

Research Aptitude Test**GENERAL INFORMATION FOR APPLICANTS**

The Xavier University Research Aptitude Test (X-RAT) is a test of some basic skills considered essential for researchers, namely writing ability, verbal ability and comprehension, reasoning, and quantitative aptitude. Please keep in mind the following instructions regarding the test. Similar instructions will appear on the cover page of the test booklet. You should reach the test centre 30 minutes before time, so that you will have time to read the actual instructions before the test begins.

1. You should have with you a scale (or paper knife, to tear open the seal in the test booklet), and your pens. Books, notebooks, calculators, computing aids, and mobile phones are not allowed. Use a pen with either black or blue ink. Once the test begins, you will not be allowed to leave the room until the test is over.
2. The test booklet contains four sealed sections (A, B, C, D). The time allowed for different sections are: Section A: **30** minutes, Section B: **40** minutes, Section C: **40** minutes, and Section D: **40** minutes [Total: 150 minutes].
3. You will be evaluated essentially on your writing, verbal ability and comprehension, reasoning, and quantitative skills. You should use formal English for all your answers (i.e. avoid informal abbreviations, casual usages, slang vulgar expressions, etc.). Section A is the writing ability section in which you need to write on the topic given as per instructions. Section B will assess your skills of verbal ability and comprehension. Section C will assess your reasoning, and Section D will assess your quantitative skills.
4. During the test, you should feel free to write any feedback (about the test, specific questions, defects in the booklet, etc.) on the feedback page given at the end. You should not write your name, ID, or any identification anywhere in the test booklet, except on the front page, within the space provided for this purpose.
5. When the invigilator announces the time to start, you will use your scale (or paper knife) to tear open the seal for Section A and start answering.
6. There will be no negative marking. All the questions are self-explanatory. No further clarification should be sought from the invigilator. In all the sections, you are allowed to do rough work either in the margin or on the reverse side of the paper. Such rough work will not be taken into account for evaluation.
7. All answers are to be written within the space provided. No additional paper will be given. Therefore, you should plan your answers suitably. If for any extraordinary reason you need extra space while answering Section A and B, you could write on the reverse side of the page.
8. For some of the questions, the answers will be expected within a specified a word-count range. This helps in assessing your ability to compose an answer of an expected size. Therefore, answers that fall outside the specified range will not be taken favourably. You must write the actual word-count at the end of your answer to such questions and ensure it is within the range specified.
9. If you finish answering a section before time, you should utilize your balance time in revising your answers in that section. You are not allowed to go forward until the invigilator announces the time to go to the next section. You are not allowed to go back to the previous section(s) at any time.
10. At the end of the test, you should leave the room quietly after all the test booklets and admit cards are collected by the invigilator.

# SAMPLE QUESTIONS WITH GUIDELINES FOR ANSWERING

## SECTION A (30 Minutes)

**Total Marks: 20**

Two sample questions are given below to test your writing ability. Please remember that word-limits apply to both the questions. You must count and write the number of words at the end of each answer. These answers may also be used at the second stage of the selection process, if you are short-listed.

### Sample Questions

1. Write a short passage from your own experiences where you had to 'cut corners'. Ensure the idiom is mentioned in your written passage. [Word limit 250]
2. Please describe how you have prepared for taking up doctoral-level studies at a management school [within 150-250 words].

When you finish writing both the answers, you should review your answers in this section only. The invigilator will announce when it is time to go to the next section.

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## SECTION B (40 Minutes)

**Total Marks: 25**

This section tests your verbal ability and comprehension. Please follow the instructions provided along with the questions to complete this section.

