

# DSSSB JULY 2018

Participant ID:	
Participant Name:	
Test Center Name:	
Test Date:	03/07/2018
Test Time:	9:00 AM - 12:00 PM
Subject:	PGT MATHS MALE

Section : Mental Ability

- Q.1** ‘C \$ D’ means ‘C is the mother of D’;  
 ‘C # D’ means ‘C is the father of D’;  
 ‘C @ D’ means ‘C is the daughter of D’;  
 Now, if P \$ Q # R @ S, then which of the following is NOT true?

Question ID : 723053623

- Ans**
- 1. Q is the wife of S
  - 2. R is Q’s daughter
  - 3. S is the wife of Q
  - 4. P is mother-in-law of S

- Q.2** You are given a statement and two conclusions. Read them carefully and select the option(s) that logically follow(s) from the statement.

Question ID : 723053635

Statement:  
 ‘Our ‘X’ brand mobile phones are best in picture clarity and multiplicity of functions.’ – An advertisement on TV.

Conclusions:  
 I. TV has a wide range of viewers.  
 II. People look for picture clarity and multiplicity of functions in a mobile phone.

- Ans**
- 1. Only conclusion I follows
  - 2. Either conclusion I or II follows
  - 3. Only conclusion II follows
  - 4. Both conclusions I and II follows

- Q.3** Read the situation below and choose the most logical step you would take.

Question ID : 723053632

Your neighbour’s hand is burnt while cooking food. You should:

- Ans**
- 1. tell your neighbour that she should have been more careful.
  - 2. dip her hand in water till burning sensation subsides.
  - 3. apply an ointment on the burn.
  - 4. ignore the situation.

- Q.4** Which letter will be 10<sup>th</sup> to the right of the 18<sup>th</sup> letter from the right end of the English alphabet series?

Question ID : 723053621

- Ans**
- 1. P
  - 2. S
  - 3. R
  - 4. T

**Q.5** Find the missing term in the below number series.

Question ID : 723053625

22, 23, 27, 36, 52, 77, 113, \_\_\_\_\_, 226

- Ans  1. 176  
 2. 161  
 3. 162  
 4. 167

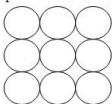
**Q.6** In a certain code, PAPER is written as QCSIW. How is HOSTEL written in the same code?

Question ID : 723053620

- Ans  1. IQUXJQ  
 2. IQUXIR  
 3. IQVXIR  
 4. IQVXJR

**Q.7** In the following figure, if the centres of all the circles are joined by horizontal and vertical lines, then find the number of squares that can be formed is:

Question ID : 723053624



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

**Q.8** Choose the missing character from the given alternatives.

Question ID : 723053629

3	3	216
4	3	?
5	3	512

- Ans  1. 343  
 2. 356  
 3. 256  
 4. 396

**Q.9** Choose the missing character from the given alternatives.

Question ID : 723053617

AD <sub>2.5</sub>	BE <sub>3.5</sub>	CF <sub>4.5</sub>
DG <sub>5.5</sub>	EH <sub>6.5</sub>	FI <sub>7.5</sub>
GJ <sub>8.5</sub>	?	IL <sub>10.5</sub>

- Ans  1. KL<sub>9.5</sub>  
 2. HI<sub>9.5</sub>  
 3. HK<sub>9.5</sub>

## 4. KH9.5

**Q.10** Kumar walks 6 km to the east and then turns to the south to walk 2 km. He again turns to the east and walks 2 km. Next, he turns northwards and walks 8 km. How far is he now from his starting point?

Question ID : 723053622

- Ans  1. 10.5 km  
 2. 12 km  
 3. 8 km  
 4. 10 km

**Q.11** Raja and Sanjay started walking from certain points towards each other. Raja walked 20 km and Sanjay walked 30 km. Then Raja turned to his left and Sanjay turned to his right, and they walked 25 km each. If Raja is facing North, which direction is Sanjay facing now?

Question ID : 723053636

- Ans  1. East  
 2. West  
 3. North  
 4. South

**Q.12** Out of the four given alternatives, choose the most appropriate description about the three words given below.

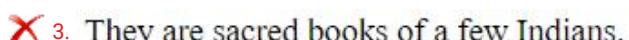
BIBLE : GITA : QURAN

Question ID : 723053634

- Ans  1. They are the holy books.



They teach that Hindu, Muslims and Christians are different.



**Q.13** Five friends — Geetha, Seetha, Preetha, Vanitha and Rani — are sitting in a circle. Seetha is sitting between Geetha and Vanitha, whereas Vanitha is sitting to Rani's right. Then, who is seated to Preetha's left?

Question ID : 723053626

- Ans  1. Rani  
 2. Seetha  
 3. Vanitha  
 4. Geetha

**Q.14** Find the missing term in the below series.

Question ID : 723053633

ZabY, XcdW, VefU, \_\_\_\_\_, RjiQ

- Ans  1. ThgS  
 2. SghT  
 3. ShgT  
 4. TghS

**Q.15** Select the pair from the options that has the same relationship between the numbers as there exists between the numbers of the pair given below.

Question ID : 723053630

4 : 36 : \_\_\_\_\_ : \_\_\_\_\_

- Ans  1. 6 : 50  
 2. 3 : 81  
 3. 5 : 49  
 4. 2 : 8

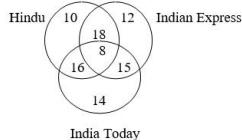
**Q.16** If BIRLA is coded as 92513 and UMPIRE is coded as 487256, then what is the code for UMBRELLA?

Question ID : 723053628

- Ans  1. 48695113  
 2. 48956113  
 3. 48659113  
 4. 48959113

**Q.17** Consider the following venn diagram.

Question ID : 723053618



The numbers in the Venn diagram indicate the number of persons reading various newspapers. The diagram is drawn after surveying 100 persons. In a population of 5,000, how many can be expected to read at least two newspapers?

- Ans  1. 2,875  
 2. 2,850  
 3. 2,750  
 4. 2,900

**Q.18** Select the option that is related to the third term in the same way the second term is related to the first term.

Question ID : 723053627

Assign : Allot : Blend : \_\_\_\_\_

- Ans  1. Juice  
 2. Bend  
 3. Mix  
 4. Separate

**Q.19** You are given two statements and two conclusions. Read them carefully and decide which of the conclusions logically follows(s) from the statements.

Question ID : 723053619

Statements:  
All bulbs are flowers.  
Some flowers are leaves.

Conclusions:  
I. All bulbs are leaves.  
II. All leaves are flowers.

- Ans  1. Neither conclusion I nor II follows  
 2. Either conclusion I or II follows  
 3. Only conclusion II follows  
 4. Only conclusion I follows

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

Question ID : 723053631

$\alpha$  denotes 'greater than';  
 $\beta$  denotes 'less than';  
 $\gamma$  denotes 'not greater than';  
 $\delta$  denotes 'equal to';  
 $\mu$  denotes 'not less than';

If  $Y \delta 2Z$  and  $3Z \gamma X$ , then which of the following is true?

- Ans  1.  $3Y \alpha 2X$   
 2.  $Y \mu 2X$   
 3.  $Y \beta X$

Section : General Awareness

Q.1 In which state is the Kanha National Park situated?

Question ID : 723053640

- Ans  1. Madhya Pradesh  
 2. West Bengal  
 3. Uttar Pradesh  
 4. Chhattisgarh

Q.2 Which of the following is correct?

Question ID : 723053643

- Ans  1. The Legislative Council of a State is dissolved after six years.  
 2. The Legislative Council of a State is not subject to dissolution.  
 3. The Legislative Council of a State is dissolved after five years.  
 4. The Governor dissolves the Legislative Council of a State.

Q.3 The Gobar-Dhan Scheme was launched at National Dairy Research Institute, \_\_\_\_\_.

Question ID : 723053654

- Ans  1. Rohtak  
 2. Karnal  
 3. Hisar  
 4. Ambala

Q.4 The Governor of a State holds office during the pleasure of:

Question ID : 723053644

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

Q.5 Which rank did India occupy in Global Optimism Index released as part of Grant Thornton's International Business Report (IBR) in the first quarter of 2018?

Question ID : 723053646

- Ans  1. 2  
 3  
 9  
 4. 6

Q.6 The Comptroller and Auditor-General of India is appointed by:

Question ID : 723053642

- Ans  1. the Chief Justice of India  
 2. the President of India  
 3. the Vice-President of India

4. the Prime Minister of India

Q.7 Who was the author of the famous book “Poverty and Un-British Rule in India”?

Question ID : 723053637

Ans  1. Dadabhai Naoroji

2. Madan Mohan Malaviya

3. Mohammad Ali Jinnah

4. Subhash Chandra Bose

Q.8 Which mirror is used in the headlight of cars?

Question ID : 723053652

Ans  1. Plane mirror

2. Rectangle mirror

3. Convex mirror

4. Concave mirror

Q.9 Who holds the record for the “highest number of wickets” across all seasons of IPL as of April 2018?

Question ID : 723053651

Ans  1. Lasith Malinga

2. Umesh Yadav

3. Ravichandran Ashwin

4. Harbhajan Singh

Q.10 The noted musician Arvind Parikh is associated with which of the following musical instruments?

Question ID : 723053648

Ans  1. Sitar

2. Mridangam

3. Sarod

4. Shehnai

Q.11 In which state is Chapchar Kut festival celebrated?

Question ID : 723053647

Ans  1. Mizoram

2. Nagaland

3. Assam

4. Manipur

Q.12 निम्नलिखित में से कौन सी विशेषता बौद्ध धर्म को जैन धर्म से अलग करती हैं?

Question ID : 723053639

Ans  1. अच्छे कर्मों में विश्वास

2. वेदों के प्रभुत्व की अस्वीकृति

3. सजीव प्राणियों को नुकसान नहीं पहुंचाना

4. आचरण और आत्मनिग्रह का चरम रूप

Q.13 With whom has the Union Government of India entered into an agreement for flexible financing arrangement to accelerate research towards early development of biopharmaceuticals under National Biopharma Mission?

Question ID : 723053655

Ans  1. WHO

- 2. UNICEF
- 3. IMF
- 4. World Bank

Q.14 The statutory power for exchange control was provided to the RBI by the Foreign Exchange Regulation Act (FERA) of:

Question ID : 723053645

- Ans  1. 1963  
 2. 1981  
 3. 1923  
 4. 1947

Q.15 In which state is the Anantagiri Hills located?

Question ID : 723053641

- Ans  1. Andhra Pradesh  
 2. Telangana  
 3. Kerala  
 4. Karnataka

Q.16 The Non-Cooperation Movement was discontinued by Mahatma Gandhi in 1922 because a crowd of protestors set fire to a police station at:

Question ID : 723053638

- Ans  1. Vaishali  
 2. Sabarmati  
 3. Wardha  
 4. Chauri Chaura

Q.17 What has been set as MSP for jute per quintal for 2018-19?

Question ID : 723053656

- Ans  1. ₹ 4,200  
 2. ₹ 3,700  
 3. ₹ 3,100  
 4. ₹ 3,500

Q.18 How many Olympic Medals has India won in the sport of wrestling so far?

Question ID : 723053650

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

Q.19 Who established the Darpana Academy of Performing Arts in Ahmedabad?

Question ID : 723053649

- Ans  1. Yamini Krishnamurthy  
 2. Rukmini Devi Arundale  
 3. Mrinalini Sarabhai  
 4. Sonal Mansingh

Q.20 Where is the headquarters of UNICEF located?

Question ID : 723053653

- Ans  1. London

2. New York  
 3. Shanghai  
 4. Paris

### Section : Arithmetic Ability

**Q.1** A person rows upstream for a distance of 21 km and returns to the starting point. He completes this journey in 10 hours. If the time taken by him in going 7 km downstream is equal to the time taken in going 3 km upstream, then what is the speed of the current?

Question ID : 723053669

- Ans  1. 3 km/h  
 2.  $3\frac{1}{2}$  km/h  
 3.  $1\frac{1}{2}$  km/h  
 4. 2 km/h

**Q.2** On simplification,  $\frac{\frac{1}{5}}{5 \div \frac{7}{3\frac{7}{9} - \frac{5}{1+\frac{2}{3}}}}$  reduces to:

Question ID : 723053661

- Ans  1. 9  
 2. 45  
 3.  $\frac{1}{45}$   
 4.  $\frac{1}{9}$

**Q.3** A, B and C working together can complete a task in 18 days. B takes double the time that A takes and C takes double the time that B takes to complete the task. They work together for 4 days. A alone will complete the remaining task in:

Question ID : 723053670

- Ans  1. 24 days  
 2.  $20\frac{1}{2}$  days  
 3. 20 days  
 4.  $24\frac{1}{2}$  days

**Q.4** Anil spends 90% of his salary. Suppose his salary increases by 32% and savings increase by 50%, what is the percentage increase in his expenditure?

Question ID : 723053665

- Ans  1. 36  
 2. 25  
 3. 32  
 4. 30

**Q.5** If the sum of eighteen consecutive positive integers is a perfect square, then the smallest possible value of the sum is:

Question ID : 723053657

- Ans  1. 289  
 2. 169  
 3. 324  
 4. 225

- Q.6** The value of  $\frac{(12.12)^2 - (8.12)^2}{(0.25)^2 + (0.25)(19.99)} \div \left(\frac{17.28+12}{3.6 \times 0.02}\right)$  is: Question ID : 723053658
- Ans  1. 0.6  
 2. 1.2  
 3. 0.8  
 4. 0.4
- Q.7** A person has 1323 mangoes, 2457 apples and 2835 oranges. He wants to pack them in boxes so that each box has equal number of fruits of the same kind. The least number of boxes will be: Question ID : 723053663
- Ans  1. 28  
 2. 20  
 3. 54  
 4. 35
- Q.8** Two alloys A and B contain copper and zinc in the ratio 4 : 1 and 3 : 5, respectively. They are mixed in the ratio 9 : 4 to get a new alloy C. What is the ratio of copper and zinc in alloy C? Question ID : 723053664
- Ans  1. 17 : 18  
 2. 13 : 12  
 3. 16 : 17  
 4. 87 : 43
- Q.9** The value of  $\frac{5+[2+\{2-2(5-3)+5\}-10]\div 5}{3+\frac{1}{6}\{29-(20+3)+\frac{1}{2}of 48\}+4}$  lies between: Question ID : 723053659
- Ans  1. 0.3 and 0.4  
 2. 0.2 and 0.3  
 3. 0.4 and 0.5  
 4. 0.1 and 0.2
- Q.10** On selling an article at 20% discount on its marked price, there is a loss of  $x\%$ . If it is sold at the marked price, then profit is 15%. What is the value of  $x$ ? Question ID : 723053666
- Ans  1. 8%  
 2. 12%  
 3. 9%  
 4. 10%
- Q.11** A sum of ₹ 13,600 amounts to ₹ 16,456 at compound interest in a certain time at a certain rate percent per annum. What will the same sum amount to at the same rate in half the earlier time? Question ID : 723053667
- Ans  1. ₹ 14,840  
 2. ₹ 14,960  
 3. ₹ 14,980  
 4. ₹ 15,840
- Q.12**  $\frac{1}{2} + \frac{1}{5} + \frac{1}{8} + \frac{1}{11} + \frac{1}{20} + \frac{1}{41} + \frac{1}{110} + \frac{1}{1640}$  is equal to: Question ID : 723053660
- Ans  1. 1  
 2. 1.6

3. 2

4. 1.8

- Q.13** The sum and difference of LCM and HCF of two numbers are 592 and 518, respectively. If the difference of the numbers is  $x$  and their sum is 296 then the value of  $x$  is:

Question ID : 723053662

Ans  1. 74

2. 111

3. 148

4. 37

- Q.14** Three concentric circles have radii (in cm)  $a$ ,  $b$  and  $c$  where  $a < b < c$ . If  $a = 8$ ,  $b = 9$  and the middle circle bisects the area between the other two circles, then the value of  $c$  is:

Question ID : 723053668

Ans  1.  $8\sqrt{2}$

2. 8

3. 7

4.  $7\sqrt{2}$

#### Comprehension:

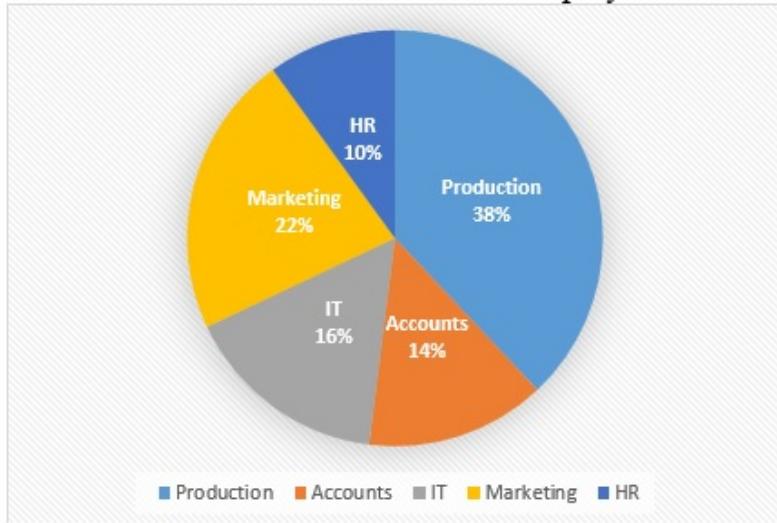
Study the following pie chart and table and answer the questions that follow.

