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JEE / NEET / Olympiads / NTSE / Boards



P-TQE 2022

Pinnacle Talent Quest Exam

For Classes 5th to 10th

(Stage-2)

Pinnacle Talent Quest Exam

SAMPLE TEST PAPER

Class 8th



INSTRUCTIONS

Duration: 2 Hours

Maximum Marks: 240

Please read the instructions carefully. You are allotted 5 minutes specifically for this purpose.

Things NOT ALLOWED in EXAM HALL: Blank Paper, clipboard, log table, slide rule, calculator, camera, mobile and any electronic or electrical gadget. If you are carrying any of these, then keep them at a place specified by invigilator at your own responsibility.

I. General Instructions

1. This Booklet is your question paper. Don't break the seal of booklet until the invigilator instructs to do so.
2. The answer sheet (ORS) is provided to you separately which is a machine readable optical response sheet. You have to mark your answers in the ORS by darkening bubbles as per your answer choice, by using black or blue ball point pen.
3. This question paper contains three sections as follows:
 - a) **Section - A** contains total 30 questions (Q. No. 1 to 30), 10 each of Physics, Chemistry & Biology, which have only one correct answer.
 - b) **Section - B** contains total 10 questions (Q. No. 31 to 40) of Mathematics, which have only one correct answer.
 - c) **Section - C** contains total 20 questions (Q. No. 41 to 60) of Mental Aptitude.

Part-1: This part contains 10 Logical Puzzles which have only one correct answer.
Part-2: This part contains 10 Mathematical Puzzles, which have the answer from 000 to 999.
4. Rough spaces are provided for rough work inside the question paper. No additional sheets will be provided for rough work.
5. If you are found involved in cheating or disturbing others, then your ORS will be cancelled.

II. Filling of OMR Sheet

1. Ensure matching of OMR sheet with the Question paper before you start marking your answers on OMR sheet.
2. On OMR sheet, darken the appropriate bubble with black/blue pen for each character of your Enrollment No. and your Name, Test Code and other details at the designated places.
3. Think wisely before darkening bubble as there is negative marking for wrong answer. Answer once marked by pen can't be cancelled.
4. Don't put any stain on ORS and hand it over back properly to the invigilator.
5. While attempting integer type questions, integer has to be marked in the following manner. For example, if the answer is 8, it has to be attempted as 008, if the answer is 59, it has to be attempted as 059.

III. Marking Scheme

Questions (1-50)

1. All the questions of **each Part** have only one correct answer.
2. If darkened bubble is **RIGHT** answer: 4 Marks.
3. If darkened bubble is **WRONG** answer: -1 Marks (Minus One Mark).
4. If no bubble is darkened in any question: No Marks.

Questions (51-60)

1. All the questions have integer type answer from 000 to 999.
2. If darkened bubble is **RIGHT** answer: 4 Marks.
3. There is no negative marking in this section.
4. If no bubble is darkened in any question: No Marks.

Please follow the instructions



5th to 10th Class Students GET READY FOR

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OF THE YEAR BY **PINNACLE** IS HERE!



P-TQE 2023

Pinnacle Talent Quest Exam

STAGE - 1 & STAGE - 2



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₹1 Crore



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EXCITING
PRIZES**

Test Date

Stage-1 2nd Oct & 16th Oct

Stage-2 30th Oct

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Registration fee is Rs. 200/-



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Establishing Milestones in Sangrur

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JEE MAINS & ADVANCE RESULTS

JEE MAINS RESULT 2022

 AIR 1805 Vishal Garg JEE-Main 99.80	 AIR 1752 Gagan Singla JEE-Main 99.81
 Monit Chawla JEE-Main 98.56	 Bhavansh Singla JEE-Main 98.43
 Vaibhav Mehta JEE-Main 98.37	 Krish Kumar JEE-Main 97.27
 Gurleen Saini JEE-Main 97.00	

