

SPJET SAMPLE PAPER 3

Please fill in the following information with a ball-point pen:

STUDENT NAME

S P JAIN'S UNDERGRADUATE ENTRANCE TEST

Please read instructions in the answer sheet and question booklet before answering

1. Please check the number of questions before you start answering (Total no. of Sections : 5)
2. All rough work to be done only on the blank sheet provided at the back of the question booklet. Please do NOT write on the question paper
3. Laptops, calculators, slide rules, log tables, watch calculators, papers, cellular phones etc are not allowed inside the examination hall
4. You will not be allowed to leave the examination hall during the examination
5. Any candidate found violating the instructions and receiving/giving any form of help will be disqualified

The decision of S P Jain will be final and binding on the applicant in case of any dispute.

Signature of Invigilator

APPROPRIATION OF MARKS AND TIME

Section	No. of Questions	Marks per question	Total Marks per Section
Logic	5	2	10
Diagrammatic Reasoning	4	4	16
Numeracy	6	3	18
IQ	10	2	20
Reading Comprehension	5	4	20
General Awareness	8	2	16
Total	38		100

ANSWER FOR THE QUESTIONS ARE PROVIDED AT THE END OF THE PAPER

Note

It is advisable that the candidate reads the question carefully and avoids marking answers thoughtlessly.

Analyzing the previous question papers will help the candidate to get a clear picture of the pattern of questions asked in each section. Only answer if you are 100% sure about the correct answer.

LOGIC (50 x 2 marks = 10 marks.)

1. U, V, W, X and Z are all comparing the pocket money they get. It is discovered that
 1. W gets less pocket money than X but more pocket money than Z
 2. U gets lesser pocket money than Z
 3. V gets more pocket money than U
 4. X gets more pocket money than V

Who among them gets the highest pocket money?

- (A) U
- (B) V
- (C) X
- (D) Cannot be determined

2. The numbers 1, 2, 3 and 4 are printed on four red coloured cards. The same process is then repeated where the numbers 1, 2, 3 and 4 are written on four green cards, four blue cards and four yellow cards respectively.

These cards are then distributed among W, X, Y and Z with each of them getting four cards each. It is known that each of them has cards of all the four colours. It is also known that each of them has cards with all four numbers (1, 2, 3 and 4) printed on them

Some partial information on who holds which cards is provided below

1. W has the yellow card with 1 printed on it and the red card with 3 printed on it
 2. X has the green card with 1 printed on it and the red card with 2 printed on it
 3. Y has the green card with 3 printed on it and the yellow card with 2 printed on it
 4. Z has the green card with 4 printed on it
- Who holds the red card with 1 printed on it?

- (A) W
- (B) X
- (C) Y
- (D) Z

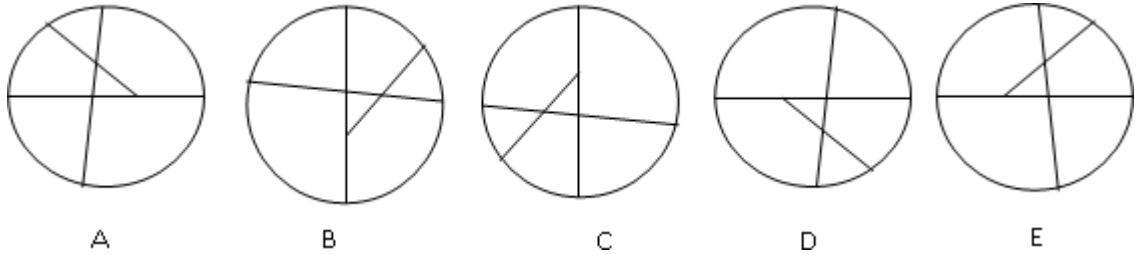
3. Rashi starts walking from her house. She first walks 10 meters south. She then turns left and walks 60 meters. Then she turns right and walks 30metres after which she makes another right turn and walks a further 30 meters. In which direction and how many meters away is Rashi from her house.

