z-6}{4}$ is:

Question ID : 7230531791

- Ans 1. $\frac{13}{5}\sqrt{30}$
 2. $\frac{3}{5}\sqrt{30}$
 3. $\frac{2}{5}\sqrt{30}$
 4. $\frac{3}{5}\sqrt{20}$

Q.9 The distance of the point $(1, -2, 3)$ from the plane $x - y + z - 5 = 0$ measured parallel to the line $\frac{x}{2} = \frac{y}{3} = \frac{z}{-6}$ is:

Question ID : 7230531787

- Ans 1. 2
 2. 5
 3. 3

4. 1

- Q.10** A lot contains 12 items, of which 4 are defective. Three items are drawn at random from the lot, one after the other. What is the probability that all three are non-defective?

Question ID : 7230531802

Ans

1. $\frac{16}{55}$

2. $\frac{1}{5}$

3. $\frac{14}{55}$

4. $\frac{12}{55}$

- Q.11** A plane passes through a fixed point (a, b, c) and cuts the axes at A, B, C. Then the locus of the centre of the sphere OABC is:

Question ID : 7230531793

Ans

1. $\left(\frac{x}{a}\right) + \left(\frac{y}{b}\right) + \left(\frac{z}{c}\right) = 1$

2. $\left(\frac{a}{x}\right) + \left(\frac{b}{y}\right) + \left(\frac{c}{z}\right) = 2$

3. $\left(\frac{a}{x}\right) + \left(\frac{b}{y}\right) + \left(\frac{c}{z}\right) = 1$

4. $\left(\frac{x}{a}\right) + \left(\frac{y}{b}\right) + \left(\frac{z}{c}\right) = 0$

- Q.12** The mean deviation of the values 8, 15, 53, 49, 19, 62, 7, 15, 95, 77 about the median is:

Question ID : 7230531798

Ans

1. 21.7

2. 26.1

3. 27.2

4. 25.4

- Q.13** The direction cosines of the line joining the points (-3, -5) and (-2, 1, -8) are:

Question ID : 7230531786

Ans

1. $\frac{6}{7}, \frac{2}{7}, \frac{3}{7}$

2. 6, 2, 3

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

4. -6, -2, -3

- Q.14** The mean and standard deviation of 20 items is found to be 10 and 2, respectively. At the time of checking, it was found that one item 8 was incorrect. If the item 8 is replaced by the correct one i.e. 12, then the correct mean and standard deviation are respectively:

Question ID : 7230531799

Ans

1. 10.01 and 1.917

2. 10.01 and 1.097

3. 10.2 and 1.99

4. 10.11 and 1.997

- Q.15** The equation of the plane in terms of the intercepts of a, b, c from the axes is of the form:

Question ID : 7230531789

Ans

1. $(x - c)(y - a)(z - a) = 0$

2. $\left(\frac{x}{a}\right) + \left(\frac{y}{b}\right) + \left(\frac{z}{c}\right) = 1$

3. $(x - a)(y - b) + (z - c) = 1$

4. $ax + by + cz = 1$

Q.16 If the scalar product of $\hat{i} + \hat{j} + \hat{k}$ with the unit vector parallel to the sum of $2\hat{i} + 4\hat{j} - 5\hat{k}$ and $\lambda\hat{i} + 2\hat{j} + 3\hat{k}$ is equal to unity, then the value of λ is:

Question ID : 7230531783

Ans 1.

2. -5

3. $-\frac{38}{7}$

4. $\frac{11}{3}$

Q.17 A man travelled 12 hours at 4 m/h, and again 10 hours at 5 m/h. What is his average speed?

Question ID : 7230531795

Ans 1. 4.40 m/h

2. 4.15 m/h

3. 4.45 m/h

4. 4.10 m/h

Q.18 The angle between the plane $x + 2y - 3z + 4 = 0$ and the line whose direction cosine are $\frac{2}{\sqrt{14}}, \frac{3}{\sqrt{14}}, \frac{1}{\sqrt{14}}$ is given by:

Question ID : 7230531792

Ans

1. $\sin^{-1}\left(\frac{5}{14}\right)$

2. $\cos^{-1}\left(\frac{5}{14}\right)$

3. $\cos^{-1}\left(\frac{3}{14}\right)$

4. $\sin^{-1}\left(\frac{3}{14}\right)$

Q.19 The mean and standard deviation calculated from 20 observations are 15 and 10, respectively. If an additional observation 5, left out through oversight, is included in the calculations, then the corrected mean and the standard deviation are respectively:

Question ID : 7230531800

Ans 1. 8.36 and 9.91

2. 12.26 and 9.19

3. 14.52 and 9.99

4. 14.83 and 9.78

Q.20 Calculate the mean deviation about the mean for the data given below.