### Sample Questions

**Related To Verbal Ability:** There can be questions on correcting sentences, identifying errors in sentence parts, sequencing jumbled-up sentences, and various other aspects that can test the verbal understanding of a scholar. You may refer to the following book and similar other materials

Arun Sharma. How to Prepare for Verbal Ability and Reading Comprehension for CAT. McGraw Hill Education

### **Related To Comprehension:**

Please read the passage given below and the answer the questions that follow:

Comparable worth is a concept that rejects the premise of a separate and lower wage hierarchy for jobs that are done primarily by women, arguing instead that earnings should reflect only the worth of the work performed. This worth should be determined by an evaluation system that rates jobs according to their social importance and skill requirements. Because comparable worth does not attack all forms of inequality, it can have only a modest direct effect on the overall degree of inequality in society, but in attacking gender inequality in the job classification system, it attacks a major component of gender inequality in the United States. The likelihood that other forms of inequality will become more manifest with the lessening of gender inequality is not a valid argument against-comparable worth. Indeed, struggles for comparable worth may help launch campaigns against similar forms of inequity. Still, while conservatives have battled hard against comparable worth, radicals have been reluctant to fight for it because they see the narrow presentations in

comparable worth litigation as the limits of concept. But in addition to helping redress particular inequalities, comparable worth could open a discussion of the entire wage system. Its theoretical and political impact will reach far beyond the framework in which it was conceived and force a rethinking of assumptions underlying current employment practices and the market itself.

How comparable worth will affect the hierarchy of wages is more difficult to foresee. It does not directly challenge the concept of a hierarchy; in fact, its insistence that jobs must be evaluated implies a hierarchy. However, its rejection of the market as an adequate basis for determining wages initiates a discussion of how value should be assigned to jobs. Advocates of comparable worth have challenged the prevailing standards of evaluation, which stem from formal job evaluations first developed in industrial settings. These evaluations, based on points awarded for difficult job tasks, gave considerable emphasis to such activities as strenuous lifting and the operation of expensive equipment. Consequently, the skills and knowledge more typical of work done by women are less heavily emphasized. The Dictionary of Occupational Titles reveals numerous current instances of such imbalance in job ratings.

While comparable-worth advocates accept the principle of a hierarchy of wages, arguing only that they seek more objective measures of job worth, the issues they raise provoke a broader debate. This debate does not, as the opponents have claimed, concern the feasibility of setting up and applying evaluative standards. Employers have done that for centuries. Rather the debate is about the social values and priorities underlying the wage hierarchy and ultimately, the market where age-old conventions and political, as opposed to purely economic, forces enter the process of setting wages.

1. Write a precis in 150 words and give a title
2. Why do you think the radicals did not support comparable worth?
3. What is the meaning of the term: Advocate?
4. It can be inferred that the phrase “a separate and lower wage hierarchy for jobs that are done primarily by women,” as used in the introductory lines of the passage, most nearly means which of the following? (Choose the correct option)
  - A. That there is a greater range of salaries for men than for women.
  - B. Women typically receive less money than men do for doing jobs of approximately the same value.
  - C. That there are fewer wage-earning women than men in the work force.
  - D. Men and women typically do not compete for the same jobs.

When you finish answering the questions in this section, you should review your answers in this section only. The invigilator will announce when it is time to go to the next section.

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## SECTION C (40 Minutes)

**Total Marks: 30**

**Six sample questions (C1, C2, C3, C4, C5, C6) are listed below for this section. These questions are designed to assess your reasoning skills. Please read the instructions given below very carefully before you start answering:**

**General Instructions:**

- ❖ **Most of the questions have four options (a), (b), (c), (d) out of which only one is correct**
- ❖ **There is no negative marking.**
- ❖ **To answer, please put a tick mark following the manner given below on the option which you think is correct:**

(a) .....     (b) .....    (c) .....    (d) .....

❖ In case you want to change the answer option, please do the following:

If you are answering in pen, cross out the tick marks on options which you have marked and now intend to change, and then put a tick mark following the above manner on the option which you now think is correct. For example, if you have initially marked option (c), and now intend to change the answer option to (b), this can be done as follows:

(a) ..... (b) ..... (c) ..... (d) .....