- (A) 40 meters South of her house
- (B) 50 meters South East of her house
- (C) 50 meters South West of her house
- (D) 40 meters East of her house

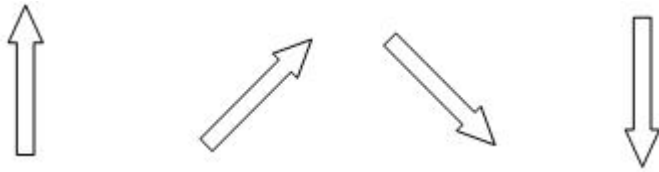
4. T, U, V, W, X, Y and Z are seven friends who have met for dinner and are sitting in a circle, adhering to the following conditions
1. Y is to the immediate right of T
 2. X is a neighbour of both T and W
 3. Exactly one person is sitting between V and Y and that person is not Z
- Which of the following pair of friends is not sitting adjacent to each other?
- (A) Z and T
(B) U and Y
(C) Z and W
(D) W and X
5. Given below is a question followed by two statements
- How many daughters does Swati have?
- Statement 1-Renu's mother has three children
Statement 2 Bana is Renu's sister and is Swati's daughter
- (A) Only statement 1 is required to answer the question
(B) Only statement 2 is required to answer the question
(C) Both statements together are required to answer the question
(D) Both statements taken together cannot answer the question

DIAGRAMMATIC REASONING (40 x 4 marks = 16 marks.)

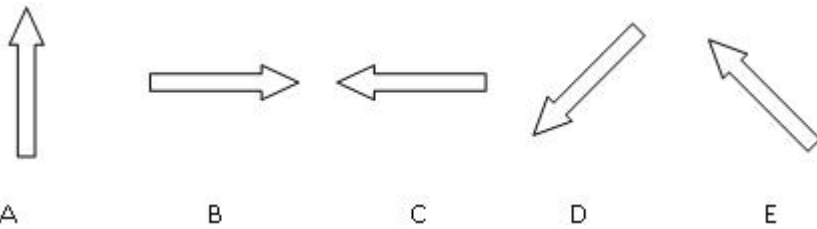
1. Select the option which is the odd one out



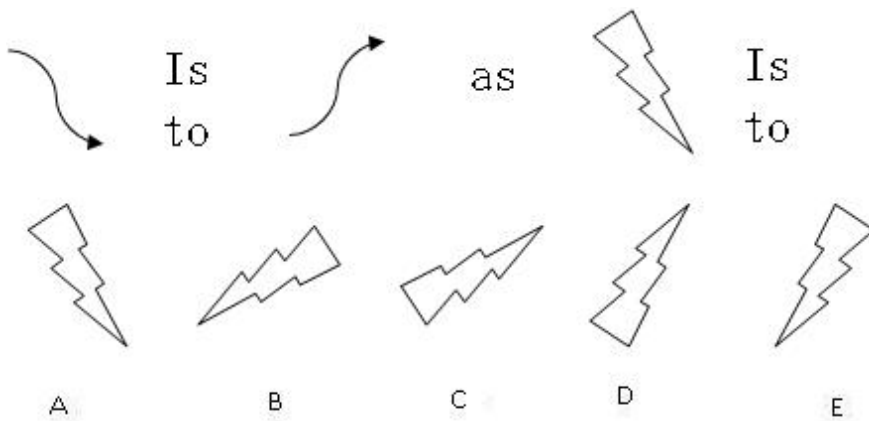
2.



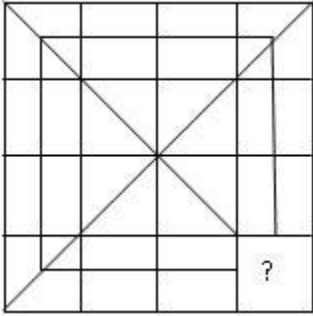
Choose the option that completes the above series



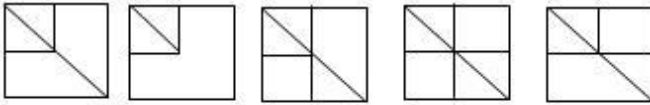
3. Given below is a relation between the first two diagrams. Select the option which has a similar relation with the diagram provided



4.