Question ID : 7230531801

Class:	4 – 5	6 – 7	8 – 9	10 – 11	12 – 13	14 – 15
Frequency:	4	10	20	15	8	3

Ans 1. 2.48

2. 9.23

3. 2.90

4. 3.30

Section : Subject Related

Q.1 If $T: \mathbb{R}^4 \rightarrow \mathbb{R}^5$ and $\dim(R(T)) = 2$, then $\dim(N(T)) = ?$

Question ID : 7230531816

- Ans 1. 1
 2. 4
 3. 3
 4. 2

Q.2 Let ρ_2 denote the vector space of polynomials of degree less than or equal to 2. If $T: \rho_2 \rightarrow \rho_2$ is a linear operator and $T(1) = 1 + x$, $T(x) = 2 + x^2$, $T(x^2) = x - 3x$, then $T(-3 + x - x^2)$ is:

Question ID : 7230531815

- Ans 1. $1 - 4x - 4x^2$
 2. $-3 + 4x - x^2$
 3. $1 + 4x + 4x^2$
 4. $-1 - 4x + 4x^2$

Q.3

The singular values of $A = \begin{bmatrix} 1 & 1 \\ 0 & 1 \\ 1 & 0 \end{bmatrix}$ is:

Question ID : 7230531817

- Ans 1. $1, \sqrt{3}$
 2. 1, 4
 3. 1, 3
 4. 2, 3

Q.4 If $f: [-1, 1] \rightarrow \mathbb{R}$ is a function defined by $f(x) = \begin{cases} 1 & \text{if } x \text{ is rational} \\ 0 & \text{if } x \text{ is irrational} \end{cases}$, then $\lim_{x \rightarrow 0} f(x) :$

Question ID : 7230531819

- Ans 1. is equal to 0
 2. is not equal to 0 and 1
 3. does not exist
 4. is equal to 1

Q.5 Let T be linear operator on \mathbb{R}^3 defined by $T\begin{pmatrix} x \\ y \\ z \end{pmatrix} = \begin{pmatrix} x \\ -y \\ z \end{pmatrix}$. Then the matrix of T relative to the standard basis for \mathbb{R}^3 is:

Question ID : 7230531814

- Ans 1. $\begin{bmatrix} -1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & -1 \end{bmatrix}$
 2. $\begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$
 3. $\begin{bmatrix} 1 & 0 & 0 \\ 0 & -1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$

4. $\begin{bmatrix} 1 & 0 & 1 \\ 1 & -1 & 0 \\ 0 & 1 & 1 \end{bmatrix}$

- Q.6** A box B contains 5 red marbles and 4 blue marbles, and another box C contains 3 red marbles and 2 blue marbles. A marble is drawn at random from each box. What is the probability that both marbles will be red?

Question ID : 7230531804

Ans

1. $\frac{5}{9}$

2. $\frac{3}{5}$

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

4. $\frac{8}{9}$

- Q.7** If A is a $m \times n$ matrix, then:

Question ID : 7230531812

Ans

1. $\text{rank}(A) + \text{nullity}(A) = m$

2. $\text{rank}(A) + \text{nullity}(A) < m$

3. $\text{rank}(A) + \text{nullity}(A) = n$

4. $\text{rank}(A) + \text{nullity}(A) > n$

- Q.8** Let A and B be any two events such that $P(A) = 0.6$, $P(B) = 0.3$ and $P(A \cap B) = 0.2$. Then $P(A^c|B^c) = ?$

Question ID : 7230531803

Ans

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

2. $\frac{3}{7}$

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

4. $\frac{3}{4}$

- Q.9** Identify that the function T from \mathbb{R}^2 to \mathbb{R}^2 defined below is NOT linear.

Question ID : 7230531811

Ans

1. $T\left(\begin{bmatrix} x \\ y \end{bmatrix}\right) = \begin{bmatrix} x \\ 0 \end{bmatrix}$

2. $T\left(\begin{bmatrix} x \\ y \end{bmatrix}\right) = \begin{bmatrix} 0 \\ y \end{bmatrix}$

3. $T\left(\begin{bmatrix} x \\ y \end{bmatrix}\right) = \begin{bmatrix} x \\ y^2 \end{bmatrix}$

4. $T\left(\begin{bmatrix} x \\ y \end{bmatrix}\right) = \begin{bmatrix} y \\ x \end{bmatrix}$

- Q.10** If $\delta\left(t - \frac{\pi}{4}\right)$ denotes the unit impulse function, then the Laplace transform of $\sin 2t\delta\left(t - \frac{\pi}{4}\right)$ is:

Question ID : 7230531822

Ans

1. $e^{\frac{rs}{2}}$

2. $e^{\frac{-rs}{4}}$

3. $e^{\frac{rs}{4}}$

4. $e^{\frac{-rs}{2}}$

Q.11 If the probability density function of a discrete random variable X is defined by

$P(X = x) = 1/2^x$ for $x = 1, 2, 3, \dots$, then $P(X \geq 4) = ?$

Question ID : 7230531805

Ans

1. $\frac{1}{8}$

2. $\frac{7}{8}$

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

4. $\frac{1}{7}$

Q.12 Under which of the following conditions does the space (R, \oplus, \otimes) fail to be vector space under the operations \oplus and \otimes defined by $a \oplus b = a^b$ and $k \otimes a = ka$, where R denotes the set of all real numbers?