If you are answering in pencil, to change your answer, erase completely the tick mark sign(s) which you have already given using good quality eraser, and then put the tick mark sign following the above manner on the option which you now think is correct

- ❖ Questions containing tick marks on two or more answer options will not be evaluated for correctness
- ❖ Rough work is allowed in the margin or on the reverse side of the paper, which will not be evaluated.

Answers are given to all the sample questions. The answer or the correct answer option appear in the font style (boldface)

**C1. Based on the information given below, answer the following questions**

Arun Sarin has an account with CITI bank which also provides ATM CARD to all its account holders. One day Mr. Sarin lost his ATM CARD and went to the bank to report the same. But he could not recall his 9 digit ATM card number which consists of digits from 1 to 9. The only thing he remembers is that the 9 digit number was divisible by 9. If we delete the last digit, the eight digit number remaining is divisible by 8, further if we delete one more digit; it is divisible by 7 and so on. The number can be viewed as ABCDEFGHI which consist of digits from 1 to 9.

1. Find the sum of first 5 digits of number on the ATM Card?  
**(a) 23**      (b) 20      (c) 22      (d) None of these
2. What is the number represented by the alphabet D on the ATM card?  
**(a) 6**      (b) 3      (c) 1      (d) None of these
3. What is the alphabet represented by the digit 7 on the ATM card?  
(a) B      (b) D      **(c) G**      (d) None of these

**C2. In each of the following questions, there is a main statement followed by two additional statements - A & B. Write down your answer (1, 2, 3, or 4) based on the following instructions.**

**Your answer is:**

- 1: if the main statement is not inconsistent with A but is inconsistent with B.**
- 2: if the main statement is not inconsistent with B but is inconsistent with A.**
- 3: if the main statement is inconsistent with both A and B.**
- 4: if the main statement is inconsistent with neither A nor B.**

1. Main statement: Among three classes x, y and z the average marks of classes x & y together is 30, that of y & z together is 40 and that of z & x is 50.  
(A) The average marks of all the three class x, y, z together is more than 35.  
(B) The average marks of all the three class x, y, z together is 52.

**Your Answer: 1**

2. Main statement: The present ages of A & B are in the ratio 5 : 4.  
 (A) 15 years ago, the ages of A & B were in the ratio 6 : 5.  
 (B) 15 years hence, the ages of A & B will be in the ratio 3 : 2.

**Your Answer: 3**

3. Main statement: The L.C.M of P & 180 is 900 (where P is a natural number).  
 (A) H.C.F of P & 180 is 7.  
 (B) H.C.F of N & 180 is 25.

**Your Answer: 3**

**C3. Each question contains six statements followed by four sets of combinations of three. Choose the set in which the statements are logically related.**

1. A. Only smart people crack X-RAT.  
 B. Smart people like X-RAT s.  
 C. Ram is smart.  
 D. Ram dislikes X-RAT s.  
 E. Ram cracked X-RAT.  
 F. Ram is dumb.  
 (a) ACE      (b) BDF      **(c) AEC**      (d) ADF
2. A. Some theory is practical.  
 B. All theory is bunkum.  
 C. All practical is bunkum.  
 D. Some practical is bunkum.  
 E. Some practical is not bunkum.  
 F. No practical is bunkum.  
 (a) ABC      **(b) ABD**      (c) ABE      (d) ABF

**C4. Based on the information given below answer the following questions.**

To Argue is to convince someone that your point of view is correct. An Assertion is a point of view. Through argument an issue is brought to a conclusion with the help of a Supporting Reason. A Counter Argument contains logic opposing the assertion. Categorize the statements in the arguments that follow as :