Which option completes the above diagram?



A

B

C

D

E

NUMERACY (60 x 3 = 18 marks.)

1. If $\ln \frac{y}{1-y} = a + bx$, $0 < y < 1$, then

(A) $y = \frac{e^{a+bx}}{1 - e^{a+bx}}$

(B) $y = \frac{e^{a+bx}}{1 + e^{a+bx}}$

(C) $y = e^{1-(a+bx)}$

(D) $y = e^{1-(a+bx)}$

(E) None of a, b, c or d is correct

2. Find the value of x if $2^{x-1} = \left(\frac{1}{2}\right)^{4x}$

(A) -1/3

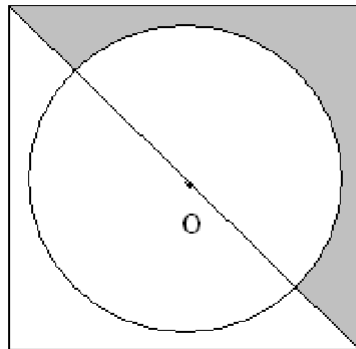
(B) 1/3

(C) -1/5

(D) 1/5

(E) None of a, b, c or d is correct

A



B

3. In the above diagram there is a circle embedded in a square. Both the circle and square have the same centre point O

The diagonal of the square AB is drawn which passes through the centre of the circle

If one side of the square is equal to 14 cms and the radius of the circle is 7cm

What is the area of the shaded portion?

(A) 21 cm²

(B) 42 cm²

(C) 77 cm²

(D) 99 cm²

(E) None of the above

4. Let $f(x) = e^x - 1$ and $g(x) = x^2$. Find $f(g(x))$

(A) $(e^x - 1)x^2$

(B) $e^{2x} - 1$

(C) $(e^x - 1)^2$

(D) $e^x x^2 - 1$

(E) $e^{x^2} - 1$

5. Solve the system of equations $2xy - y = 1$ and $x - y = 0$ for $x, x > 0$

(A) 0

(B) $1/2$

(C) 1

(D) 2

(E) None of a, b, c or d is correct

6. If $(e^x)^2 + e^{2x} = 1$, then

(A) $x = 0$

(B) $x = -2$ or $x = 0$

(C) $x = 0.5 \ln(0.5)$

(D) $e^{x^2} + e^{2x} = 1$

(E) None of a, b, c or d is correct

IO (100 x 2 = 20 marks.)

1. X % Y means X is the wife of Y
X \$ Y means X is the daughter of Y
X ^ Y means X is the brother of Y

Then what does A% C ^ B mean?

- (A) B is the daughter of A
(B) B is the husband of A
(C) A is the brother of B
(D) A is the sister in law of B
2. If the word COLD is coded as 24-12-15-23
Then how should the word LIKE be coded?
- (A) 15-18-16-22
(B) 8-14-9-16
(C) 12-9-11-5
(D) 14-17-15-21
3. Q W E T R Y U I O P A S D F G H I J K L Z X C V B N M
Three of the following four options are alike based on their position in the above arrangement. Which of the options is the odd one out?
- (A) WPQ
(B) ZNJ
(C) SEZ
(D) YAE
4. Given below are two statements
Statement 1- Most fruits are flowers
Statement 2 -Some flowers are plants
- On the basis of these two statements, given below are two conclusions which may or may not be accurate
- Conclusion 1- Some plants are flowers
Conclusion 2 - All fruits are plants
- Choose the correct option based on the data given above
- (A) Conclusion1 alone is correct and Conclusion 2 is incorrect
(B) Conclusion 2 alone is correct and Conclusion 1 is incorrect
(C) Both Conclusions are correct
(D) Both Conclusions are incorrect

5. Among the four options given below three are alike in a certain manner whereas one is different. Identify the option that is different from the other three

(A) 168
(B) 224
(C) 288
(D) 325

6. What should replace the question mark?

4	12
3	49

5	30
6	151

4	28
7	?