The following table shows the respective ratio of males to females in each department of a company.

Department	Males : females
Production	11 : 8
HR	8 : 7
IT	3 : 5
Marketing	7 : 4
Accounts	2 : 5

#### Percentage wise breakup of employees in various departments

Total number of employees = 2850



SubQuestion No : 15

Q.1  
5

Question ID : 723053673

The total number of females working in the HR department and the total number of males working in the Accounts department forms approximately how much percent of the total number of female employees in the company?

- Ans  1. 17.8%  
 2. 16.2%  
 3. 15.8%  
 4. 16.4%

**Comprehension:**

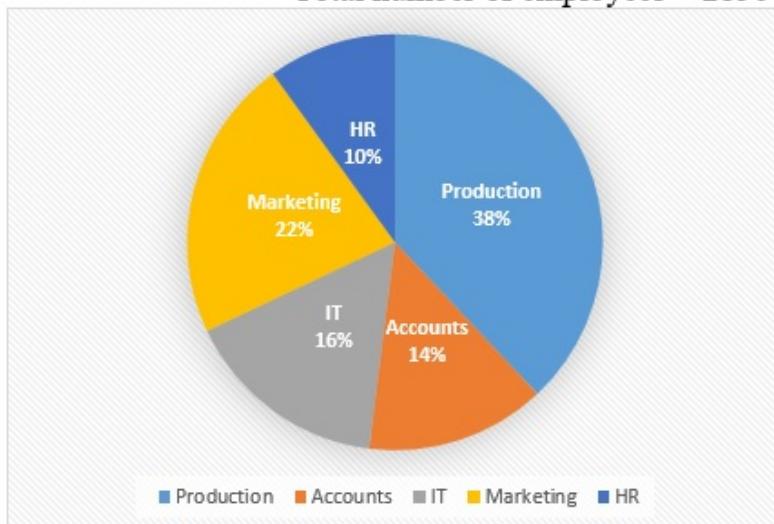
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**Percentage wise breakup of employees in various departments**

Total number of employees = 2850



**SubQuestion No : 16**

- Q.1 6 What is the ratio of the total number of males working in IT and marketing departments to the numbers of females working in the Production department?

Question ID : 723053672

- Ans  1. 5 : 4  
 2. 5 : 2  
 3. 10 : 9

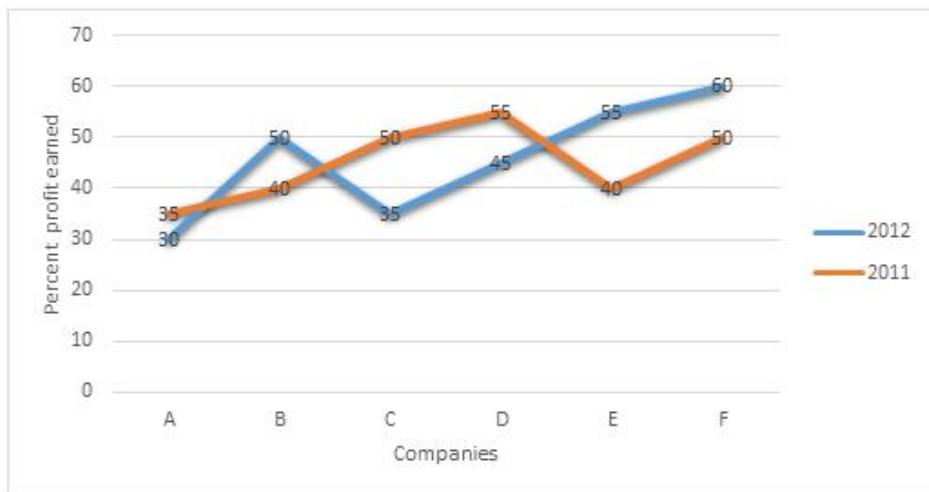
**X 4.** 2 : 1

**Comprehension:**

Study the following graph which shows percent profit earned by six companies during 2011 and 2012. And answer the questions that follow.

Profit = Income – Expenditure

$$\% \text{ profit} = \frac{\text{Income} - \text{Expenditure}}{\text{Expenditure}} \times 100$$



**SubQuestion No : 17**

- Q.1 <sub>7</sub> The expenditures of company A in 2011 and 2012 were ₹ 21 crores and ₹ 25 crores, respectively. What was the total income of the company in these two years? (in crores of rupees)

Question ID : 723053676

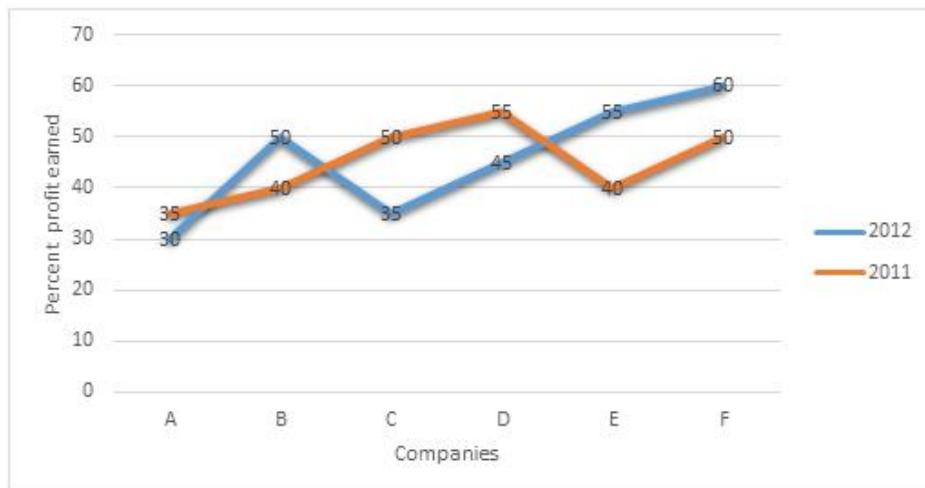
- Ans  1. 70.52  
 2. 70.82  
 3. 60.85  
 4. 60.55

**Comprehension:**

Study the following graph which shows percent profit earned by six companies during 2011 and 2012. And answer the questions that follow.

Profit = Income – Expenditure

$$\% \text{ profit} = \frac{\text{Income} - \text{Expenditure}}{\text{Expenditure}} \times 100$$



SubQuestion No : 18

- Q.1  
8 If the expenditure of company E in 2011 and 2012 was the same, then what was the ratio of incomes of the company in the same years respectively?

Question ID : 723053675

- Ans  1. 8 : 11  
 2. 28 : 31  
 3. 29 : 31  
 4. 9 : 10

Comprehension:

Study the following graph and answer the question that follows.

Target and Actual Production of Air Conditioners (in 1000) of a factory over the period of six months



SubQuestion No : 19

- Q.1

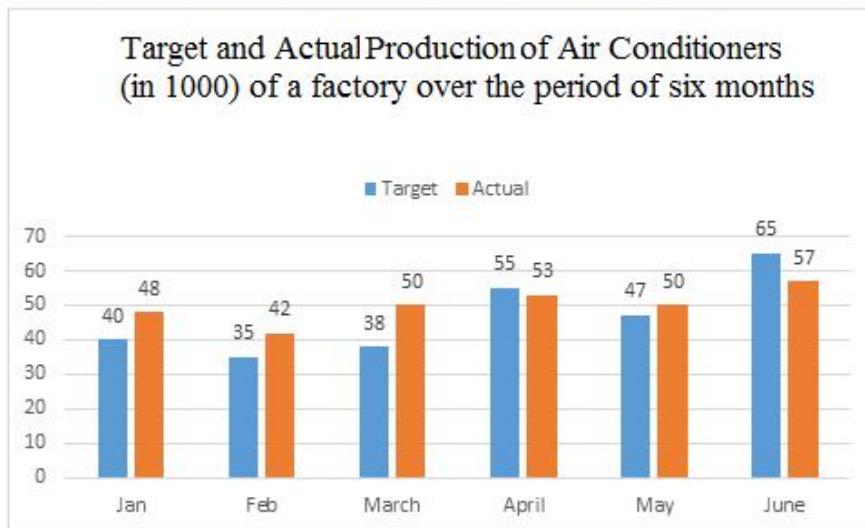
Question ID : 723053678

- 9 The combined actual production of air conditioners in February and June is what percent less than the combined targeted production in January, March and May?

Ans  1. 20.4%  
 2. 19.8%  
 3. 20.8%  
 4. 21.2%

**Comprehension:**

Study the following graph and answer the question that follows.



**SubQuestion No : 20**

- Q.2 0 What is the difference between the total targeted production for February, April and May and the actual production in thousand for January, March and June?

Question ID : 723053679

Ans  1. 18  
 2. 24  
 3. 29  
 4. 22

Section : General English

- Q.1 Fill in the blank with the appropriate word/s.

Question ID : 723053684

Did your college \_\_\_\_\_ in the university tournament?

Ans  1. participate  
 2. participated  
 3. participating  
 4. are participating

**Q.2** Fill in the blank with the appropriate idiomatic expression.

Question ID : 723053694

Virat Kohli is \_\_\_\_\_ most batsmen in the world.

Ans  1. hard and fast

2. head and shoulders above

3. keeping an eye on

4. leaving no stone unturned

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

On Sundays I \_\_\_\_\_ have my breakfast in bed and spend the morning relaxing with a book.

Question ID : 723053685

Ans  1. rapidly

2. frequently

3. usually

4. gradually

**Q.4** Choose the appropriate antonym of:

Question ID : 723053681

avoid

Ans  1. dodge

2. kill

3. seek

4. discover

**Q.5** Choose the most appropriate indirect narration for the following sentence.

Ravi said, "Do you understand how difficult this job is? I need at least four team members to complete it within five days."

Question ID : 723053689

Ans  1.

Ravi asked do you understand how difficult this job is? I need at least four team members to complete it within five days.

2.

Ravi said if he understands how difficult this job is? He said he needs at least four team members to complete it within five days.

3.

Ravi says, "Do you understand how difficult this job is? I needed at least four team members to complete it within five days."

4.

Ravi asked if he understood how difficult that job was and further said he needed at least four team members to complete it within five days.

**Q.6** Choose the passage that is correctly punctuated.

Question ID : 723053691

Ans  1.

It was very dark and windy. Aastha saw the dark clouds and shouted, "Mother! It's going to rain. Let's run indoors quickly."

2.

It was very dark and windy. Aastha saw the dark clouds and shouted Mother! It's going to rain. Let's run indoors quickly.

3.

It was very dark and windy. Aastha saw the dark clouds and shouted, "Mother! It's going to rain. Let's run indoors quickly."

4.

It was very dark and windy. Aastha saw the dark clouds and shouted, "mother it's going to rain. Let's run indoors quickly."

**Q.7**

Choose the passive voice form of the given sentence.

Question ID : 723053688

My colleague and I decided we would continue our efforts to conquer the seas.

Ans  1.

My colleague and I decided we will continue our efforts to conquer the seas.

2.

My colleague and I decided we would be continuing our efforts to conquer the seas.

3.

It is decided by my colleague and me to continue our efforts to conquer the seas.

4.

It was decided by my colleague and me that we would continue our efforts to conquer the seas.

**Q.8 Choose the word that is correctly spelt.**

Question ID : 723053692

Ans  1. recieve

2. imediate

3. grammer

4. irrelevant

**Q.9** 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 : 723053686

One who desires wealth and property from God is not a devotee but a slavery of wealth and property because, to him, God is only a means to an end.

Ans  1. One who desires

2. not a devotee

3. slavery of wealth

4. means to an end

**Q.10 Choose the correct synonym of:**

Question ID : 723053680

oration

Ans  1. speech

2. silence

3. dialogue

4. attraction

**Q.11** Choose the correct antonym of the underlined word to fill in the blank.

Question ID : 723053682

It looked as if the answer to the quiz question was obvious but it turned out to be \_\_\_\_\_.

Ans  1. ambiguous

2. transparent

3. persuasion

4. predictable

**Q.12** Fill in the blank with the appropriate idiomatic expression.

Question ID : 723053693

Why are you \_\_\_\_\_? You paid no heed when you were warned so many times.

Ans  1. giving yourself airs

2. chicken- hearted

3. crying over spilt milk

4. beating about the bush

Q.13 Choose the best option to combine the given sentences.

Question ID : 723053690

Ritu felt very offended. She stopped talking to her friend.

Ans 1.

Ritu felt so offended that she stopped talking to her friend.

2.

Ritu felt very offended that she stopped talking to her friend.

3.

Ritu felt very offended because she stopped talking to her friend.

4.

Ritu felt too offended she that stopped talking to her friend.

Q.14 Fill in the blank with the correct word.

Question ID : 723053683

The match was quite boring as we could easily predict who would be \_\_\_\_\_ winner.

Ans 1. the

2. an

3. some

4. a

Q.15 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 : 723053687

It was a near-impossible mission, and once more fate handed me a failure when I could see the finish line and expect to win.

Ans 1. expect to win

2. I could see

3. handed me

4. once more

Comprehension:

Read the following passage and answer the questions based on it.

My only work is to give you a clear-cut idea how you can become more conscious; I call it meditation. Working, walking, sitting. . . . I don't believe what others call meditation; that for ten minutes or 20 minutes you do it and then just be your ordinary self for 24 hours and again meditate for 20 minutes. It is like asking a person to breathe every day for 20 minutes and then forget all about it, because the person has to do many other things! And then next day she/he can breathe again in the morning! To me meditation is exactly like breathing. So whatsoever you are doing and wherever you are, do it more consciously.