Question ID : 7230531809

Ans

1. Addition is associative

2. Additive inverse

3. Addition is not commutative

4. Additive identity

Q.13 Suppose 300 misprints are distributed randomly throughout a book of 500 pages. What is the probability that a given page contains 2 or more misprints?

Question ID : 7230531806

Ans

1. 0.549

2. 0.329

3. 0.1

4. 0.122

Q.14 If the probability density function $f(x)$ of a continuous random variable X is given by $f(x) = \begin{cases} k & \text{if } a \leq x \leq b \\ 0 & \text{otherwise} \end{cases}$, then the mean X is:

Question ID : 7230531807

Ans

1. $\frac{(a-b)}{3}$

2. 0

3. $\frac{(a+b)}{2}$

4. $\frac{1}{(b-a)}$

Q.15 If λ is an eigenvalue of an invertible matrix A, then the eigenvalue of A^{-1} is:

Question ID : 7230531813

Ans

1. λ^{-1}

2. $\frac{2}{\lambda}$

3. λ

4. 1

Q.16

Question ID : 7230531818

The range of the function $f(x) = \begin{cases} \frac{x}{2} & \text{if } x \in [-2, 0] \\ x^2 & \text{if } x \in [0, 2] \end{cases}$ is given by:

- Ans 1. $[-2, 2]$
 2. $[-1, 4]$
 3. $(-2, 2)$
 4. $[0, 1]$

Q.17 The radius of convergence of the series $1 - \left(\frac{x}{2}\right) + \left(\frac{x^2}{3}\right) - \left(\frac{x^3}{4}\right) + \dots$ is:

Question ID : 7230531820

- Ans 1. 1
 2. 0
 3. -1
 4. -2

Q.18 Which of the following functions is the only analytic function?

Question ID : 7230531821

- Ans 1. $f(z) = \bar{z}$
 2. $f(z) = \operatorname{Im}(z)$
 3. $f(z) = R(iz)$
 4. $f(z) = \sin(z)$

Q.19 A box contains 3 red marbles and 2 white marbles. A marble is drawn and replaced three times from the box. What is the probability that at least one red marble was drawn?

Question ID : 7230531808

- Ans 1. $\frac{117}{125}$
 2. $\frac{113}{125}$
 3. $\frac{36}{125}$
 4. $\frac{54}{125}$

Q.20 Which of the following subset K of a vector space \mathbb{R}^2 is NOT a basis for \mathbb{R}^2 ?

Question ID : 7230531810

- Ans 1. $K = \left\{ \begin{pmatrix} -1 \\ 3 \end{pmatrix}, \begin{pmatrix} 1 \\ -1 \end{pmatrix} \right\}$
 2. $K = \left\{ \begin{pmatrix} 1 \\ 1 \end{pmatrix}, \begin{pmatrix} -1 \\ 2 \end{pmatrix} \right\}$
 3. $K = \left\{ \begin{pmatrix} 1 \\ 0 \end{pmatrix}, \begin{pmatrix} 0 \\ 1 \end{pmatrix} \right\}$
 4. $K = \left\{ \begin{pmatrix} 2 \\ 1 \end{pmatrix}, \begin{pmatrix} 1 \\ 0 \end{pmatrix}, \begin{pmatrix} 8 \\ -3 \end{pmatrix} \right\}$

Section : Subject Related

Q.1 The content for arts education activities at primary stage should be oriented towards all the below options, EXCEPT:

Question ID : 7230531833

- Ans 1. Towards cultural diversity

- 2. Towards Family
- 3. Towards Classroom
- 4. Towards Self

Q.2 Which of these is a summative assessment?

Question ID : 7230531839

Ans 1.

Interviews (brief, private, 10-minute interview of each student)

- 2.

Discussion board responses (on content-specific prompts)

- 3.

Self-assessments (identifying skills and competencies)

- 4.

Final examination used for certification

Q.3 Which of these is NOT an assessment method?

Question ID : 7230531838

Ans 1. Question and answer

- 2. Homework exercises

- 3. Teacher suggests correction

- 4. Skill test

Q.4 What has been the shift in teacher evaluation techniques?