*A : Concluding Assertion*  
*C : Irrelevant Statement*

*B : Supporting Reason*  
*D : Counter Argument*

1. 1. Although a cochlear implant does not restore the natural hearing mechanism, it does permit the interpretation of speech and a high level of interaction with the 'hearing world'.  
 2. A procedure known as a cochlear implant can allow people who exhibit certain kinds of deafness, to detect and interpret sounds.  
 3. In addition to concerns regarding the risk of surgery to correct a non-fatal disorder, there are an increasing number of cases in which the procedure is not effective.  
 4. Deaf individuals often value their deafness as an integral part of their identity and any intrusion into their lives is misinterpreted.  
 (a) BACD      (b) DACD      **(c) BADD**      (d) CDDA

2. 1. Business has to constantly contend with volatile variables.
2. Free trade is impossibility.
3. In business, one encounters situations where there is a sudden drying up of raw material supplies.
4. New laws concerning business income have been framed.

(a) ACBC      (b) CACB      (c) BABC      (d) ACBB

**C5.** Two persons, Amar and Ishwar, are having a witty conversation. Ishwar says he has three children, all of whom have the same birthday (but all weren't necessarily born in the same year). Amar asks their ages. Isaac replies, "The product of the ages of my children is 72." Amar points out that this is not enough information to determine their ages. Ishwar responds with another clue -- he tells Amar the sum of the ages of his children. But Amar again points out that there is not enough information. Finally Ishwar says, "My youngest child is Ganesh." At last, Amar correctly determines the ages of Ishwar's children. What are the ages of Ishwar's children?

**Your Answer: 2, 6, 6**

**C6.** There are some arguments/statements appearing below, which may have some logical oddities/flaws. Please indicate whether the arguments/statements are logically sound or unsound. If it is the latter, then describe the flaws you notice in them:

<i>Arguments or Statement</i>	<i>Space for Answer</i>
(a) All cars can be categorized into three broad classes: luxury cars, low-priced cars, and non-polluting cars.	<b>Unsound: There is a logical problem. Multiple criteria have been used in the classification of cars, furthermore in an incomplete manner. As a result, the classes are overlapping and do not cover all cars.</b>
(b) I am an Indian and India lives in her villages. Therefore, I live in a village.	<b>Unsound: There are logical and semantic problems. Logically, there is a category mistake in assuming what is true of India must also be true of Indians. Semantically, the word 'live' assumes different meanings in the two sentences.</b>

## SECTION D (40 Minutes)

**Total Marks: 25**

Ten sample questions are listed below. These questions given below are designed to assess your quantitative and analytical skills. Please read the instructions given below very carefully before you start answering:

**General Instructions:**

- ❖ Some of the questions have four options (a), (b), (c), (d) out of which only one is correct
- ❖ There is no negative marking.
- ❖ To answer, please put a tick mark following the manner given below on the option which you think is correct:

(a) .....  (b) ..... (c) ..... (d) .....

❖ In case you want to change the answer option, please do the following:

If you are answering in pen, cross out the tick marks on options which you have marked and now intend to change, and then put a tick mark following the above manner on the option which you now think is correct. For example, if you have initially marked option (c), and now intend to change the answer option to (b), this can be done as follows:

(a) .....  (b) .....  (c) ..... (d) .....

If you are answering in pencil, to change your answer, erase completely the tick mark sign(s) which you have already given using good quality eraser, and then put the tick mark sign following the above manner on the option which you now think is correct

- ❖ Questions containing tick marks on two or more answer options will not be evaluated for correctness
- ❖ Rough work is allowed in the margin or on the reverse side of the paper, which will not be evaluated.