JEE MAINS/Adv. RESULT 2021

 IIT-Roorkee Kartikay Ahuja JEE-Advance AIR 3675 JEE-Main %ile 99.42	 IIT-BHU Tanish Chugh JEE-Advance AIR 7533 JEE-Main %ile 98.52	 IIT-Jammu Savneet Kaur JEE-Advance AIR 10552 JEE-Main %ile 98.69
 PEC-Chd Deepak Gupta JEE-Advance AIR 10274 JEE-Main %ile 99.47	 PEC-Chd Disha Aggarwal JEE-Main %ile 98.59	
 PEC-Chd Nakul Garg JEE-Main %ile 98.58	 PEC-Chd Harneet Kaur JEE-Main %ile 97.93	 DTU - Delhi Karan Bansal JEE-Main %ile 97.59
 PEC-Chd Divyam Jain JEE-Main %ile 97.56		

JEE MAINS/Adv. RESULT 2020

 AIR 1092 Sanchit Garg JEE-Advance AIR 679 JEE-Main 99.94	 AIR 1785 Yadwinder JEE-Advance AIR 1670 JEE-Main 98.88
 IIT-Ropar Tejinder Singh JEE-Advance AIR 7737 JEE-Main 98.80	 DTU-Delhi Rajat Garg JEE-Main 99.69
 IIT-Allahabad Rahul Garg JEE-Main 99.66	
 IIT-Allahabad Karan Chhabra JEE-Main 99.45	 PEC-Chd Pratham Garg JEE-Main 99.03
 PEC-Chd Mohit Tuteja JEE-Main 98.16	

MEDICAL RESULTS

 Aarchi MBBS, AIMS - Mohali	 Arshdeep MBBS, GMC - Patiala	 Harmandeep Kaur MBBS, SGRD Amritsar	 Satvir Kaur MBBS, GMC - Amritsar
 AIR 1 SNST 2020 Ishatpreet Singh IISER - Mohali	 AIR 336 Gitika AIIMS Delhi Nursing	 AIR 30 Hitakshi B.Ph.T. PGIMER, Cdg	

ADV. OLYMPIADS

 Parth Garg IOQM & IOQA	 Paawan Khurana IOQM
 Vishal Garg IOQC & IOQA	 Krish Jindal IOQA

KVPY

 Nitish Singla Rank - 532
 Vishal Garg Rank - 937

NTSE

 NTSE Scholar Rank Punjab 38 Region Topper
 NTSE Rank Punjab 161

SST OLYMPIAD

 Dhruv Gaba IR - 104	 Dyumn Johar IR - 200
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IMO RESULTS

*IR INTERNATIONAL RANK

 Aashi IR - 8	 Pulkit Kansal IR - 21	 Pranavi Singla IR - 365	 Vrishti Mittal IR - 472	 Pratham Goyal IR - 608	 Dhruv Gaba IR - 654	 Bhavik Kansal IR - 660	 Maanvi IR - 1282
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NSO RESULTS

*IR INTERNATIONAL RANK

 Vrishti Mittal IR - 13	 Pulkit Kansal IR - 67	 Aashi IR - 97	 Pranavi Singla IR - 127	 Dhruv Gaba IR - 133	 Dhruv Mehta IR - 208	 Bhavik Kansal IR - 208	 Prithvi Garg IR - 239	 Divyana Bansal IR - 240	 Drishti IR - 262	 Mishi Gupta IR - 342	 Arshit Goyal IR - 374	 Pratham Goyal IR - 492
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CBSE RESULTS CLASS 12th

 99%	 97.6%	 97%	 97%	 96.6%	 96%	 95.6%	 95.6%	 95.6%
 95.6%	 95.6%	 95%	 95%	 94.2%	 94%	 94%	 95.6%	 93.4%
 Maths- 97	 Maths- 95	 Maths- 95	 Maths- 95	 Maths- 94	 Chemistry-99	 Chemistry-95	 Chemistry-92	 Physics-91

CBSE RESULTS CLASS 10th

 98.6%	 98.2%	 98.2%	 98%	 98%	 97.8%	 97.4%	 97.2%	 97%
 97%	 96.2%	 95.6%	 95.6%	 95%	 94.8%	 94.4%	 94.2%	 94%
 Maths- 100	 Maths- 98	 Maths- 97	 Maths- 94	 Maths- 94	 Science- 96	 Science- 96	 Science- 95	 Science- 94

What Makes Pinnacle Unique?