Question ID : 7230531840

Ans 1. Peer evaluation to self-evaluation

- 2. Mentor evaluation to peer evaluation

- 3.

From assessing practice teaching to micro teaching

- 4. Standards evaluation to Value addition

Q.5 Identify the most vital reason why students with special needs to be made a part of regular schools?

Question ID : 7230531842

Ans 1.

To take opportunities in the field which will help them have a better future

- 2.

To create dependency on specialised services only which will give a way to prove their worth.

- 3.

To keep them away from their need based activities.

- 4.

To take advantage of benefits in the form of educational resources and activities that are available

Q.6 What is the function of language, when it is used to communicate information, known as?

Question ID : 7230531827

Ans 1. Inspiring function

- 2. Informative function

- 3. Expressive function

- 4. Directive function

Q.7 Which of these is NOT a feature of a blog?

Question ID : 7230531835

Ans 1.

Readers have the possibility to leave comments

2. Content is updated on a regular basis

3.

The content is published in a reverse chronological fashion

4.

They are composed of web pages in which one can make changes thus enabling fast and easy collaboration.

Question ID : 7230531831

Q.8 Which of these is NOT an objective of teaching mathematics?

Ans 1. Teaching and learning of numeracy skills

2.

Making students understand the importance of micro teaching

3. Teaching of advanced mathematics

4. Teaching of abstract mathematical concepts

Question ID : 7230531826

Q.9 Identify the learning style from the given description:

Shyam is a 6th grader, fond of learning through charts, diagrams, and visual aids. Textbooks that are dominated by words, without illustrations, bore him.

Ans 1. Visual / Non-verbal Learning style

2. Auditory Learning style

3. Tactile Learning style

4. Visual /Verbal Learning style

Question ID : 7230531828

Q.10 Which of these is NOT a characteristic of mathematics?

Ans 1. Abstractness

2. Logical sequence

3. Peculiar symbolism

4. Inquiry approach

Question ID : 7230531834

Q.11 Which of these is NOT a 3D art method or technique to use while teaching a subject?

Ans 1. Relief work

2. Photographs

3. Hand pottery

4. Clay modelling

Question ID : 7230531836

Q.12 What advantage does micro teaching give student teachers?

Ans 1. Collect data for research studies

2.

Helps teacher educators evaluate student teachers

3.

Prepares for transfer of new technique to a real classroom

4.

Allows specific methods to be evolved for teaching

Q.13 Which of the following is a disorder that affects the development of motor skills, in which the affected have trouble planning and executing fine motor tasks, which can range from waving goodbye to getting dressed?

Question ID : 7230531841

- Ans 1. Dyspraxia
 2. Dyscalculic
 3. Dysgraphia
 4. Dyslexia

Q.14 When a person knows the theory behind how to drive a car without ever having driven a car in reality, then the person is said to possess:

Question ID : 7230531837

- Ans 1. Personal Knowledge
 2. Procedural knowledge
 3. Propositional knowledge
 4. Inherent knowledge

Q.15 Which of these is NOT a part of social science?

Question ID : 7230531830

- Ans 1. Biology
 2. Philosophy
 3. Political science
 4. Law

Q.16 Which of these options need NOT be given much importance while choosing cartoons to teach a concept?

Question ID : 7230531832

- Ans 1.

Selection of cartoons keeping the goal of the specific subject in mind

- 2.

Use of appropriate and relevant cartoons to drive in the concept

- 3.

Taking care that the cartoons don't disturb the sentiments of any group

4. The colours used in the cartoon characters

Q.17 Which of these is NOT a characteristic feature of a well-designed active learning strategy?

Question ID : 7230531825

- Ans 1.

Every student acting on the material either individually or with others

2. A relatively long time frame

- 3.

Clear, meaningful, and uncomplicated goal of activity

- 4.

Unambiguous description of the nature of the end product — be it a list, an answer, a choice, or a structure.

Q.18 Which is the scheme in 2018 has proposed in the Union Budget with a view to improving school effectiveness, at all school stages?

Question ID : 7230531824

- Ans 1. SamagraShiksha
 2. Rashtriya Madhyamik Shiksha Abhiyan
 3. Sarva Shiksha Abhiyan
 4. Teacher Education

Q.19 What behaviour is exhibited when Sita takes responsibility for not being there for her friends when they are in need

Question ID : 7230531823

- Ans 1. Charitable disposition
 2. Social maturity
 3. Compassion
 4. Responsibility

Q.20 Which one of the following approach would ensure gender equality in textbooks?

Question ID : 7230531829

- Ans 1. Using feminist writing as source material

2.

Including pictures of boys doing activities which girls usually do

3.

Illustrating common stereotypes about boys and girls

4.

Using both girls and boys names in examples

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