Just try for few minutes to walk consciously; be alert at each step and you will be surprised that the quality of your walk is totally different. It is relaxed. There is no tension and there is a subtle joy that is arising out of your relaxed walking. And the more you become aware of this joy, the more you would like to be awake.

Eat with awareness. Thirty million people in America are suffering from overeating. Strange world we are living in; men are dying every day in Ethiopia because they don't have food, and millions are dying in America because they have too much food. These people who are suffering from obesity cannot resist eating. No doctor is going to help them, unless they become aware, while they are eating. They have to be aware that a man of awareness eats only as much as his body needs. He immediately feels that now there is no need, the hunger is gone, he is content.

SubQuestion No : 16

- Q.1  
6 Choose the most suitable option to answer the question given below.

Question ID : 723053699

What should you NOT do if you are obese?

- Ans
- 1. Be led by your love for food
  - 2. Consult a doctor
  - 3. Eat only what your body needs
  - 4. Resist eating too much

Comprehension:

Read the following passage and answer the questions based on it.

My only work is to give you a clear-cut idea how you can become more conscious; I call it meditation. Working, walking, sitting. . . . I don't believe what others call meditation; that for ten minutes or 20 minutes you do it and then just be your ordinary self for 24 hours and again meditate for 20 minutes. It is like asking a person to breathe every day for 20 minutes and then forget all about it, because the person has to do many other things! And then next day she/he can breathe again in the morning! To me meditation is exactly like breathing. So whatsoever you are doing and wherever you are, do it more consciously.

Just try for few minutes to walk consciously; be alert at each step and you will be surprised that the quality of your walk is totally different. It is relaxed. There is no tension and there is a subtle joy that is arising out of your relaxed walking. And the more you become aware of this joy, the more you would like to be awake.

Eat with awareness. Thirty million people in America are suffering from overeating. Strange world we are living in; men are dying every day in Ethiopia because they don't have food, and millions are dying in America because they have too much food. These people who are suffering from obesity cannot resist eating. No doctor is going to help them, unless they become aware, while they are eating. They have to be aware that a man of awareness eats only as much as his body needs. He immediately feels that now there is no need, the hunger is gone, he is content.

SubQuestion No : 17

- Q.1 7 Choose the most suitable option to complete the sentence given below.

Question ID : 723053697

When meditation is done with awareness, it:

- Ans  1. gives a great deal of satisfaction.  
 2. is quite time consuming.  
 3. is painful and tedious.  
 4. makes you a forgetful person.

Comprehension:

Read the following passage and answer the questions based on it.

My only work is to give you a clear-cut idea how you can become more conscious; I call it meditation. Working, walking, sitting. . . . I don't believe what others call meditation; that for ten minutes or 20 minutes you do it and then just be your ordinary self for 24 hours and again meditate for 20 minutes. It is like asking a person to breathe every day for 20 minutes and then forget all about it, because the person has to do many other things! And then next day she/he can breathe again in the morning! To me meditation is exactly like breathing. So whatsoever you are doing and wherever you are, do it more consciously.

Just try for few minutes to walk consciously; be alert at each step and you will be surprised that the quality of your walk is totally different. It is relaxed. There is no tension and there is a subtle joy that is arising out of your relaxed walking. And the more you become aware of this joy, the more you would like to be awake.

Eat with awareness. Thirty million people in America are suffering from overeating. Strange world we are living in; men are dying every day in Ethiopia because they don't have food, and millions are dying in America because they have too much food. These people who are suffering from obesity cannot resist eating. No doctor is going to help them, unless they become aware, while they are eating. They have to be aware that a man of awareness eats only as much as his body needs. He immediately feels that now there is no need, the hunger is gone, he is content.

SubQuestion No : 18

- Q.1 8 Complete the sentence by choosing a suitable option.

Question ID : 723053696

The writer believes that meditation \_\_\_\_\_.

- Ans ✓ 1. is a process that requires consciousness  
✗ 2. must be done many times during the day  
✗ 3. needs to be done for only 20 minutes a day  
✗ 4. can be done only when you are walking

Comprehension:

Read the following passage and answer the questions based on it.

My only work is to give you a clear-cut idea how you can become more conscious; I call it meditation. Working, walking, sitting. . . . I don't believe what others call meditation; that for ten minutes or 20 minutes you do it and then just be your ordinary self for 24 hours and again meditate for 20 minutes. It is like asking a person to breathe every day for 20 minutes and then forget all about it, because the person has to do many other things! And then next day she/he can breathe again in the morning! To me meditation is exactly like breathing. So whatsoever you are doing and wherever you are, do it more consciously.

Just try for few minutes to walk consciously; be alert at each step and you will be surprised that the quality of your walk is totally different. It is relaxed. There is no tension and there is a subtle joy that is arising out of your relaxed walking. And the more you become aware of this joy, the more you would like to be awake.

Eat with awareness. Thirty million people in America are suffering from overeating. Strange world we are living in; men are dying every day in Ethiopia because they don't have food, and millions are dying in America because they have too much food. These people who are suffering from obesity cannot resist eating. No doctor is going to help them, unless they become aware, while they are eating. They have to be aware that a man of awareness eats only as much as his body needs. He immediately feels that now there is no need, the hunger is gone, he is content.

SubQuestion No : 19

Q.1 9 One who is \_\_\_\_\_ is an aware person.

Question ID : 723053700

- Ans  1. eats unconsciously  
 2. always alert  
 3. terribly overweight  
 4. always tense

Comprehension:

Read the following passage and answer the questions based on it.

My only work is to give you a clear-cut idea how you can become more conscious; I call it meditation. Working, walking, sitting. . . . I don't believe what others call meditation; that for ten minutes or 20 minutes you do it and then just be your ordinary self for 24 hours and again meditate for 20 minutes. It is like asking a person to breathe every day for 20 minutes and then forget all about it, because the person has to do many other things! And then next day she/he can breathe again in the morning! To me meditation is exactly like breathing. So whatsoever you are doing and wherever you are, do it more consciously.

Just try for few minutes to walk consciously; be alert at each step and you will be surprised that the quality of your walk is totally different. It is relaxed. There is no tension and there is a subtle joy that is arising out of your relaxed walking. And the more you become aware of this joy, the more you would like to be awake.

Eat with awareness. Thirty million people in America are suffering from overeating. Strange world we are living in; men are dying every day in Ethiopia because they don't have food, and millions are dying in America because they have too much food. These people who are suffering from obesity cannot resist eating. No doctor is going to help them, unless they become aware, while they are eating. They have to be aware that a man of awareness eats only as much as his body needs. He immediately feels that now there is no need, the hunger is gone, he is content.

SubQuestion No : 20

- Q.2 0 Choose the most suitable option to answer the question given below.

Question ID : 723053698

What is the irony of life mentioned by the writer?

- Ans  1. Many people are dying in Ethiopia  
 2. Many Americans are dying due to overeating  
 3. Awareness is essential but it has no effect  
 4.

While some people die of hunger, others die of overeating

Section : General Hindi

Comprehension:

निम्नलिखित गद्यांश को ध्यानपूर्वक पढ़कर पूछे गए प्रश्नों के उत्तर दीजिये।

हम एक ऐसे युग में जी रहे हैं, जहाँ एक तरफ भौतिक समृद्धि अपनी ऊंचाई पर है, तो दूसरी तरफ चारित्रिक पतन की गहराई है।

आधुनिकीकरण में उलझा मानव सफलता की नित नई परिभाषाएँ खोजता रहता है अपनी अंतहीन इच्छाओं के रेगिस्ट्रेशन में भटकता रहता है। ऐसे समय में सच्ची सफलता और सुख-शांति की प्यास से व्याकुल व्यक्ति अनेक मानसिक रोगों का शिकार बनता जा रहा है। हममे से कितने लोगों को इस बात का ज्ञान है कि जीवन में सफलता प्राप्त करना और सफल जीवन जीना, यह दोनों अलग-अलग बातें हैं! यह ज़रूरी नहीं कि जिसने अपने जीवन में साधारण कामनाओं को हासिल कर लिया हो, वह पूर्णतः संतुष्ट और प्रसन्न भी हो। अतः हमें गंभीरतापूर्वक इस बात को समझना चाहिए कि इच्छित फल को प्राप्त कर लेना ही सफलता नहीं है। जब तक हम अपने जीवन में नैतिक व आध्यात्मिक मूल्यों का सिंचन नहीं करेंगे, तब तक यथार्थ सफलता पाना हमारे लिए मुश्किल ही नहीं, अपितु असंभव कार्य हो जाएगा, क्योंकि बिना मूल्यों के प्राप्त सफलता केवल क्षणभंगुर सुख के समान रहती है। कुछ निराशावादी लोगों का कहना है कि हम सफल नहीं हो सकते, क्योंकि हमारी तक़दीर या परिस्थितियाँ ही ऐसी हैं। परंतु यदि हम अपना ध्येय निश्चित करके उसे अपने मन में बिठा लें, तो फिर सफलता स्वयं हमारी ओर चलकर आएगी। सफल होना हर मनुष्य का जन्मसिद्ध अधिकार है, परंतु यदि हम अपनी विफलताओं के बारे में ही सोचते रहेंगे, तो सफलता को कभी हासिल नहीं कर पाएँगे। अतः विफलताओं की चिंता न करें, क्योंकि वे तो हमारे जीवन का सौंदर्य है और संघर्ष जीवन का काव्य है, कई बार प्रथम आघात में पत्थर नहीं टूट पाता, उसे तोड़ने के लिए आघात करने पड़ते हैं, इसलिए सदैव अपने लक्ष्य को सामने रख आगे बढ़ने की जरूरत है। कहा भी गया है कि जीवन में सकारात्मक कोशिश करने वालों की कभी हार नहीं होती।

SubQuestion No : 1

Q.1 यथार्थ सफलता मिलती है:

Question ID : 723053702

Ans

- 1. नैतिक मूल्यों को अपनाने से
- 2. भौतिक समृद्धि से
- 3. इच्छाओं की पूर्ति से

## X 4. आधुनिकीकरण की प्रवृत्ति से

Comprehension:

निम्नलिखित गद्यांश को ध्यानपूर्वक पढ़कर पूछे गए प्रश्नों के उत्तर दीजिये।

हम एक ऐसे युग में जी रहे हैं, जहाँ एक तरफ भौतिक समृद्धि अपनी ऊंचाई पर है, तो दूसरी तरफ चारित्रिक पतन की गहराई है।

आधुनिकीकरण में उलझा मानव सफलता की नित नई परिभाषाएँ खोजता रहता है अपनी अंतहीन इच्छाओं के रेगिस्ट्रेशन में भटकता रहता है। ऐसे समय में सच्ची सफलता और सुख-शांति की प्यास से व्याकुल व्यक्ति अनेक मानसिक रोगों का शिकार बनता जा रहा है। हममे से कितने लोगों को इस बात का ज्ञान है कि जीवन में सफलता प्राप्त करना और सफल जीवन जीना, यह दोनों अलग-अलग बातें हैं! यह ज़रूरी नहीं कि जिसने अपने जीवन में साधारण कामनाओं को हासिल कर लिया हो, वह पूर्णतः संतुष्ट और प्रसन्न भी हो। अतः हमें गंभीरतापूर्वक इस बात को समझना चाहिए कि इच्छित फल को प्राप्त कर लेना ही सफलता नहीं है। जब तक हम अपने जीवन में नैतिक व आध्यात्मिक मूल्यों का सिंचन नहीं करेंगे, तब तक यथार्थ सफलता पाना हमारे लिए मुश्किल ही नहीं, अपितु असंभव कार्य हो जाएगा, क्योंकि बिना मूल्यों के प्राप्त सफलता केवल क्षणभंगुर सुख के समान रहती है। कुछ निराशावादी लोगों का कहना है कि हम सफल नहीं हो सकते, क्योंकि हमारी तक़दीर या परिस्थितियाँ ही ऐसी हैं। परंतु यदि हम अपना ध्येय निश्चित करके उसे अपने मन में बिठा लें, तो फिर सफलता स्वयं हमारी ओर चलकर आएगी। सफल होना हर मनुष्य का जन्मसिद्ध अधिकार है, परंतु यदि हम अपनी विफलताओं के बारे में ही सोचते रहेंगे, तो सफलता को कभी हासिल नहीं कर पाएँगे। अतः विफलताओं की चिंता न करें, क्योंकि वे तो हमारे जीवन का सौंदर्य है और संघर्ष जीवन का काव्य है, कई बार प्रथम आघात में पत्थर नहीं टूट पाता, उसे तोड़ने के लिए आघात करने पड़ते हैं, इसलिए सदैव अपने लक्ष्य को सामने रख आगे बढ़ने की जरूरत है। कहा भी गया है कि जीवन में सकारात्मक कोशिश करने वालों की कभी हार नहीं होती।

SubQuestion No : 2

Q.2 दृढ़निश्चय वाले लोग पा लेते हैं:

Question ID : 723053705

- Ans X 1. हताशा  
✓ 2. सफलता

**X** 3. निराशा

**X** 4. विफलता

Comprehension:

निम्नलिखित गद्यांश को ध्यानपूर्वक पढ़कर पूछे गए प्रश्नों के उत्तर दीजिये।

हम एक ऐसे युग में जी रहे हैं, जहाँ एक तरफ भौतिक समृद्धि अपनी ऊंचाई पर है, तो दूसरी तरफ चारित्रिक पतन की गहराई है।

आधुनिकीकरण में उलझा मानव सफलता की नित नई परिभाषाएँ

खोजता रहता है अपनी अंतहीन इच्छाओं के रेगिस्टान में भटकता रहता है। ऐसे समय में सच्ची सफलता और सुख-शांति की प्यास से व्याकुल व्यक्ति अनेक मानसिक रोगों का शिकार बनता जा रहा है। हममे से कितने लोगों को इस बात का ज्ञान है कि जीवन में सफलता प्राप्त करना और सफल जीवन जीना, यह दोनों अलग-अलग बातें हैं! यह ज़रूरी नहीं कि जिसने अपने जीवन में साधारण कामनाओं को हासिल कर लिया हो, वह पूर्णतः संतुष्ट और प्रसन्न भी हो। अतः हमें गंभीरतापूर्वक इस बात को समझना चाहिए कि इच्छित फल को प्राप्त कर लेना ही सफलता नहीं है। जब तक हम अपने जीवन में नैतिक व आध्यात्मिक मूल्यों का सिंचन नहीं करेंगे, तब तक यथार्थ सफलता पाना हमारे लिए मुश्किल ही नहीं, अपितु असंभव कार्य हो जाएगा, क्योंकि बिना मूल्यों के प्राप्त सफलता केवल क्षणभंगुर सुख के समान रहती है। कुछ निराशावादी लोगों का कहना है कि हम सफल नहीं हो सकते, क्योंकि हमारी तकदीर या परिस्थितियाँ ही ऐसी हैं। परंतु यदि हम अपना ध्येय निश्चित करके उसे अपने मन में बिठा लें, तो फिर सफलता स्वयं हमारी ओर चलकर आएगी। सफल होना हर मनुष्य का जन्मसिद्ध अधिकार है, परंतु यदि हम अपनी विफलताओं के बारे में ही सोचते रहेंगे, तो सफलता को कभी हासिल नहीं कर पाएँगे। अतः विफलताओं की चिंता न करें, क्योंकि वे तो हमारे जीवन का सौंदर्य है और संघर्ष जीवन का काव्य है, कई बार प्रथम आघात में पत्थर नहीं टूट पाता, उसे तोड़ने के लिए आघात करने पड़ते हैं, इसलिए सदैव अपने लक्ष्य को सामने रख आगे बढ़ने की जरूरत है। कहा भी गया है कि जीवन में सकारात्मक कोशिश करने वालों की कभी हार नहीं होती।