1 Best Faculty Team

2 Hi-Tech Classrooms

3 Customized Study material

4 Personal Attention

5 Unlimited Doubt Sessions

6 Best Testing Methodology



Lecture
Recording
Lab



Revision
Classes &
Self Study
Zones



Online Testing
Lab (CBT)



Smart & AC
Classrooms



Objective +
Subjective



Student
Performance
and
Analysis Report



Rich Library &
Researched
Study
Modules



Extra Support
to weaker
students



CCTV
Campus



Biometric
Attendance

Classroom Program

1 Comprehensive Classroom Lectures

All classes at Pinnacle are conducted by highly qualified and experienced faculty members, mostly IITians. Each chapter is started at the grass root level and is dealt to an extent which is the requirement of competitive examinations, with an aim of enabling the students to develop a comprehensive view of the whole chapter with a thorough understanding.



Doubt Clearance 2

"If you ask a question, you may appear fool for some time, but if you don't, you'll remain a fool for whole life." System at Pinnacle encourages all students to ask their doubts and questions.

3 Regular Tests Online and Offline

As JEE Mains and Advanced have gone completely online and NEET is in the pipeline, we have launched a dedicated online testing platform where students can practise over CBT (Computer Based Tests). The combination of online and offline testing modes based on latest JEE/NEET patterns ensure that students are at par with the recent changes. Students can check their test reports and performance analysis via a unique online login ID. Their results are also communicated to parents via SMS.



Addressing the Board Exam 4

Pinnacle has a very distinct methodology for preparing the students for competitive examinations while in full synchronization with Board Exams as well. Board level tests are conducted alongside the regular JEE/NEET tests and the copies are graded at a very meticulous level by teachers. Students receive methodological tips so as to perform excellent in the board Exams as well.



Engineering
JEE Main & Adv.



Medical
NEET



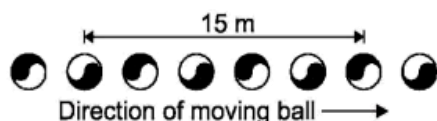
Foundation
VIII, IX, X, NTSE, Olympiads



Subjective
Boards

Section – A Science

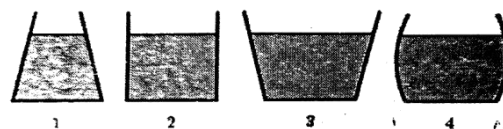
- The coefficient of static friction between two surfaces depends on
 - Nature of surfaces
 - The shape of the surfaces in contact
 - The area of contact
 - All of the above
- The given diagram shows a series of images of a moving ball captured by a camera.



The ball was moving at a constant velocity and the images were taken at a constant rate of 10 per second. What is the speed of the ball in kmph?

- 108 kmph
 - 110 kmph
 - 145 kmph
 - 115 kmph
- A block of mass 2 kg is placed on the floor. The coefficient of static friction is 0.4. Force of 2.8 N is applied on the block. The force of friction between the block and the floor is ($g=9.8 \text{ m/s}^2$)
 - 2.8 N
 - 7.84 N
 - 2.0 N
 - zero
 - A girl stands on a box having 60 cm length, 40 cm breadth and 20 cm height in three ways. Pressure exerted by the brick will be
 - Max. when length and breadth form the base
 - Max. when breadth and height form the base
 - Max. when height and length form the base
 - The same in all the above three cases
 - The two high bones (femurs), each of cross-sectional area 10 cm^2 support the upper part of a human body of mass 40 kg. Estimate the total pressure sustained by both the femurs. (Given $g = 10 \text{ m/s}^2$)
 - $1 \times 10^5 \text{ Pa}$
 - $2 \times 10^5 \text{ Pa}$
 - $3 \times 10^5 \text{ Pa}$
 - $4 \times 10^5 \text{ Pa}$
 - The vessels shown below all contain water to the same height. Rank them according to the pressure

exerted by the water on the vessel bottoms, least to greatest.