Answers are given to all the sample questions. The answer or the correct answer option appear in the font style (boldface)

### Direction for Questions 1 - 8

Answer the following questions independently

1. How many 2 digit numbers are there such that absolute difference of the square of the 2-digit is a prime number.  
(a) 21      **(b) 12**      (c) 10      (d) None of these
2. James and Ronald started simultaneously from P and Q towards Q and P respectively. After reaching their destination they return back to their respective starting points. After reaching their starting points, the process continues indefinitely, but every time they meet, both of them decrease their speed by 25% each. First time they meet at a distance of 8 km from Q and second time they meet at a distance of 4 km from P. If the speed of the faster among them is less than twice the speed of the slower among them, where will they meet for the third time?  
(a) 20 km from Q      **(b) 20 km from P**  
(c) 12 km from Q      (d) cannot be determined
3. An authentic gold coin weighs 10 gm while a counterfeit gold coin weighs 9 gm in a Jewellery shop. There are 10 stacks of 10 gold coins each. They are identical, except that one stack contains entirely of counterfeit coins. How many weights are needed to reveal which stack is counterfeit?  
**(a) 1**      (b) 2      (c) 3      (d) None of these
4. If  $x$  is real, find the real values of 'a', which make  $x^2 - ax + 1 - 2a^2$  always positive.  
(a)  $a < -2/3$       **(b)  $-2/3 < a < 2/3$**       (c)  $-2/3 \leq a \leq 2/3$       (d)  $a > 2/3$
5. The latest registration number issued by the Delhi authority is "DL 5S 2234". If all the no. and alphabets before this have been used up, then find how many vehicles have a registration number starting with DL 5?  
(a) 192234      (b) 192225      **(c) 182234**      (d) None of these
6. A sum of money is distributed among a certain number of persons. The second person receives Re.1 more than the first, the third Rs.2 more than the second, the fourth Rs.3 more than the third and so on. If the first person gets Re.1 and the last person Rs. 67, then find the total number of persons among whom the money was distributed?  
(a) 9      (b) 10      **(c) 12**      (d) None of these

7. Nine blocks shown on the right-hand-side are to be filled by letters A to I. It is given that

- I. A is just above B.                      II. B is just right to C  
III. D is just left to E.                  IV. F is just below I.  
V. G is just right to H.


Elements of which of the following can be fully determined?

- (a) **Middle row**            (b) Middle column            (c) Left column            (d) Right column

8. A person is expert in assembling a computer. He always prefers to take up assignments of assembling certain number of computer. The charge that he fixes for completing the assignment has got two parts: The fixed part of his wage Rs.380 and the variable part is  $n^2$  where  $n$  = number of computers to be assembled. If in an assignment average amount charged per computer by the person is not more than Rs.39 then calculate maximum and minimum number of computers in the assignment.

- (a) 18 and 19            (b) 19 and 21            (c) 20 and 21            (d) **19 and 20**

### **Direction for Questions 9 - 10**

**Based on the information given below, answer the following questions.**

A dictionary has 700 pages numbered from 1 to 700. Ramesh, a curious observer wanted to count all the pages that had the digit 3 written on the page number.

9. How many pages were there?

- (a) 114            (b) 195            (c) 239            (d) **None of these**

10. Find how many 3's were present in all the pages from 1 to 700?

- (a) 220            (b) 140            (c) 239            (d) **240**

With this section completed, you reach the end of the *Xavier University Research Aptitude Test*. If you still have time, you should feel free to review your answers in this section only.

## **SOME USEFUL TIPS**

1. To get more clarity on the types of question expected in this test, you may read more about: *analytical writing, common errors in English, standard English, logical fallacies, logic puzzles, mathematical reasoning, data interpretation, data analysis, probability and statistics, etc.*

2. Writing an answer within a specified word-count range requires some practice. To improve your skill in this area, try writing something (e.g., your views on education or your summary of an interesting article) using different word-counts. At first you may write it in about 100 words. Then write it again in about 50 words. You may continue experimenting with this for different lengths, say 150 or 200 words, etc. When a range is specified in a question, you should target to write an answer that will have a word-count near the mid-point of the range. For example, if the question specifies 100-200 words, you should target to reach about  $(100+200)/2 = 150$  words. That way, you are surer to stay within the specified range.

3. The numerical questions in Section D require a higher-secondary level mathematical knowledge. Although X-RAT is not designed to be a speed-test, you should use your time in this section judiciously. Be careful with the calculations and double-check your answers.