SubQuestion No : 3

Q.3 'पत्थर तोड़ने के लिए कई आघात करने पड़ते हैं' का आशय है:

Question ID : 723053706

Ans

✗ 1. निरंतर सहायतार्थ पुकारना।

✓ 2. निरंतर श्रम करते रहना।

✗ 3. निरंतर चोट खाते रहना।

✗ 4. निरंतर पत्थर तोड़ते रहना।

Comprehension:

निम्नलिखित गद्यांश को ध्यानपूर्वक पढ़कर पूछे गए प्रश्नों के उत्तर दीजिये।

हम एक ऐसे युग में जी रहे हैं, जहाँ एक तरफ भौतिक समृद्धि अपनी ऊंचाई पर है, तो दूसरी तरफ चारित्रिक पतन की गहराई है।

आधुनिकीकरण में उलझा मानव सफलता की नित नई परिभाषाएँ खोजता रहता है अपनी अंतहीन इच्छाओं के रेगिस्ट्रेशन में भटकता रहता है। ऐसे समय में सच्ची सफलता और सुख-शांति की प्यास से व्याकुल व्यक्ति अनेक मानसिक रोगों का शिकार बनता जा रहा है। हममे से कितने लोगों को इस बात का ज्ञान है कि जीवन में सफलता प्राप्त करना और सफल जीवन जीना, यह दोनों अलग-अलग बातें हैं! यह ज़रूरी नहीं कि जिसने अपने जीवन में साधारण कामनाओं को हासिल कर लिया हो, वह पूर्णतः संतुष्ट और प्रसन्न भी हो। अतः हमें गंभीरतापूर्वक इस बात को समझना चाहिए कि इच्छित फल को प्राप्त कर लेना ही सफलता नहीं है। जब तक हम अपने जीवन में नैतिक व आध्यात्मिक मूल्यों का सिंचन नहीं करेंगे, तब तक यथार्थ सफलता पाना हमारे लिए मुश्किल ही नहीं, अपितु असंभव कार्य हो जाएगा, क्योंकि बिना मूल्यों के प्राप्त सफलता केवल क्षणभंगुर सुख के समान रहती है। कुछ निराशावादी लोगों का कहना है कि हम सफल नहीं हो सकते, क्योंकि हमारी तक्कीर या परिस्थितियाँ ही ऐसी हैं। परंतु यदि हम अपना ध्येय निश्चित करके उसे अपने मन में बिठा लें, तो फिर सफलता स्वयं हमारी ओर चलकर आएगी। सफल होना हर मनुष्य का जन्मसिद्ध अधिकार है, परंतु यदि हम अपनी विफलताओं के बारे में ही सोचते रहेंगे, तो सफलता को कभी हासिल नहीं कर पाएँगे। अतः विफलताओं की चिंता न करें, क्योंकि वे तो हमारे जीवन का सौंदर्य है और संघर्ष जीवन का काव्य है, कई बार प्रथम आघात में पत्थर नहीं टूट पाता, उसे तोड़ने के लिए आघात करने पड़ते हैं, इसलिए सदैव अपने लक्ष्य को सामने रख आगे बढ़ने की जरूरत है। कहा भी गया है कि जीवन में सकारात्मक कोशिश करने वालों की कभी हार नहीं होती।

SubQuestion No : 4

Q.4 परस्थितियों को असफलता का कारण मानते हैं:

Question ID : 723053704

Ans ✗ 1. कर्मरत लोग

✗ 2. ध्येयनिष्ठ व्यक्ति

✗ 3. श्रमशील लोग

✓ 4. निराश लोग

Comprehension:

निम्नलिखित गद्यांश को ध्यानपूर्वक पढ़कर पूछे गए प्रश्नों के उत्तर दीजिये।

हम एक ऐसे युग में जी रहे हैं, जहाँ एक तरफ भौतिक समृद्धि अपनी ऊंचाई पर है, तो दूसरी तरफ चारित्रिक पतन की गहराई है। आधुनिकीकरण में उलझा मानव सफलता की नित नई परिभाषाएँ खोजता रहता है अपनी अंतहीन इच्छाओं के रेगिस्ट्रेशन में भटकता रहता है। ऐसे समय में सच्ची सफलता और सुख-शांति की प्यास से व्याकुल व्यक्ति अनेक मानसिक रोगों का शिकार बनता जा रहा है। हममे से कितने लोगों को इस बात का ज्ञान है कि जीवन में सफलता प्राप्त करना और सफल जीवन जीना, यह दोनों अलग-अलग बातें हैं! यह ज़रूरी नहीं कि जिसने अपने जीवन में साधारण कामनाओं को हासिल कर लिया हो, वह पूर्णतः संतुष्ट और प्रसन्न भी हो। अतः हमें गंभीरतापूर्वक इस बात को समझना चाहिए कि इच्छित फल को प्राप्त कर लेना ही सफलता नहीं है। जब तक हम अपने जीवन में नैतिक व आध्यात्मिक मूल्यों का सिंचन नहीं करेंगे, तब तक यथार्थ सफलता पाना हमारे लिए मुश्किल ही नहीं, अपितु असंभव कार्य हो जाएगा, क्योंकि बिना मूल्यों के प्राप्त सफलता केवल क्षणभंगुर सुख के समान रहती है। कुछ निराशावादी लोगों का कहना है कि हम सफल नहीं हो सकते, क्योंकि हमारी तक़दीर या परिस्थितियाँ ही ऐसी हैं। परंतु यदि हम अपना ध्येय निश्चित करके उसे अपने मन में बिठा लें, तो फिर सफलता स्वयं हमारी ओर चलकर आएगी। सफल होना हर मनुष्य का जन्मसिद्ध अधिकार है, परंतु यदि हम अपनी विफलताओं के बारे में ही सोचते रहेंगे, तो सफलता को कभी हासिल नहीं कर पाएंगे। अतः विफलताओं की चिंता न करें, क्योंकि वे तो हमारे जीवन का सौंदर्य है और संघर्ष जीवन का काव्य है, कई बार प्रथम आघात में पत्थर नहीं टूट पाता, उसे तोड़ने के लिए आघात करने पड़ते हैं, इसलिए सदैव अपने लक्ष्य को सामने रख आगे बढ़ने की जरूरत है। कहा भी गया है कि जीवन में सकारात्मक कोशिश करने वालों की कभी हार नहीं होती।

SubQuestion No : 5

Q.5 चारित्रिक पतन का कारण है:

Question ID : 723053703

- Ans  1. नैतिक मूल्यों को महत्व देना
2. प्रगतशील विचार
3. अंतहीन इच्छाएँ

#### 4. आध्यात्मिक चिंतन

Q.6 सदा बहुवचन में प्रयुक्त होने वाला शब्द है:

Question ID : 723053712

Ans  1. वेद

 2. दर्शन

 3. सद्गी

 4. गीत

Q.7 निम्नलिखित में से भाववाचक संज्ञा शब्द की पहचान करें।

Question ID : 723053713

Ans  1. क्रोध

 2. शूर

 3. नुकीला

 4. घर

Q.8 'बांसों उछालना' मुहावरे का अर्थ होता है:

Question ID : 723053720

Ans  1. उछल कर चढ़ना

 2. बांस की सहायता से ऊपर उठना

 3. पागल हो जाना

 4. प्रसन्न होना

Q.9 निम्नलिखित में से कौन-सा शब्द पुंलिंग है?

Question ID : 723053718

Ans  1. चमक

 2. भौंह

 3. उलझन

 4. बहाव

Q.10 'जिसमे संदेह न हो' उसे कहते हैं:

Question ID : 723053716

Ans  1. अनिर्णीत

 2. असंदिग्ध

 3. आंत

 4. संदिग्ध

Q.11 निम्नलिखित में से 'तत्सम' शब्द की पहचान करें।

Question ID : 723053707

Ans  1. साँस

 2. व्याह

3. मनुष्य

4. सात

Q.12 निम्नलिखित वाक्यों में से शुद्धवाक्य को छांटिए:

Question ID : 723053719

Ans  1. आज हमारे घर बहुत मेहमान आएँगे।

2. उसे पैसे निकालने चाहिएँ।

3. मेरे को इसका उत्तर नहीं आता।

4. फलों का रस मेरे को नहीं पीना।

Q.13 'इस हाथ दे उस हाथ ले' लोकोक्ति का अर्थ है:

Question ID : 723053721

Ans  1. लेने का देना

2. लाभ कमाना

3. हैरान रह जाना

4. चालाकी से काम निकालना

Q.14 'उज्ज्वल' का संधि विच्छेद होगा:

Question ID : 723053710

Ans  1. उत्त+ज्वल

2. उत्+ज्वल

3. उद्द+ज्वल

4. उज्+ज्वल

Q.15 'दुराचार' शब्द का विलोम है:

Question ID : 723053715

Ans  1. सदाचार

2. अविचार

3. अपचार

4. कदाचार

Q.16 निम्नलिखित में से कौन-सा शब्द स्वीलिंग है?

Question ID : 723053717

Ans  1. गात

2. मात

3. बात

4. दांत

Q.17 'माली' शब्द का बहुवचन (अभिभक्ति) होगा:

Question ID : 723053711

Ans  1. मालिएँ

2. माली

3. मालिया

4. मालियों

Q.18 'मित्र' शब्द का पर्यायवाची शब्द नहीं है:

Question ID : 723053714

Ans  1. सहपाठी

2. गीत

3. दोस्त

4. सखा

Q.19 'सदधर्म' शब्द में कौन-सा समास है?

Question ID : 723053709

Ans  1. बहुव्रीहि

2. तत्पुरुष

3. द्वन्द्व

4. कर्मधारय

Q.20 निम्नलिखित में से कौन सा शब्द तद्रव है?

Question ID : 723053708

Ans  1. मुँह

2. सूत्र

3. शाक

4. मित्र

#### Section : Subject Related

Q.1 Let R be a relation from a set A = {1,2,3,4} to a set B = {u,v,w,x} defined by R = {(1,u), (1,v), (3,v), (3,x), (4,v)}. The domain of R and range of R, are, respectively:

Question ID : 723053735

Ans  1. {1,2,3,4}; {u,v,w,x}

2. {1,3,4}; {u,v,x}

3. {1,2,4}; {u,v,x}

4. {1,3,4}; {u,w,x}

Q.2 Consider  $n(U) = 20$ ,  $n(A) = 12$ ,  $n(B) = 9$  and  $n(A \cap B) = 4$ . Then the value of  $n\left(\frac{A}{B}\right)$

Question ID : 723053731

Ans  1. 11

2. 17

3. 3

4. 8

Q.3 Let  $A = \{1, 2, 3\}$ . A function  $f$  from A to A is defined by  $f(1) = 2$ ,  $f(2) = 1$  and  $f(3) = 3$ . The inverse of the function  $f$  is:

Question ID : 723053738

Ans

1.  $\{(1, 2), (2, 1), (3, 3)\}$

2.  $\{(1, 2), (2, 1), (2, 3)\}$

3.  $\{(1, 2), (2, 2), (3, 3)\}$

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

**Q.4** The number of subsets of the set  $A = \{a_1, a_2, \dots, a_n\}$  which contain even number of elements is:

Question ID : 723053723

Ans  1.  $2^n - 1$

2.  $2^{n-1}$

3.  $2^{n-2}$

4.  $2^n$

**Q.5** Using mathematical induction, the value of  $2 + 5 + 8 + \dots + (3n-1)$  comes out to be:

Question ID : 723053741

Ans  1.  $\frac{n(3n+1)}{2}$

2.  $\frac{n(2n+1)}{3}$

3.  $\frac{n(n+2)}{2}$

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

**Q.6** Let  $\wp(A)$  be the power set of a set  $A = \{1, 2, \dots, 5\}$ . The number of distinct elements of the sub-collection of  $\wp(A)$ , where each element of that subcollection consists of 1 and 2 other elements of  $A$ , is:

Question ID : 723053730

Ans  1. 5

2. 4

3. 6

4. 8

**Q.7** Let  $R = \{(1,1), (1,2), (1,3), (2,4), (3,2)\}$  and  $S = \{(1,3), (1,4), (2,3), (3,1), (4,1)\}$  be the relations on a set  $A = \{1, 2, 3, 4\}$ .  
The composition  $SoR$  of  $R$  and  $S$  is:

Question ID : 723053736

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

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

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

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

**Q.8** If  $A$  and  $B$  are finite sets, then  $(A \cup B)$  and  $(A \cap B)$  are finite and  $n(A \cup B)$  is equal to:

Question ID : 723053726

Ans  1.  $n(A) - n(B)$

2.  $n(A) + n(B)$

3.  $n(A) + n(B) - n(A \cap B)$

4.  $n(A \cap B) - n(A) + n(B)$

**Q.9** The power set of a set  $A$  having four distinct elements is:

Question ID : 723053727

Ans

1. 16  
 2. 8  
 3. 14  
 4. 32

Q.10 Let  $U = \{1, 2, \dots, 9\}$  be the universal set. Let  $A = \{1, 2, 5, 6\}$ ,  $B = \{2, 5, 7\}$  and  $C = \{1, 3, 5, 7, 9\}$ , then  $\left(\frac{B \oplus C}{A}\right) = ?$

Question ID : 723053728

- Ans  1.  $\{1, 6\}$   
 2.  $\{3, 9\}$   
 3.  $\{2, 3, 6, 7, 9\}$   
 4.  $\{1, 6, 7\}$

Q.11 Let  $R$  be a relation on a set  $A = \{2, 3, 4, 6\}$ , defined as " $x$  divides  $y$ ". Then a set of ordered pairs is of the form:

Question ID : 723053732

- Ans  1.  $\{(2, 4), (2, 6), (3, 6), (4, 6)\}$   
 2.  $\{(2, 2), (2, 4), (2, 6), (3, 3), (3, 6), (4, 4), (6, 6)\}$   
 3.  $\{(2, 4), (2, 6), (3, 6), (4, 2), (4, 6), (6, 2), (6, 3)\}$   
 4.  $\{(2, 4), (2, 6), (3, 3), (3, 6), (4, 6)\}$

Q.12 The possible number of relations from a set  $A = \{u, v, w\}$  to a set  $B = \{x, y\}$  is:

Question ID : 723053733

- Ans  1. 64  
 2. 6  
 3. 32  
 4. 16

Q.13 Let  $A = \mathbb{Z} \setminus \{0\}$  denote the set of all NON-zero integers. Let  $\approx$  be the relation on  $A \times A$  defined by  $(a, b) \approx (c, d)$  if  $ad = bc$ . Then  $\approx$  is:

Question ID : 723053734

- Ans  1. reflexive, symmetric but not transitive  
 2. an equivalence relation  
 3. reflexive, antisymmetric and transitive  
 4. reflexive, transitive but not symmetric

Q.14 The formula  $\left(\frac{A}{B}\right) = A \cap B^C$  represents the difference operation in terms of the operations of intersection and complement. Then the formula for the union  $A \cup B$  in terms of the operations of intersection and complement is:

Question ID : 723053729

- Ans  1.  $A^C \cap B^C$   
 2.  $A^C \cap B$   
 3.  $(A \cap B^C)^C$   
 4.  $(A^C \cap B^C)^C$

Q.15 The relation between the sets  $A = \{2, 3, 4, 5\}$  and  $B = \{1, 2, 3, \dots, 9\}$  is:

Question ID : 723053722

- Ans  1.  $A \cap B = B$   
 2.  $A \subset B$   
 3.  $A \supset B$   
 4.  $A \cup B = A$

**Q.16** When  $n(A) = 3$  and  $n(B) = 5$ , then the number of injection functions that can be defined from A to B is:

- Ans  1. 120  
 2. 60  
 3. 40  
 4. 30

Question ID : 723053739

**Q.17** Consider  $n(U) = 80$ ,  $n(A) = 40$ ,  $n(B) = 55$  and  $n(A \cap B) = 20$ . Then the value of  $n(A \oplus B)$  is:

- Ans  1. 25  
 2. 55  
 3. 45  
 4. 35

Question ID : 723053725

**Q.18** If A and B are nonempty sets, then  $\frac{(A \cup B)}{(A \cap B)}$  is equal to:

Question ID : 723053724

- Ans  1.  $\left(\frac{A}{B}\right) \cup \left(\frac{B}{A}\right)$   
 2.  $((A \cap B) \cup B)$   
 3.  $\left(\frac{A}{B}\right) \cap \left(\frac{B}{A}\right)$   
 4.  $((A \cup B) \cap A)$

**Q.19** If  $f$  is a function satisfying  $2f(x) - 3f\left(\frac{1}{x}\right) = x^2$  for any non-zero value of  $x$ , then the value of  $f(2)$  is equal to:

Question ID : 723053740

- Ans  1.  $-\frac{7}{4}$   
 2. 4  
 3. -2  
 4.  $-\frac{7}{8}$

**Q.20** If set A has m elements and set B has n elements, then the possible number of distinct functions from A to B is:

Question ID : 723053737

- Ans  1.  $n^m$   
 2.  $mn$   
 3.  $2^{mn}$   
 4.  $m^n$

Section : Subject Related

**Q.1** If  $\left(\frac{1-i}{1+i}\right)^n = 1$ , then the smallest positive integer n is:

Question ID : 723053757

- Ans  1. 4  
 2. 1  
 3. 2

4. 3

Q.2 The modulus of the complex number  $(1 - \cos \alpha) + i \sin \alpha$  is:

Question ID : 723053755

Ans

1.  $\sin\left(\frac{\alpha}{2}\right)$

2.  $2 \sin \alpha$

3.  $2 \sin\left(\frac{\alpha}{2}\right)$

4.  $\cos\left(\frac{\alpha}{2}\right)$

Q.3

How do we express  $\frac{(1+2i)^3}{(1+i)(2-i)}$  in the form of a complex number  $a + ib$ ?

Question ID : 723053752

Ans

1.  $\left(\frac{7}{2}\right) + i\left(\frac{1}{2}\right)$

2.  $\left(\frac{-7}{2}\right) + i\left(\frac{1}{2}\right)$

3.  $\left(\frac{7}{2}\right) - i\left(\frac{1}{2}\right)$

4.  $\left(\frac{-7}{2}\right) - i\left(\frac{1}{2}\right)$

Q.4

The rectangular form of  $10\angle -30^\circ$  is given by:

Question ID : 723053756

Ans

1.  $-5\sqrt{3} - 5i$

2.  $5\sqrt{3} - 5i$

3.  $-5\sqrt{3} + 5i$

4.  $5\sqrt{3} + 5i$

Q.5

In how many ways can 7 gentlemen and 7 ladies sit down at a round table, NO 2 ladies being together?

Question ID : 723053751

Ans

1.  $6! \times 7!$  ways

2.  $7! \times 7!$  ways

3.  $6! \times 6!$  ways

4.  $6!$  ways

Q.6

The number of positive integers not exceeding 1,000, which are divisible by 7 or 11, is:

Question ID : 723053746

Ans

1. 220

2. 120

3. 210

4. 240

Q.7

The number of words that can be formed by using the letters of the word "MATHEMATICS" that start as well as end with T is:

Question ID : 723053744

Ans

1. 90,720

2. 20,860

3. 80,720

4. 37,528

- Q.8** In an Argand diagram, one vertex of an equilateral triangle is  $(1 + i\sqrt{3})$ , and assume that the origin is the circumcenter. Then the complex numbers represented by other vertices are:

Question ID : 723053758

Ans  1.  $\sqrt{3} + i0; 1 - i\sqrt{3}$

2.  $-2 + 0i; 1 - i\sqrt{3}$

3.  $2 + i0; \sqrt{3} - i$

4.  $0 + 2i; 1 - i\sqrt{3}$

- Q.9** If  $\arg(z + 2i) = \frac{\pi}{4}$ ,  $\arg(z - 2i) = \frac{3\pi}{4}$ , then the value of  $z$  is:

Question ID : 723053760

Ans  1. 2

2. 0

3. -1

4. 1

**Q.10**

The principal argument of the complex number  $\frac{(1 + 2i)}{[1 - (1-i)^2]}$  is:

Question ID : 723053753

Ans  1.  $\infty$

2. 0

3. 1

4.  $-\infty$

- Q.11** If  $\omega$  is a complex cube root of unity, then the value of  $(1 - \omega)^6$  is:

Question ID : 723053761

Ans  1. -9

2. -27

3. 0

4. 6

- Q.12** The number of odd three-digit positive integers that have no repeated digits is:

Question ID : 723053748

Ans  1. 240

2. 320

3. 160

4. 128

- Q.13** The number of ways to distribute 20 identical balls in 4 different boxes such that no box remains empty is:

Question ID : 723053750

Ans  1. 696

2. 323

3. 969

4. 52

- Q.14** The number of permutations can be made out of the letters word "COMPUTER" as:

Question ID : 723053749

- Ans  1. 720  
 2. 10,080  
 3. 5,040  
 4. 40,320

Q.15 In how many ways can 12 balloons be distributed at a birthday party of 10 children?

Question ID : 723053747

- Ans  1. 48 ways  
 2. 56 ways  
 3. 45 ways  
 4. 55 ways

Q.16 If the sum and product of any two distinct complex numbers are 4 and 8 respectively, then the numbers are:

Question ID : 723053759

- Ans  1.  $2 + 2i; 2 - 2i$   
 2.  $2 + 3i; 2 - 3i$   
 3.  $3 + 2i; 1 - 2i$   
 4.  $1 + 2i; 3 - 2i$

Q.17 Using mathematical induction, the value of  $1^3 + 2^3 + \dots + n^3$  is:

Question ID : 723053742

- Ans  1.  $\frac{n^2(n^2 + 1)}{4}$   
 2.  $\frac{n(n+1)(2n+1)}{6}$   
 3.  $\frac{n^2(n+1)^2}{4}$   
 4.  $\frac{n(n+2)}{4}$

Q.18

The polar form of the complex number  $\left(\frac{2+i}{3-i}\right)^2$  is:

Question ID : 723053754

- Ans  1.  $\frac{1}{2} \left( \cos \frac{\pi}{4} - i \sin \frac{\pi}{4} \right)$   
 2.  $\frac{1}{2} \left( \cos \frac{\pi}{2} - i \sin \frac{\pi}{2} \right)$   
 3.  $\frac{1}{2} \left( \cos \frac{\pi}{4} + i \sin \frac{\pi}{4} \right)$   
 4.  $\frac{1}{2} \left( \cos \frac{\pi}{2} + i \sin \frac{\pi}{2} \right)$

Q.19 The number of ways of choosing  $m$  objects out of  $(3m+1)$  objects, of which  $m$  are identical and  $(2m+1)$  are distinct, is:

Question ID : 723053745

- Ans  1.  $2^{2m} - 1$   
 2.  $2^{m+2}$

3.  $2^{2m}$

4.  $2^{2(m+1)}$

Q.20 How many integer solutions are there for the equation  $x + y + z = 15$ , where  $x \geq 0, y \geq 0, z \geq 0$  ?

Question ID : 723053743

Ans  1. 136

2. 6

3. 15

4. 1

Section : Subject Related

Q.1 The series whose nth term is of the form  $\sqrt{(n^3 + 1)} - \sqrt{n^3}$  is:

Question ID : 723053775

Ans  1. Convergent

2. Oscillatory

3. Conditionally convergent

4. Divergent

Q.2 The sum of the last 20 coefficients in the Binomial expansion of  $(1 + x)^{39}$ , when expanded in the ascending powers of  $x$ , is:

Question ID : 723053769

Ans  1.  $2^{39}$

2.  $2^{38}$

3.  $2^{18}$

4.  $2^{17}$

Q.3 If  $\log_{\sqrt{5}}(x) + \log_{3\sqrt{5}}(x) \log_{4\sqrt{5}}(x) + \dots$  up to 7 terms = 35, then the value of  $x$  is:

Question ID : 723053776

Ans  1. 5

2. 75

3. 25

4. 125

Q.4 Solve the absolute value inequality  $3|2x + 6| < 42$ .

Question ID : 723053762

Ans  1.  $x \in (-10, 4)$

2.  $x \in (5, 2)$

3.  $x \in (-10, 2)$

4.  $x \in (-5, 4)$

Q.5 Use Cauchy-Schwarz inequality to determine the value of  $a^3 + b^3 + c^3$ , where  $a, b, c > 0$  and  $a + b + c = 3$

Question ID : 723053765

Ans  1. less than 2

2. greater than 4

3. greater than or equal to 3

4. less than or equal to 4

Q.6 The possible solution of the inequality  $|x + 1| + |x| > 3$  is:

Question ID : 723053763

- Ans  1.  $x \in (-\infty, -1) \cup (1, \infty)$   
 2.  $x \notin (1, \infty)$   
 3.  $x \notin (-\infty, -2)$   
 4.  $x \in (-\infty, -2) \cup (1, \infty)$

Q.7 The series  $x - \frac{x^2}{2} + \frac{x^3}{3} - \frac{x^4}{4} + \frac{x^5}{5} + \dots$  converges in:

Question ID : 723053781

- Ans  1.  $2 < x < \infty$   
 2.  $|x| > 1$   
 3.  $-1 < x \leq 1$   
 4.  $x < -1$

Q.8 If the 6<sup>th</sup> term in the Binomial expansion of  $\left(\frac{1}{x^{\frac{1}{2}}} + x^2 \log_{10} x\right)^8$  is 5,600, then the value of  $x$  is:

Question ID : 723053767

- Ans  1. 10  
 2.  $\sqrt{2}$   
 3. 5  
 4.  $\sqrt{5}$

Q.9 The sum of the series  $\cos x + \frac{1}{3} \cos^3 x + \frac{1}{5} \cos^5 x + \dots \infty$ , where  $x$  is real, is equal to:

Question ID : 723053779

- Ans  1.  $\ln\left(\tan\left(\frac{x}{2}\right)\right)$   
 2.  $\ln(1 + \cos x)$   
 3.  $\ln(1 - \cos x)$   
 4.  $\ln\left(\cot\left(\frac{x}{2}\right)\right)$

Q.10 The number of rational and irrational terms in the Binomial expansion of  $\left(5^{\frac{1}{6}} + 2^{\frac{1}{3}}\right)^{100}$  are respectively.

Question ID : 723053768

- Ans  1. 8, 93  
 2. 15, 86  
 3. 4, 97  
 4. 6, 95

Q.11 If  $A_1$  and  $A_2$  are two Arithmetic means, and  $G_1$  and  $G_2$  are two Geometric means between two positive numbers  $a$  and  $b$ , then  $\frac{A_1 + A_2}{G_1 G_2}$  is equal to:

Question ID : 723053777

- Ans  1.  $\frac{a+b}{ab}$   
 2.  $\frac{a+b}{2ab}$

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

4.  $\frac{2ab}{a+b}$

Q.12 The sum of the series  $1 + \frac{3}{1!} + \frac{5}{2!} + \frac{7}{3!} + \dots \infty$  is:

Question ID : 723053778

Ans  1.  $2e$

2.  $3e$

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

4.  $e - 1$

Q.13 Which is true with regard to the system of the inequalities  $\frac{x}{2x+1} \geq 0.25$ ;  $\frac{6x}{4x-1} < 0.5$ ?

Question ID : 723053764

Ans  1.  $x \in (-0.5, 0.5)$

2. There is no solution

3.  $x \in (-0.125, 0.25)$

4.  $x < -0.5 \text{ or } x \geq 0.5$

Q.14 The sum of the 24 terms of the series  $\sqrt{2} + \sqrt{8} + \sqrt{18} + \sqrt{32} + \dots$  is:

Question ID : 723053774

Ans  1.  $500\sqrt{2}$

2.  $100\sqrt{2}$

3.  $200\sqrt{2}$

4.  $300\sqrt{2}$

Q.15 When  $2^{2000}$  is divided by 17, then the remainder is:

Question ID : 723053770

Ans  1. 9

2. 2

3. 5

4. 1

Q.16 If  $a$  is sufficiently large when compare with  $b$ , and  $\sqrt{\left(\frac{a}{a-b}\right)} + \sqrt{\left(\frac{a}{a+b}\right)} = 2 + k \left(\frac{b}{a}\right)^2$ , then the value of 'k' is:

Question ID : 723053772

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

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

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

4.  $\frac{5}{6}$

**Q.17** The sum of the series  $\frac{1}{2} - \frac{1}{2} \cdot \frac{1}{2^2} + \frac{1}{3} \cdot \frac{1}{2^3} - \frac{1}{4} \cdot \frac{1}{2^4} + \dots$  is equal to:

Question ID : 723053780

Ans

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

2.  $\ln(2)$

3.  $\ln\left(\frac{2}{3}\right)$

4.  $\ln\left(\frac{3}{2}\right)$

**Q.18** The largest term in the Binomial expansion of  $(3 + 2x)^{50}$ , when  $x = \frac{1}{5}$ , is:

Question ID : 723053771

Ans

1. third term

2. eighth term

3. sixth term

4. fifth term

**Q.19** Suppose that a, b, c are in A.P. and  $a^2, b^2, c^2$  are in G.P. If  $a < b < c$  and  $a + b + c = \frac{3}{2}$ , then the value of a is given by:

Question ID : 723053773

Ans

1.  $\frac{1}{2}(1 - \sqrt{2})$

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

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

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

**Q.20** The solution of polynomial inequality  $f(x) = (x + 1)(x - 2)^2(x + 3) \leq 0$  is:

Question ID : 723053766

Ans

1.  $x \in (3, \infty)$

2.  $x \in (-\infty, -3)$

3.  $x \in [-3, -1]$

4.  $x \in (0, 2)$

Section : Subject Related

**Q.1**

If  $a, b$  and  $c$  are any three complex numbers such that  $a^2 + b^2 + c^2 = 0$  and  $\begin{vmatrix} b^2 + c^2 & ab & ca \\ ab & c^2 + a^2 & bc \\ ca & bc & a^2 + b^2 \end{vmatrix} = k(abc)^2$ ,

Question ID : 723053800

then the value of  $k$  is:

Ans

1. 4

2. -2

3. 3

4. 1

**Q.2** The number of real values of  $x$  satisfying the equation  $2\left(x^2 + \frac{1}{x^2}\right) - 9\left(x + \frac{1}{x}\right) + 14 = 0$  is given by:

Question ID : 723053789

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

**Q.3** When  $a + b + c = 0$ , then the quadratic equation  $3ax^2 + 2bx + c = 0$  has:

Question ID : 723053799

- Ans  1. Imaginary roots  
 2. At least one root in  $[0, 1]$   
 3. One root in  $[-2, -1]$  and other root in  $[2, 3]$   
 4. One root in  $[-2, -1]$  and other root in  $[1, 2]$

**Q.4**

The positive value of  $x = \sqrt{12 + \sqrt{12 + \sqrt{12 + \dots \text{up to } \infty}}}$  is:

Question ID : 723053797

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

**Q.5** The prime factorization of 42833 is given by:

Question ID : 723053785

- Ans  1. 7. 21. 291  
 2. 7. 21. 299  
 3. 7. 21. 219  
 4. 7. 29. 211

**Q.6** Every prime divisor of the Fermat number  $F_n = 2^{2^n} + 1$  is of the form:

Question ID : 723053786

- Ans  1.  $2^{2n+1}k + 1$   
 2.  $2^{n+1}k + 1$   
 3.  $2^{2n}k + 1$   
 4.  $2^{n+2}k + 1$

**Q.7** Let  $a, b$  and  $c$  be real numbers such that  $a$  and  $b$  are distinct. Then the roots of the equation  $2(a-b)x^2 - 11(a+b+c)x - 3(a-b) = 0$  are:

Question ID : 723053793

- Ans  1. Real and equal  
 2. Purely imaginary  
 3. Real and unequal  
 4. Both real and imaginary

**Q.8** If  $a, b$  and  $c$  are real numbers, then both the roots of the equation

Question ID : 723053794

$$(x-a)(x-b) + (x-b)(x-c) + (x-c)(x-a) = 0$$

- Ans  1. Are negative

2. Do not exist  
 3. Are positive  
 4. Are real

Q.9 The number of real solutions of the equation  $\sqrt{x+9} + \sqrt{4+x} = 5$  is:

Question ID : 723053791

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

Q.10 What is the maximum number of divisions used by the Euclidean algorithm to find the greatest common divisor of two positive integers 252 and 198?