- 3,4,2,1
 - 4,3,2,1
 - 2,3,4,1
 - All pressures are the same
- A box is given a push across the floor. It comes to stop shortly after moving some distance, which one of the following reasons explains this?
 - Gravity is acting on the box in the direction opposite to the box's movement
 - Friction is acting on the box in the same direction of the box's movement
 - Friction is acting on the box in the direction opposite to the box's movement
 - The heat produced during the box's movement slows down the box
 - A ray deviates 90° after suffering reflection from a mirror. The angle of incidence is
 - 90°
 - 30°
 - 45°
 - 60°
 - When you stand in front of a plane mirror, your image is
 - Real, erect and smaller than you
 - Real, erect and the same size as you
 - Virtual, erect, and smaller than you
 - Virtual, erect, and the same size as you
 - What should be the angle between two plane mirrors so that whatever be the angle of incidence the incident ray and the reflected ray from the two mirrors be parallel to each other?
 - 60°
 - 90°
 - 120°
 - 175°
 - The nature of oxides of non-metals is:
 - Acidic
 - Neutral
 - Basic
 - Both a and b

12. Carpets made of rayon are blended with:

- (a) Cotton
- (b) Silk
- (c) Nylon
- (d) wool

13. Choose the correct option for the given statements

- (i) Plastics are generally bad conductors of electricity
- (ii) Ropes made by bakelite are used in cranes and elevators
- (iii) Teflon is a special plastic on which oil and water do not stick
- (iv) Plastic is non-biodegradable, hence is environment friendly.

(a) (i) \rightarrow T; (ii) \rightarrow T; (iii) \rightarrow F; (iv) \rightarrow F

(b) (i) \rightarrow F; (ii) \rightarrow F; (iii) \rightarrow T; (iv) \rightarrow T

(c) (i) \rightarrow T; (ii) \rightarrow F; (iii) \rightarrow T; (iv) \rightarrow F

(d) (i) \rightarrow F; (ii) \rightarrow T; (iii) \rightarrow F; (iv) \rightarrow T

14. Different components of petroleum are separated by fractional distillation. What is the correct sequence of fractions obtained in the fractionating column from bottom to top?

- (a) Petroleum gas, lubricating oil, kerosene, gasoline
- (b) Lubricating oil, Kerosene, gasoline, petroleum gas
- (c) Petroleum gas, gasoline, kerosene, lubricating oil.
- (d) Gasoline, kerosene, petroleum gas, lubricating oil

15. Sumit was performing an experiment with a blue coloured solution (X) in a beaker. By mistake a shaving blade fell into the beaker. After half an hour, he found that the colour of the solution in beaker changed to green (Y). What could be the solutions X and Y respectively?



- (a) Copper sulphate, Iron sulphate
- (b) Iron sulphate, copper sulphate
- (c) Iron sulphate, zinc sulphate
- (d) Copper sulphate, zinc sulphate

16. Substance X reacts with dilute HCl violently, Y reacts slowly while Z does not react at all. Y, Z and X could be respectively