- (A) 7
(B) 112
(C) 113
(D) 56
7. There is a flight leaving for Las Vegas from Los Angeles at an interval of every one hour and forty five minutes. An announcement was made at Los Angeles airport stating that the last flight to Las Vegas had left thirty five minutes ago and the next flight will leave at 11am. At what time was the announcement made?

(A) 8:50am
(B) 9:10am
(C) 9:50am
(D) 10:10am

8. In the following series of instructions

A stands for sleep
B stands for awake
C stands for lie down
D stands for dance
E stands for rest

If the below sequence is continued what instruction would logically follow next?

A C D E C E B E B C D C A C D E C E B

(A) Sleep
(B) Awake
(C) Lie Down
(D) Rest

9. In a certain encoding technique the words 'Sara is bright' is coded as 325
'Larry is strong' is coded as 936
'Larry likes bright people' is coded as 6241

What word does the number 2 stand for?

- (A) Sara
- (B) Bright
- (C) People
- (D) Is

10. Given below are two words exhibiting a particular relationship
Evening : Night

Select the option below which represents a similar relationship?

- (A) Death: Birth
- (B) Moon: Stars
- (C) Joy: Sadness
- (D) Spring: Summer

READING COMPREHENSION (50 x 4 = 20 marks.)

The manner in which a child acquires language is a matter long debated by linguists and child psychologists alike. The "father" of most nativist theories of language acquisition is Noam Chomsky, who brought greater attention to the innate capacity of children for learning language, which had widely been considered a purely cultural phenomenon based on imitation. Nativist linguistic theories hold that children learn through their natural ability to organize the laws of language, but cannot fully utilize this talent without the presence of other humans. This does not mean, however, that the child requires formal tutelage of any sort. Chomsky claims that children are born with a hard-wired language acquisition device (LAD) in their brains. They are born with the major principles of language in place, and with some parameters to set (such as whether sentences in the language they are to acquire must have explicit subjects). According to nativist theory, when the young child is exposed to a language her LAD makes it possible for her to set the parameters and deduce the grammatical principles, because the principles are innate.

This is still a controversial view, and many linguists and psychologists do not believe language is as innate as Chomsky argues. There are important arguments for Chomsky's view of development, however. These include the idea of universal grammar, the similarities that underlie every human language. Another argument is that without a propensity for language, human infants would be unable to learn such complete speech patterns in a natural human environment where complete sentences are the exception. This is known as the poverty of stimulus argument. Psychologists like Catherine Snow at Harvard, who study parent-child interaction, however, point out that children do not have to deduce the principles of language from impoverished and ungrammatical scraps of talk. Many studies of child directed speech or CDS have shown that speech to young children is slow, clear, grammatical, and very repetitious, rather like traditional language lessons. Social interactionists like Snow theorize that adults play an important part in children's language acquisition.

Linguist Eric Lenneberg states that the crucial period of language acquisition ends around the age of 12 years. He claims that if no language is learned before then, it can never be learned in a normal and fully functional sense. This is known as the "Critical Period Hypothesis".

An interesting example of this is the case of Genie, otherwise known as "The Wild Child". A thirteen-year-old victim of lifelong child abuse, Genie was discovered in her home on November 4th, 1970, strapped to a potty chair and wearing diapers. She appeared to be entirely without language. Her father had judged her retarded at birth and had chosen to isolate her, and so she had remained up until her discovery. It was an ideal (albeit horrifying) opportunity to test the theory that a nurturing environment could somehow make up for a total lack of language past the age of 12. Sadly, she was unable to acquire language completely. Due to this and other complications, she eventually ended up in an adult foster care home.