Question ID : 723053784

- Ans  1. 36  
 2. 12  
 3. 4  
 4. 16

Q.11 The number of real roots of the equation  $(7 + 4\sqrt{3})^{|x|-6} + (7 - 4\sqrt{3})^{|x|-6} = 14$  is:

Question ID : 723053796

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

Q.12 The number of real solutions of the equation  $\frac{1}{x+1} - \frac{1}{x+2} = \frac{1}{x+4} - \frac{1}{x+5}$  is:

Question ID : 723053790

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

Q.13 When the quadratic equations  $x^2 - 7x + k = 0$  and  $x^2 - 11x + 2k = 0$  have a common root, then the value of  $k$  is:

Question ID : 723053798

- Ans  1. 1, -12  
 2. 0, 14  
 3. 12, -1  
 4. 0, 12

Q.14 Let  $a$  and  $b$  be the roots of the equation  $x^2 + px + 1 = 0$ . Let  $c$  and  $d$  be the roots of the equation  $x^2 + qx + 1 = 0$ . Then the value of  $(a - c)(b - c)(a + d)(b + d)$  is equal to:

Question ID : 723053792

- Ans  1.  $-p^2 + q^2$   
 2.  $p^2 - q^2$   
 3.  $-p^2 - q^2$   
 4.  $p^2 + q^2$

Q.15 The greatest common divisor of three integers 105, 140 and 350 is:

Question ID : 723053783

Ans

1. 5

2. 70

3. 15

4. 35

**Q.16** The sum of the positive integer divisors of 200 and the number of positive integer divisors of 200, respectively, are:

Question ID : 723053788

Ans  1. 456, 12

2. 435, 21

3. 455, 21

4. 465, 12

**Q.17** If  $c$  and  $d$  are integers and  $c = dq + r$ , then:

Question ID : 723053782

Ans  1.  $(c, d) = (d, r)$

2.  $(c, q) = (d, r)$

3.  $(c, r) = (d, r)$

4.  $(c, d) = (d, q)$

**Q.18** The solutions of the linear congruence  $7x \equiv 22 \pmod{31}$  is:

Question ID : 723053787

Ans  1.  $x \equiv 21 \pmod{31}$

2.  $x \equiv 12 \pmod{31}$

3.  $x \equiv 196$

4.  $x \equiv 12 \pmod{21}$

**Q.19**

If  $\alpha, \beta$  and  $\gamma$  are the roots of the equation  $x^3 + px^2 + q = 0$ , where  $q \neq 0$ , then the value of  $\begin{vmatrix} 1 & 1 & 1 \\ \alpha & \beta & \gamma \\ \beta & \gamma & \alpha \\ \gamma & \alpha & \beta \end{vmatrix}$  is equal to:

Question ID : 723053801

Ans  1.  $\frac{p}{q}$

2. 0

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

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

**Q.20** The product of the roots of the equation  $x^2 - 3kx + 2e^{4\ln(k)} = 1$  is 31. Then the sum of the root is:

Question ID : 723053795

Ans  1. 6

2. 2

3. 5

4. 4

**Q.1** For what value of k, does the straight line  $y = x + k$  touches the ellipse  $\left(\frac{x}{4}\right)^2 + \left(\frac{y}{3}\right)^2 = 1$ ?

Question ID : 723053818

- Ans  1. 7  
 2.  $\pm 5$   
 3. 2  
 4.  $\pm 6$

**Q.2** Two vertices of a triangle are (0,5) and (6,3). When its centroid is (1, -2), then the third vertex is:

Question ID : 723053808

- Ans  1.  $(-3, -14)$   
 2.  $(-3, 14)$   
 3.  $(3, 14)$   
 4.  $(3, -14)$

**Q.3** Which of the following statements is not true?

Question ID : 723053805

- Ans  1. if  $\det(A) = 0$ , then  $\text{adj}(\det(A)) = 0$

2.  $\text{adj}(AB) = \text{adj}(A) \text{ adj}(B)$

- 3.

Adjoint of a diagonal matrix of order  $3 \times 3$  is a diagonal matrix

- 4.

The product of upper triangular matrices is an upper triangular matrix

**Q.4** If  $A = \begin{bmatrix} i & -i \\ -i & i \end{bmatrix}$  and  $B = \begin{bmatrix} 1 & -1 \\ -1 & 1 \end{bmatrix}$ , then  $A^8$  equals:

Question ID : 723053804

- Ans  1.  $16B$   
 2.  $64B$   
 3.  $32B$   
 4.  $128B$

**Q.5** All the four entries of the  $2 \times 2$  matrix  $A = \begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{bmatrix}$  are NON-zero, and one of its eigen values is zero. Which of the following statements is true?

Question ID : 723053803

- Ans  1.  $a_{11}a_{22} - a_{12}a_{21} = 0$   
 2.  $a_{11}a_{22} - a_{12}a_{21} = 1$   
 3.  $a_{11}a_{22} - a_{12}a_{21} = -1$   
 4.  $a_{11}a_{22} + a_{12}a_{21} = 0$

**Q.6** The equation of the straight line that is equidistant from the lines  $x = -3.5$  and  $x = 7.5$  is:

Question ID : 723053812

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

**Q.7**

If A, B and C are the angles of a triangle ABC, then the value of  $\begin{vmatrix} \sin^2 A & \cot A & 1 \\ \sin^2 B & \cot B & 1 \\ \sin^2 C & \cot C & 1 \end{vmatrix}$  is:

Question ID : 723053802

- Ans  1.  $8 \sin A \sin B \sin C$   
 2.  $-4 \sin A \sin B \sin C$   
 3. 0  
 4.  $1 + 4 \cos A \cos B \cos C$

Q.8 For which value of  $k$ , the points  $(k, 2 - 2k), (-k + 1, 2k)$  and  $(-4 - k, 6 - 2k)$  are collinear?

Question ID : 723053811

- Ans  1. 2  
 2. 0.5  
 3. -1  
 4. 1

Q.9 The equation of the straight line passing through the point of intersection of the lines  $x + 5y + 7 = 0, 3x + 2y - 5 = 0$  and parallel to the line  $7x + 2y - 5 = 0$  is:

Question ID : 723053815

- Ans  1.  $7x + 2y - 17 = 0$   
 2.  $2x + 7y + 20 = 0$   
 3.  $7x + 2y - 20 = 0$   
 4.  $2x - 7y + 17 = 0$

Q.10 If a system of equations  $\lambda x + y + z = 1, x + \lambda y + z = 1$  and  $x + y + \lambda z = 1$  is consistent, then  $\lambda$  can have value as:

Question ID : 723053807

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

Q.11 The value of  $\tan \theta \tan(60^\circ + \theta) \tan(60^\circ - \theta)$  is:

Question ID : 723053819

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

Q.12 If  $x = \sin^2 \theta + \cos^4 \theta$ , then for all values of  $\theta$ :

Question ID : 723053821

- Ans  1.  $1 \leq x \leq 2x$   
 2.  $1 \leq x \leq 3$   
 3.  $0.75 \leq x \leq 1$   
 4.  $0.5 \leq x \leq 1.5$

Q.13 One radian is equal to:

Question ID : 723053820

- Ans  1.  $\frac{3\pi}{2}$   
 2.  $57^\circ 17' 45''$

3.  $360^\circ$

4.  $180^\circ$

**Q.14** If  $(1.5, 0)$ ,  $(1.5, 6)$  and  $(-1, 6)$  are the midpoints of the sides of a triangle, then the in-centre of the triangle is at coordinates:

Question ID : 723053809

Ans  1.  $(1, 2)$

2.  $(3, 1)$

3.  $(2, 4)$

4.  $(2, 3)$

**Q.15** The equation of the straight line that passes through the point  $(3, 4)$  and has intercepts on the axes equal in magnitude but opposite in sign is:

Question ID : 723053813

Ans  1.  $x - y = 1$

2.  $x - y = -1$

3.  $x + y = 2$

4.  $x + y = 1$

**Q.16** If a system of equations  $x + y = 3$ ,  $(1+k)x + (2+k)y = 8$  and  $x - (1+k)y + (2+k) = 0$  is consistent, then the values of  $k$  are:

Question ID : 723053806

Ans  1.  $1, \frac{-5}{3}$

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

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

4.  $0, 1$

**Q.17** The orthocentre of the triangle ABC, whose angular points are A(1, 2), B(2, 3) and C(4, 3), is of the form:

Question ID : 723053816

Ans  1.  $(1, 4)$

2.  $(2, 1)$

3.  $(2, 5)$

4.  $(1, 6)$

**Q.18** When  $m$  is a variable, then the equation of a family of lines making a constant intercept  $c$  on the  $y$ -axis is:

Question ID : 723053817

Ans  1.  $y = mx \pm c$

2.  $y = \left(\frac{x}{2}\right) - c$

3.  $m(x + y) = c$

4.  $x = my \pm c$

**Q.19** The equation of the locus of a point which moves such that its difference of distances from the points  $(3, 0)$  and  $(-3, 0)$  is 4 units, is given by:

Question ID : 723053810

Ans  1.  $\frac{x^2}{5} - \frac{y^2}{6} = 1$

2.  $\frac{x^2}{4} - \frac{y^2}{5} = 1$

3.  $\frac{x^2}{5} + \frac{y^2}{6} = 1$

4.  $\frac{x^2}{4} + \frac{y^2}{5} = 1$

Q.20 The distance between two parallel lines  $5x - 12y + 2 = 0$  and  $5x - 12y - 3 = 0$  is given by:

Question ID : 723053814

Ans

1.  $\frac{1}{17}$

2.  $\frac{5}{14}$

3.  $\frac{1}{13}$

4.  $\frac{5}{13}$

Section : Subject Related

Q.1 When we use Mean Value theorem for  $f(x) = x(x-1)(x-2)$ , then the value of c between 0 and  $\frac{1}{2}$  is:

Question ID : 723053837

Ans  1. 0.138

2. 0.236

3. 1.764

4. 0.317

Q.2 The slope of the circle  $x^2 + y^2 = 25$  at the point  $(3, -4)$  is:

Question ID : 723053838

Ans  1. 0.25

2. 0.75

3. 1

4. 0.5

Q.3 If  $A = \tan^{-1}\left(\frac{1}{7}\right)$  and  $B = \tan^{-1}\left(\frac{1}{3}\right)$ , then:

Question ID : 723053828

Ans  1.  $\cos 2A = \sin 4B$

2.  $\sin 2A = \cos 2B$

3.  $\sin 4A = \cos 2B$

4.  $\sin 2B = \cos 2A$

Q.4 If  $\sin^{-1}(x) + \sin^{-1}(y) + \sin^{-1}(z) = \frac{3\pi}{2}$ , then the value of  $((x)^{100} + (y)^{100} + (z)^{100}) - \left(\frac{9}{(x)^{101} + (y)^{101} + (z)^{101}}\right)$  is:

Question ID : 723053831

Ans  1. 0

2. 3

3. 2

4. -1

Q.5

A tree is broken by wind, its upper part touching the ground at a point 16 m from the foot of the tree and making an angle of  $45^\circ$  with the ground. The entire length of the tree is:

Question ID : 723053827

- Ans  1.  $16\sqrt{2}$  m  
 2.  $(4\sqrt{2} + 1)$  m  
 3.  $4(1 + \sqrt{2})$  m  
 4.  $4^2(1 + \sqrt{2})$  m

Q.6 When we use Rolle's theorem for  $f(x) = x^{2m-1}(a-x)^{2n}$ , then the value of  $x$  between 0 and  $a$  is:

Question ID : 723053836

- Ans  1.  $\frac{(2m-1)a}{2m+2n-1}$   
 2.  $\frac{(2m+1)a}{2m-2n+1}$   
 3.  $\frac{(m-1)a}{m+n-1}$   
 4.  $\frac{(m+1)a}{m+n+1}$

Q.7 The function  $f(x) = (x^2 - 1)|x^2 - 3x + 2| + \cos|x|$  is not differentiable at the point:

Question ID : 723053834

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

Q.8 If the median of the triangle ABC through A is perpendicular to AB, then the value of  $\tan A + 2 \tan B$  is:

Question ID : 723053824

- Ans  1. 0  
 2.  $\sin C$   
 3.  $\cos C$   
 4.  $\tan C$

Q.9 The possible solution(s) of the equation  $\tan x + \frac{1}{\cos x} = 2 \cos x$ , lying in the interval  $0 \leq x \leq 2\pi$ , are:

Question ID : 723053822

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

Q.10 An aeroplane flying at a height of 3,000 m above the ground, passes vertically above another plane at an instant, when the angles of elevation of the two planes from the same point on the ground are  $60^\circ$  and  $45^\circ$  respectively. The height of the lower plane from the ground is:

Question ID : 723053826

- Ans  1.  $100\sqrt{300}$  m  
 2.  $100\sqrt{30}$  m  
 3.  $300\sqrt{10}$  m  
 4.  $\frac{100}{\sqrt{30}}$  m

**Q.11** If  $f(x) = \begin{cases} \frac{1}{x^3}[x(1+a \cos x) - b \sin x] & \text{if } x \neq 0 \\ 1 & \text{if } x = 0 \end{cases}$  is a continuous function, then the values of a and b, respectively, are:

Question ID : 723053833

Ans

1.  $\frac{-5}{2}, \frac{3}{2}$

2.  $\frac{1}{3}, \frac{1}{5}$

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

4.  $\frac{5}{2}, \frac{-3}{2}$

**Q.12** Let  $f$  be a continuous function on  $[1, 3]$ . If  $f$  takes only rational values for all  $x$  and  $f(2) = 10$ , then  $f(1.5)$  is equal to:

Question ID : 723053840

Ans  1. 20

2. 8

3. 10

4.  $\left(\frac{1}{3}\right)[f(1) + f(3)]$

**Q.13** When  $\tan^{-1}(x) = \cos^{-1}(x)$ , then the value of  $\sin(\cos^{-1}(x))$  is:

Question ID : 723053829

Ans  1.  $x^{-2}$

2.  $x^{-1}$

3.  $x^2$

4.  $2x$

**Q.14** Does  $\lim_{x \rightarrow 0} \frac{\tan x - x}{x^2 \tan x}$  exist? If it does, then the value of this limit is:

Question ID : 723053832

Ans

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

2. Such value does not exist

3. 1

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

**Q.15** If the two sides of a triangle are the roots of the equation  $4x^2 - (2\sqrt{6})x + 1 = 0$  and they include an angle is  $60^\circ$ , then third side of the triangle is:

Question ID : 723053825

Ans

1.  $\sqrt{3}$

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

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

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

**Q.16** The first derivative of  $y = \frac{(x-1)(x^2-2x)}{x^4}$ , with respect of  $x$ , is:

Question ID : 723053835

- Ans  1.  $2x^{-2} + 5x^{-3} - 6x^{-4}$   
 2.  $-x^{-2} + 6x^{-3} - 6x^{-4}$   
 3.  $x^{-2} - 6x^{-3} + 6x^{-4}$   
 4.  $x^{-2} + 6x^{-3} - 2x^{-4}$

**Q.17** If  $\sin^{-1}(x) + \sin^{-1}(-x) + \cos^{-1}(1-x) = 0$ , then  $x$  satisfies the equation:

Question ID : 723053830

- Ans  1.  $2x^2 - 5x + 2 = 0$   
 2.  $2x^2 + x - 2 = 0$   
 3.  $2x^2 - 5x = 0$   
 4.  $2x^2 - x + 1 = 0$

**Q.18** The distance of a point on the curve  $y = x(x^3 + 3x + 2)$  which is nearest to the line  $y = 2x - 1$  is:

Question ID : 723053839

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

**Q.19** In a triangle ABC, if  $a + b - 3c = 0$ , then  $\cos A + \cos B$  is equal to:

Question ID : 723053823

- Ans  1.  $3(1 - \cos C)$   
 2.  $3 \cos C$   
 3.  $3 \sin C$   
 4.  $3 \cos(A - B)$

**Q.20** The possible extreme point of a function  $f(x, y) = x^2 + y^2 + \binom{2}{x} + \binom{2}{y}$  is:

Question ID : 723053841

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

Section : Subject Related

**Q.1** If  $f(x) = \frac{\sqrt{\tan x}}{(\sin x \cos x)}$ , and  $F(x)$  is its antiderivative such that  $F\left(\frac{\pi}{4}\right) = 6$ , then  $F(x)$  is of the form:

Question ID : 723053845

Ans

1.  $2\sqrt{\tan x} + 4$

2.  $2\sqrt{\tan x} + 2$

3.  $2\sqrt{\tan x} + 1$

4.  $2\sqrt{\tan x} + 3$

**Q.2** If  $(\vec{a} \times \vec{b}) \times \vec{c} = \vec{a} \times (\vec{b} \times \vec{c})$ , where,  $\vec{a} = 2\hat{i} + \hat{j} + \lambda\hat{k}$ ,  $\vec{b} = \hat{i} - \hat{j}$ ,  $\vec{c} = 4\hat{i} + \mu\hat{j} + 2\hat{k}$ , then the values of  $\lambda$  and  $\mu$  are respectively:

Question ID : 723053857

Ans  1. 1, 4

2. 1, 2

3. 2, 3

4. 4, 2

**Q.3** The solution of the differential equation  $\frac{dy}{dx} = \frac{(ax+b)}{(cx+d)}$  represents a parabola if:

Question ID : 723053854

Ans  1. Both a and c are 1

2. Both a and c are 0

3. c is zero and a is non-zero

4. a = 1 and b = 2

**Q.4** If  $f(x) = 2x + 3^x \log_e(3)$ , and  $F(x)$  is its antiderivative such that  $F(2) = 7$ , then the value of  $x$  for which the curve  $F(x)$  cuts the abscissa axis is:

Question ID : 723053844

Ans  1.  $x = 1$

2.  $x = 3$

3.  $x = 0$

4.  $x = 2$

**Q.5** The general solution of the equation  $\frac{dy}{dx} = \left(\frac{y}{x}\right) + \phi\left(\frac{x}{y}\right)$  is given by  $y \ln|Cx| = x$ . Then  $\phi\left(\frac{x}{y}\right)$  is:

Question ID : 723053856

Ans  1.  $\left(-\frac{x}{y}\right)^2$

2.  $\left(\frac{y}{x}\right)^2$

3.  $\left(-\frac{y}{x}\right)^2$

4.  $\left(\frac{x}{y}\right)^2$

**Q.6** The value of the integral  $\int \frac{\cos 4x - 1}{\cot x - \tan x} dx$  is:

Question ID : 723053846

Ans  1.  $\frac{1}{2} \ln|\cos(2x)| + C$

2.  $\frac{1}{2} \ln|\cos(2x)| - \frac{1}{4} \cos^2(2x) + C$

3.  $\frac{1}{2} \cos(4x) + C$

4.  $\frac{1}{4} \cos(4x) + C$

- Q.7 Let  $\vec{a}$  be any non-zero vector, whereas  $\vec{b}$  and  $\vec{c}$  be unit vectors. Then the value of  $\{[(\vec{a} + \vec{b}) \times (\vec{a} + \vec{c})] \times (\vec{b} \times \vec{c})\} \cdot (\vec{b} + \vec{c})$  is:

Question ID : 723053861

- Ans  1.  $3|\vec{a}|^2$   
 2.  $|\vec{a}|^2$   
 3. 0  
 4.  $2|\vec{a}|^2$

- Q.8 The solution of the differential equation  $2y \sin x \left(\frac{dy}{dx}\right) = \sin 2x - y^2 \cos x$  with  $y\left(\frac{\pi}{2}\right) = 1$  is:

Question ID : 723053855

- Ans  1.  $y^2 = \sin x$   
 2.  $x^2 = \sin y$   
 3.  $y = \sin^2 x$   
 4.  $y^2 = 1 + \cos x$

- Q.9 The particular solution of the differential equation  $\frac{dy}{dx} = e^{(3x+4y)}$ ,  $y(0) = 0$  is:

Question ID : 723053853

- Ans  1.  $4e^{3x} + 3e^{-4y} = 7$   
 2.  $e^{3x} + 3e^{-4y} = 4$   
 3.  $4e^{3x} + 3e^{4y} = 7$   
 4.  $4e^{3x} - e^{-4y} = 3$

- Q.10 The possible number of solutions of the equation  $k^{f(x)} + g(x) = 0$ , where  $k > 0, g(x) \neq 0$  and  $g(x)$  has minimum value 0.5, is/are:

Question ID : 723053843

- Ans  1. Infinitely many  
 2. Zero  
 3. One  
 4. Two

- Q.11 The degree of the differential equation  $\left(\frac{d^2y}{dx^2}\right)^{\frac{3}{2}} - \left(\frac{dy}{dx}\right)^{\frac{1}{2}} - 4 = 0$  is:

Question ID : 723053850

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

- Q.12 Let  $\vec{a}, \vec{b}$  and  $\vec{c}$  be any three vectors such that  $|\vec{a}| = 1, |\vec{b}| = 4, |\vec{c}| = 8$  and  $\vec{a} \cdot (\vec{b} + \vec{c}) = \vec{b} \cdot (\vec{c} + \vec{a}) = \vec{c} \cdot (\vec{a} + \vec{b}) = 0$ , then  $|\vec{a} + \vec{b} + \vec{c}|$  is equal to:

Question ID : 723053858

- Ans  1. 9  
 2. 12

3. 8

4. 7

**Q.13** The distance between a point whose position vector is  $5\hat{i} + \hat{j} + 3\hat{k}$  and the line  $\vec{r} = (3\hat{i} + 7\hat{j} + \hat{k}) + t(\hat{j} + \hat{k})$  is given by:

Question ID : 723053860

Ans  1. 3

2. 6

3. 4

4. 5

**Q.14** The solution of the linear differential equation  $\frac{dy}{dx} = 1 \left( \frac{2x}{y^2} \right)$  is given by:

Question ID : 723053852

Ans  1.  $y = Ce^{-2x} + \left( \frac{1}{4} \right) [x^2 + 2x + 1]$

2.  $x = Ce^{2y} + \left( \frac{1}{4} \right) [y^2 + 2y + 1]$

3.  $x = Ce^{2y} + \left( \frac{1}{2} \right) [y^2 + y + 1]$

4.  $x = Ce^{2y} + \left( \frac{1}{4} \right) [2y^2 + 2y + 1]$

**Q.15** The general solution of the differential equation  $\frac{dy}{dx} + \sin \left( \frac{x+y}{2} \right) = \sin \frac{(x-y)}{2} =$  is:

Question ID : 723053851

Ans  1.  $\ln \left| \tan \left( \frac{y}{2} \right) \right| = C + 2 \sin \left( \frac{x}{2} \right)$

2.  $\ln \left| \tan \left( \frac{y}{4} \right) \right| = C - 2 \sin \left( \frac{x}{2} \right)$

3.  $\ln \left| \tan \left( \frac{y}{2} \right) \right| = C - 2 \sin(x)$

4.  $\ln \left| \tan \left( \frac{y}{2} \right) \right| = C - 2 \sin \left( \frac{x}{4} \right)$

**Q.16** The coordinates of the point on the parabola  $y^2 = 8x$ , which is at a minimum distance from the circle  $[x - 0]^2 + [y - (-6)]^2 = 1$ , are given by:

Question ID : 723053842

Ans  1.  $(-2, 4)$

2.  $(-1, 2)$

3.  $(2, -4)$

4.  $(1, -2)$

**Q.17** The unit vector in the direction of the vector  $2\hat{i} - \hat{j} - 2\hat{k}$  is:

Question ID : 723053859

Ans  1.  $\left( \frac{1}{9} \right) (2\hat{i} + \hat{j} - 2\hat{k})$

2.  $3(2\hat{i} + \hat{j} - 2\hat{k})$

3.  $9(2\hat{i} + \hat{j} - 2\hat{k})$

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

Q.18 Let  $f(x) = \int_0^{\sin^2 x} \sin^{-1} \sqrt{u} du$  and  $g(x) = \int_0^{\cos^2 x} \cos^{-1} \sqrt{u} du$ . Then the value of  $f(x) + g(x)$  is equal to:

Question ID : 723053848

Ans

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

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

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

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

Q.19 The value of the integral  $\int_0^{\infty} \frac{x \ln(x)}{(1+x^2)^2} dx$  is:

Question ID : 723053849

Ans

1.  $2 \ln(5)$

2. 13

3.  $5 \ln(2)$

4. 0

Q.20 The value of the integral  $\int \frac{\sin x}{\sqrt{1+\cos x}} dx$  is:

Question ID : 723053847

Ans

1.  $-\sqrt{8} \cos\left(\frac{x}{2}\right) + C$

2.  $\sqrt{2} \cos\left(\frac{x}{2}\right) + C$

3.  $-\sqrt{2} \cos\left(\frac{x}{2}\right) + C$

4.  $\sqrt{8} \cos\left(\frac{x}{2}\right) + C$

Section : Subject Related

Q.1 If A and B are mutually exclusive events such that  $P(A) = 0.29$  and  $P(B) = 0.43$ , then  $P(A \cap \bar{B})$  is equal to:

Question ID : 723053880

Ans

1. 0.29

2. 0.85

3. 0.50

4. 0.37

Q.2 When the mode is ill-defined, then the Empirical mode formula is of the form:

Question ID : 723053873

Ans

1.  $3 \text{ Median} - \text{Mode} = 2 \text{ Mean}$

2.  $\text{Mean} - \text{Mode} = 2[\text{Mean} - \text{Median}]$

3.  $\text{Mean} - \text{Mode} = 3[\text{Median} - \text{Mean}]$

#### 4. Mean – Median = 3[Mean – Mode]

Q.3 The relation between mean deviation (M.D.) and standard deviation (S.D.) is:

Question ID : 723053876

- Ans  1. 5 M.D. = 4 S.D.  
 2. 3 M.D. = 4 S.D.  
 3. 4 M.D. = 3 S.D.  
 4. 4 M.D. = 5 S.D.

Q.4 The straight lines are coplanar if:

Question ID : 723053866

- Ans  1. A line is perpendicular to each of them  
 2. A line is parallel to each other  
 3. They are concurrent  
 4.

They are concurrent and a line is perpendicular to each of them

Q.5 The co-ordinates of the point that divides the line joining the points P(2, 3, 1) and Q(5,0, 4) in the ratio 1 : 2 are:

Question ID : 723053865

- Ans  1. (3, 2, 2)  
 2. (3, 1, 1)  
 3. (4, 1, 3)  
 4.  $\left(\frac{7}{3}, 1, \frac{5}{3}\right)$

Q.6 The mean deviation about the mean and the standard deviation of the set of numbers 3, 5, 6, 7, 10, 12, 15, 18, respectively, are:

Question ID : 723053879

- Ans  1. 4.25, 4.875  
 2. 3.75, 2.575  
 3. 4.15, 4.825  
 4. 4.1, 4.5

Q.7 The angle  $\theta$  between the line  $\frac{x+1}{2} = \frac{y-0}{3} = \frac{z-3}{6}$  and the plane  $3x + y + z = 7$  is:

Question ID : 723053868

- Ans  1.  $\cos^{-1}\left(\frac{2}{\sqrt{13}}\right)$   
 2.  $\sin^{-1}\left(\frac{5}{7\sqrt{11}}\right)$   
 3.  $\sin^{-1}\left(\frac{15}{7\sqrt{11}}\right)$   
 4.  $\cos^{-1}\left(\frac{5}{7\sqrt{11}}\right)$

Q.8 If a straight line makes angles  $\alpha, \beta, \gamma$  with the axes of coordinates, then  $\cos 2\alpha + \cos 2\beta + \cos 2\gamma$  is equal to:

Question ID : 723053863

- Ans  1. 2

1

2. -1

3. -2

- Q.9** The mean and variance of a group of 100 observations are 6.5 and 3 respectively. 55 of these observations have the mean 6.6 and standard deviation 1.5. Then the mean and the standard deviation of the remaining 45 observations, respectively, are:

Question ID : 723053878

Ans  1. 6.26, 1.89

2. 6.83, 1.78

3. 6.38, 1.97

4. 8.36, 1.91

- Q.10** The median of the numbers 20, 18, 22, 27, 25, 12, 15 is:

Question ID : 723053874

Ans  1. 20

2. 22

3. 19.8

4. 19.9

- Q.11** If at least one child in a family with 2 children is a boy, then the probability that both children are boys is:

Question ID : 723053881

Ans

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

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

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

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

- Q.12** The mean and standard deviation of 20 numbers are found to be 10 and 2 respectively. At the time of checking, it is found that one value was wrongly taken as 8, which should have been ideally 12. If the wrong value is replaced by the correct one, then the correct mean and standard deviation, respectively, are:

Question ID : 723053877

Ans  1. 10.11, 1.997

2. 10.01, 1.097

3. 10.2, 1.99

4. 10.01, 1.917

- Q.13** When the spheres  $x^2 + y^2 + z^2 = 25$  and  $x^2 + y^2 + z^2 - 18x - 24y - 40z + 225 = 0$  touch externally, then the point of contact of the spheres is:

Question ID : 723053870

Ans  1.  $(9, 12, 20)$

2.  $\left(\frac{9}{5}, \frac{12}{5}, \frac{20}{5}\right)$

3.  $\left(\frac{2}{5}, \frac{3}{5}, \frac{-1}{5}\right)$

4.  $\left(\frac{3}{7}, \frac{5}{7}, \frac{-2}{7}\right)$

**Q.14** The distance of the point of intersection of the line  $\frac{x-2}{3} = \frac{y+1}{4} = \frac{z-2}{12}$  and the plane  $x - y + z = 5$ , from the point  $(-1, -5, -10)$ , is:

Question ID : 723053864

- Ans  1. 9  
 2. 2  
 3. 10  
 4. 13

**Q.15** The equation of the sphere on the join of  $(2, -3, 1)$  and  $(1, -2, -1)$  as diameter is:

Question ID : 723053871

- Ans  1.  $x^2 + y^2 + z^2 + 3x - 5y - 7 = 0$   
 2.  $x^2 + y^2 + z^2 - 3x + 5y + 7 = 0$   
 3.  $x^2 + y^2 + z^2 + 3x + 5y + 7 = 0$   
 4.  $x^2 + y^2 + z^2 + 3x - 5y + 7 = 0$

**Q.16** The length of the shortest distance between the lines  $\frac{x-1}{2} = \frac{y-2}{3} = \frac{z-3}{4}$  and  $\frac{x-2}{3} = \frac{y-4}{4} = \frac{z-5}{5}$  is:

Question ID : 723053867

- Ans  1.  $\frac{2}{3\sqrt{6}}$   
 2.  $\frac{1}{\sqrt{6}}$   
 3.  $3\sqrt{30}$   
 4.  $13\sqrt{66}$

**Q.17** The arithmetic mean of the data  $(x, f) : (8, 5), (10, 8), (15, 8), (20, 4)$  is:

Question ID : 723053872

- Ans  1. 12.5  
 2. 25  
 3. 12.4  
 4. 12.8

**Q.18** The mode of the numbers 25, 15, 23, 40, 27, 25, 23, 25, 20 is:

Question ID : 723053875

- Ans  1. 13  
 2. 24.8  
 3. 24.7  
 4. 25

**Q.19** Which of the following triplets gives the direction cosine of a straight line?

Question ID : 723053862

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

**Q.20** The point of contact of the plane  $2x - 2y + z + 12 = 0$  touches the sphere  $x^2 + y^2 + z^2 - 2x - 4y + 2z - 3 = 0$  is:

Question ID : 723053869

- Ans  1. (2, 1, 4)

2. (1,4,2)

3. (-1,4, -2)

4. (4,1,2)

Section : Subject Related

- Q.1** A box contains 20 electric bulbs, out of which 4 are defective. Two bulbs are chosen at random from this box. The probability that at least one of these is defective is:

Question ID : 723053883

Ans

1.  $\frac{12}{19}$

2.  $\frac{4}{19}$

3.  $\frac{7}{19}$

4.  $\frac{21}{95}$

- Q.2** The radius of convergence of the series  $\sum_{n=1}^{\infty} \frac{(z+2)^{n-1}}{(n+1)^3 4^n}$  is:

Question ID : 723053896

Ans

1. 2

2. 4

3. 1

4. -2

- Q.3** Identify which one of the following matrices is similar to a diagonal matrix.

Question ID : 723053894

Ans

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

2.  $\begin{bmatrix} 3 & 1 & 1 \\ 2 & 4 & 2 \\ 1 & 1 & 3 \end{bmatrix}$

3.  $\begin{bmatrix} 3 & 10 & 5 \\ -2 & -3 & -4 \\ 3 & 5 & 7 \end{bmatrix}$

4.  $\begin{bmatrix} 2 & 3 & 4 \\ 0 & 2 & -1 \\ 0 & 0 & 1 \end{bmatrix}$

- Q.4** Let  $W = \{(a, b, 0) : a, b \in \mathbb{R}\}$  be a subset of  $\mathbb{R}^3$ . Then which of the following is true?

Question ID : 723053890

Ans

1. W is a subspace of  $\mathbb{R}^3$

2.

W is not closed under vector addition and multiplication

3.  $W = \emptyset$

**X** 4. W is not a subspace of  $\mathbb{R}^3$

Q.5 If  $f(z) = (x^2 + axy + by^2) + i(cx^2 + dxy + y^2)$  is an analytic function of  $z$ , then the values of  $a, b, c$  and  $d$  are:

Question ID : 723053899

- Ans **X** 1.  $a = 2, b = -1, c = -1, d = 4$   
**X** 2.  $a = -2, b = 1, c = -1, d = 2$   
**X** 3.  $a = 2, b = 1, c = -1, d = -2$   
**✓** 4.  $a = 2, b = -1, c = -1, d = 2$

Q.6 If the probability density function of a continuous random variable  $X$  is defined by  $f(x) = kx(2 - x), 0 < x < 2$ , then the value of ' $k$ ' is:

Question ID : 723053886

- Ans **✓** 1.  $\frac{3}{4}$   
**X** 2.  $\frac{1}{2}$   
**X** 3.  $\frac{3}{8}$   
**X** 4.  $\frac{1}{4}$

Q.7 The probability density function  $f(x)$  of a continuous random variable  $X$  is given by  $f(x) = \begin{cases} k(x)^{-3} & \text{if } 5 \leq x \leq 10 \\ 0 & \text{otherwise} \end{cases}$ . Then the value of ' $k$ ' is:

Question ID : 723053884

- Ans **✓** 1.  $\frac{200}{3}$   
**X** 2.  $\frac{3}{200}$   
**X** 3. 200  
**X** 4. 40

Q.8 The eigen vectors corresponding to distinct eigen values of a real symmetric matrix are:

Question ID : 723053888

- Ans **X** 1. Invertible  
**X** 2. Symmetry  
**✓** 3. Orthogonal  
**X** 4. Distinct

Q.9 If  $F(s)$  is the Fourier transform of a function  $f(x)$ , then the Fourier transform of  $f(2x)$  is given by:

Question ID : 723053900

- Ans **X** 1.  $e^{2is}F(s)$   
**X** 2.  $\frac{1}{2}F\left(\frac{2}{s}\right)$   
**X** 3.  $F(s - 2)$   
**✓** 4.  $\frac{1}{2}F\left(\frac{s}{2}\right)$

Q.10 The norm of  $v = (3,4) \in \mathbb{R}^2$ , with respect to the usual inner product, is given by:

Question ID : 723053889

- Ans

1. 5

2. 25

3. 9

4. 16

**Q.11** The function  $f(x, y) = x^3 + y^3 - 63(x + y) + 12xy$  attains minimum at the point:

Question ID : 723053898

Ans  1.  $(-7, -7)$

2.  $(-1, 5)$

3.  $(3, 3)$

4.  $(5, -1)$

**Q.12** A bag contains 4 white, 5 red and 6 blue balls. Three balls are drawn at random from the bag. The probability that all of them are red is:

Question ID : 723053882

Ans

1.  $\frac{2}{91}$

2.  $\frac{2}{77}$

3.  $\frac{1}{22}$

4.  $\frac{3}{22}$

**Q.13** Which of the following vectors form a basis for the vector space  $\mathbb{R}^3$ ?

Question ID : 723053892

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

2.  $(2, 4, -3), (0, 1, 1)$  and  $(0, 1, -1)$

3.  $(1, 2, -1)$  and  $(1, -1, 5)$

4.  $(1, 3, -4), (1, 4, -3)$  and  $(2, 3, -11)$

**Q.14** Let  $f$  be a function such that  $f(x) = f(1-x)$ , for all  $x \in \mathbb{R}$ . If  $f$  is differentiable everywhere, then  $f'(0)$  is equal to:

Question ID : 723053895

Ans  1.  $f(0)$

2.  $f(1)$

3.  $-f'(1)$

4.  $-f(0)$

**Q.15** Let  $T$  be linear transformation of  $\mathbb{R}^3$  into  $\mathbb{R}^2$  defined by  $T(x, y, z) = (2x + y - z, 3x - 2y + 4z)$  for all  $(x, y, z) \in \mathbb{R}^3$ . Then the matrix of  $T$  relative to the bases  $\beta = \{\varepsilon_1 = (1, 1, 1), \varepsilon_2 = (1, 1, 0), \varepsilon_3 = (1, 0, 0)\}$  and  $\delta = \{\eta_1 = (1, 3), \eta_2 = (1, 4)\}$  is:

Question ID : 723053893

Ans

1.  $\begin{bmatrix} 3 & 11 & 5 \\ -1 & -8 & -3 \end{bmatrix}$

2.  $\begin{bmatrix} 3 & 11 & -5 \\ 1 & -8 & 3 \end{bmatrix}$

3.  $\begin{bmatrix} -3 & 11 & 5 \\ 1 & 8 & 3 \end{bmatrix}$

4.  $\begin{bmatrix} 3 & -11 & 5 \\ -1 & 8 & 3 \end{bmatrix}$

Q.16 If the Laplace transform of a function  $f(t)$  is  $\frac{1}{s(s+a)}$ , then  $f(t)$  is equal to:

Question ID : 723053901

Ans

1.  $\frac{1}{a}(1 - e^{-at})$

2.  $(1 - e^{-at})$

3.  $\frac{1}{a}e^{-at}$

4.  $ae^{-at}$

Q.17 If the mean of a Poisson distribution is 0.5, then the ratio of  $P(x = 3)$  to  $P(x = 2)$  is:

Question ID : 723053885

Ans

1.  $1 : 2$

2.  $1 : 8$

3.  $1 : 6$

4.  $1 : 4$

Q.18 Suppose U and W are distinct 4-dimensional subspaces of a vector space V of dimension 6. The possible dimension of  $U \cap W$  is:

Question ID : 723053887

Ans

1. 5 or 6

2. 1 or 4

3. 4 or 6

4. 2 or 3

Q.19 Suppose  $M = \begin{pmatrix} A_1 & B \\ 0 & A_2 \end{pmatrix}$ , where  $A_1$  and  $A_2$  are square matrices. The characteristic polynomial of M is \_\_\_\_\_ to/of the characteristic polynomials of  $A_1$  and  $A_2$ .

Question ID : 723053891

Ans

1. The quotient

2. The product

3. The sum

4. equal

Q.20 In a plane triangle ABC, the maximum value of  $\cos A \cos B \cos C$  is:

Question ID : 723053897

Ans

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

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

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

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

**Q.1** Which of these is NOT a part of social science?

Question ID : 723053909

Ans  1. Biology

2. Anthropology

3. Statistics

4. Sociology

**Q.2** Which of these factors does NOT affect the emotionality of a person?

Question ID : 723053902

Ans  1.

Child B is exhausted after travelling for 4 hours in the car

2.

Child C is happily sleeping at night undisturbed for 8 hours

3.

Child D is suffering from disease due to malnutrition

4.

Child A is too much excited at the thought of an ice cream

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

Question ID : 723053917

Ans  1. Homework exercises

2. Presentations

3. Simulations

4. Students watching an audiovisual

**Q.4** The ability to perceive existing gender differences and issues and to incorporate these into strategies and actions is known as:

Question ID : 723053908

Ans  1. gender equality

2. gender parity

3. gender equity

4. gender sensitivity

**Q.5** The assessment that expands the findings of an assessment with analysis of abilities and potentials with a further dimension is known as:

Question ID : 723053919

Ans  1. summative assessment

2. prognostic assessment

3. formative assessment

4. diagnostic assessment

**Q.6** Which of these is NOT a correct statement of the CAI?

Question ID : 723053915

Ans  1. It facilitates reteaching and reinforcing

2.

It can help teachers to improve their role in education process.

3. It can create simulations in the learner

4.

CAI can give a human touch better than traditional teaching

**Q.7** When knowledge is acquired through religious texts, it is known as \_\_\_\_\_.

Question ID : 723053916

- Ans  1. authority  
 2. reason  
 3. testimony  
 4. revelation

**Q.8** Which of these is NOT a correct statement on the guiding principles of constructivism?

Question ID : 723053918

- Ans  1.

Learning requires understanding wholes as well as parts and parts must be understood in the context of wholes

- 2.

Learning must start with the issues around which students are actively trying to construct meaning

- 3.

The learning process focuses on isolated facts, not on primary concepts

- 4.

The purpose of learning is for an individual to construct his or her own meaning, not just to memorise the "right" answers

**Q.9** Identify the correct statement on role play from the given options?

Question ID : 723053913

- Ans  1. Low level of learner involvement

- 2.

Effective while addressing issues in the affective domain

3. Introverts enjoy Role plays

- 4.

All kinds of learners are proactive to take up role plays

**Q.10** \_\_\_\_\_ is/are mandated to provide academic and technical resource support to adult and continuing education through development and production of material and training modules. In addition to this, it/they would be required to conduct motivational and environmental building, action research and evaluation and monitoring.

Question ID : 723053903

- Ans  1. The State Resource Centre(s)

2. Rashtriya Madhyamik Shiksha Abhiyan

3. Jan Shikshan Sansthanas

4. Sarva Shiksha Abhiyan

**Q.11** Which of these is NOT a correct statement on including inclusive education in India?

Question ID : 723053920

- Ans  1.

Children with special needs cannot be made a part of regular school.

- 2.

It is an opportunity to form friendships with other children.

- 3.

It develops the tolerance and appreciation of normal children for differently abled students.

- 4.

Giving all the normal and differently abled children equal opportunities to learn and get equal treatment as others.

**Q.12** When a learner performs a skill according to the instruction rather than the observation, he is known to be at the \_\_\_\_\_ level of psychomotor domain.

Question ID : 723053904

- Ans  1. 'Articulates'

2. 'Imitates'

3. 'Manipulates'

#### 4. 'Naturalises'

Q.13 Which of these is NOT a 2D art, method or technique to use while teaching a subject?

Question ID : 723053912

- Ans  1. Rangoli  
 2. Installation  
 3. Collage making  
 4. Mandna

Q.14 Identify the learning style from the given description:

Somu likes to have a hands-on experience in anything he learns. He enjoys field trips to experience the physical proximity of the target knowledge. He makes his own notes on whatever he learns.

Question ID : 723053905

- Ans  1. Tactile Learning style  
 2. Auditory Learning style  
 3. Visual / Verbal Learning style  
 4. Visual / Non-verbal Learning style

Q.15 Which of these skills is a receptive skill?

Question ID : 723053906

- Ans  1. Speaking  
 2. Listening  
 3. Writing  
 4. Language

Q.16 \_\_\_\_\_ is a developmental disability significantly affecting verbal and non-verbal communication and social interaction, generally evident before age three and characterised by engaging in repetitive activities and stereotyped movements.

Question ID : 723053921

- Ans  1. Autism  
 2. Dyslexia  
 3. ADHD  
 4. Dysgraphia

Q.17 Which of these is NOT a good aspect relating to reading a newspaper?

Question ID : 723053911

- Ans  1. Latest update on the current happenings  
 2. Exaggerated or underplayed news of the real situation  
 3. Increased vocabulary  
 4. Knowledge on antisocial elements in the society

Q.18 What should be the objective of teaching science at higher secondary school level?

Question ID : 723053907

- Ans  1. To develop economic efficiency and capacity to earn a livelihood  
 2. To get the knowledge about the society and natural environment  
 3. To develop the observation skills

 4.

Develop the quantitative sense to solve the problems

**Q.19** Which of these is NOT a blog tool?

Question ID : 723053914

- Ans  1. Trackback  
 2. Blogger  
 3. WordPress  
 4. Edublog

**Q.20** In a particular Mathematics class, a student can draw geometrical figures and graphs. Which stage of cognitive domain is the student exhibiting?

Question ID : 723053910

- Ans  1. Application  
 2. Skill  
 3. Knowledge  
 4. Understanding