Detractors of the "Critical Age Hypothesis" point out that in this example and others like it, the child is hardly growing up in a nurturing environment, and that the lack of language acquisition in later life may be due to the results of a generally abusive environment rather than being specifically due to a lack of exposure to language.

1. Which of the following is true as per the passage?
 - (A) Most studies of child directed speech have shown speech to children is ungrammatical and unclear
 - (B) Nativist theories of language accord higher importance to the innate ability of children in acquiring language skills than other linguistic theories
 - (C) Linguists agree on the process through which children acquire language skills
 - (D) According to the Critical Period Hypothesis, language skill acquisition is improved after a child exceeds the age of twelve

2. Which of the following descriptions best describes the meaning of LAD (Language Acquisition Device) according to the above passage?
 - (A) LAD helps children connect different languages together
 - (B) LAD helps a child translate languages from one
 - (C) LAD helps children have a basic understanding of the principles of language
 - (D) LAD helps improve children's non verbal communication.

3. Which of the following is not an argument in favour of Chomsky's theory of how children acquire language skills?
 - (A) Human infants attain the ability to form complete sentences even if they have minimal exposure to them in their environment
 - (B) Studies prove that when adults talk to children their speech and language is similar to traditional language lessons
 - (C) Most languages of the world share several similar grammatical rules
 - (D) All of the above are arguments in favour of Chomsky's theory of how children acquire language skills

4. What is the primary purpose of the author for providing the example of Genie in the second last paragraph?
 - (A) To provide an example strengthening Noam Chomsky's nativist theory of language acquisition
 - (B) To bring to the attention of the reader terrible abuse that a parent can inflict on his own child
 - (C) To provide a counter example against the Critical Period Hypothesis
 - (D) To provide an example in support of the Critical Period Hypothesis

5. What does the word "impoverished" mean as used in the passage?
 - (A) Limited
 - (B) Having a dual meaning
 - (C) Destructive
 - (D) Indirect

GENERAL AWARENESS(80 x 2 = 16 marks.)

1. Which of these American Presidents is the author of the book “The Audacity of Hope”?
 - (A) Barack Obama
 - (B) George Bush
 - (C) Bill Clinton
 - (D) Jimmy Carter

2. Of which country was Saddam Hussein the former President (ruler) of?
 - (A) Iran
 - (B) Libya
 - (C) Egypt
 - (D) Iraq

3. What is the diet of the Blue Whale (the world’s largest animal) primarily consist of?
 - (A) Coral
 - (B) Star Fish
 - (C) Tuna
 - (D) Plankton

4. Which of the following social networking websites recently listed on the New York Stock Exchange?
 - (A) Facebook
 - (B) LinkedIn
 - (C) Twitter
 - (D) Myspace

5. What city is the capital of Brazil?
 - (A) Rio De Janeiro
 - (B) Brasilia
 - (C) Sau Paulo
 - (D) Buenos Aires

6. Which of the following music group’s lead singer is named Chris Martin?
 - (A) U2
 - (B) The Killers
 - (C) Cold Play
 - (D) Aerosmith

7. Mercury holds what significance in Roman Mythology?
- (A) Mercury was the God of war
 - (B) Mercury was the God of the seas
 - (C) Mercury was the messenger of the Gods
 - (D) Mercury was the God of beauty
8. Which country has won the rights to host the 2022 football World cup?
- (A) Qatar
 - (B) South Africa
 - (C) Russia
 - (D) Brazil

ANSWERKEY FOR SPJET SAMPLE PAPER 3

LOGIC

1	C
2	D
3	B
4	A
5	D

IQ

1	D
2	A
3	C
4	A
5	D
6	C
7	C
8	D
9	B
10	D

DIAGRAMMATIC REASONING

1	E
2	C
3	D
4	A

READING COMPREHENSION

1	B
2	C
3	B
4	D
5	A

NUMERACY

1	B
2	D
3	A
4	E
5	C
6	C

GK

1	A
2	D
3	D
4	B
5	B
6	C
7	C
8	A