- (a) Cu, Al, Fe
- (b) Al, Cu, K

(c) Na, Cu, Fe

(d) Al, Cu, Na

17. Match the columns

Column I

Column II

I. Sulphuric Acid

(P) Ca_3P_2

II. Calcium Phosphide

(Q) Na_2ZnO_2

III. Sodium Zincate

(R) H_2SO_4

(a) I-R, II-Q, III-P

(b) I-P, II-Q, III-R

(c) I-R, II-P, III-Q

(d) I-Q, II-P, III-R

18. Match the columns

Column I

Column II

I. Ag

(P) Mercury

II. Au

(Q) Silver

III. Hg

(R) Sodium

IV. Na

(S) Gold

(a) I-S, II-Q, III-R, IV-P

(b) I-Q, II-S, III-P, IV-R

(c) I-P, II-Q, III-R, IV-S

(d) I-R, II-S, III-Q, IV-P

19. Which one of the following four metals would be displaced from the solution of its salt by the other three metals?

- (a) Zn
- (b) Ag
- (c) Cu
- (d) Mg

20. $\text{Al}_2(\text{SO}_4)_3 + b \text{NaOH} \rightarrow \text{Al}(\text{OH})_3 + d \text{Na}_2\text{SO}_4$

Sum of $a+b+c+d$ is

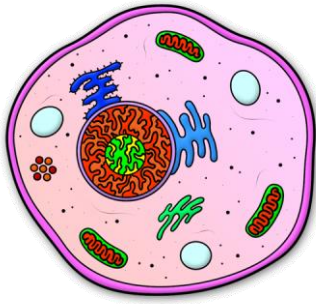
- (a) 7
- (b) 6
- (c) 10
- (d) 12

21. How many of the following living organisms can increase fertility of soil

- (i) Rhizobium (ii) Earthworm (iii) Some blue green algae (iv) Lactobacillus (v) Yeast

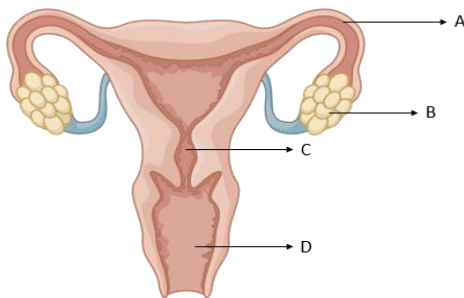
- (a) Two
- (b) Three
- (c) Four
- (d) Five

22. The given diagram of cell could probably be a



- (a) Bacterial cell
- (b) Mycoplasma
- (c) Animal cell
- (d) Data insufficient

23. Which of the following is primary sex organ in females?



- (a) A
- (b) B
- (c) C
- (d) D

24. Which of the following statements are incorrect?

- i) Prolactin is milk 'let down' hormone
- ii) Pituitary gland is known as master gland
- iii) Sebaceous gland is an endocrine gland
- iv) Pituitary gland is heterocrine gland

- (a) I, ii and iii
- (b) I and ii
- (c) ii, iii and iv
- (d) i, iii and iv

25. Consider the following statements and select the option which correctly identifies true (T) and false (F) ones.

- (i) Ploughing is an essential step in Soil Preparation
- (ii) Freshly harvested grains must be dried before storage
- (iii) Green manure is prepared by ploughing down certain plants into the soil
- (iv) Broadcasting of seeds is done by seed drill

- (a) (i) → T; (ii) → T; (iii) → F; (iv) → F
- (b) (i) → F; (ii) → T; (iii) → F; (iv) → F
- (c) (i) → T; (ii) → T; (iii) → T; (iv) → F
- (d) (i) → F; (ii) → T; (iii) → F; (iv) → T

26. Pick the odd one out from each series given below and select the correct option.

- (i) Uterus, Cervix, Prostate Gland, Vagina
- (ii) Scrotum, Epididymis, Seminal vesicle, Fallopian tube
- (iii) Sperm, ovum, gametes, fertilization
- (a) (i) Cervix; (ii) Scrotum; (iii) Gametes
- (b) (i) Vagina; (ii) Seminal vesicle; (iii) Gametes
- (c) (i) Prostate gland; (ii) Fallopian tube; (iii) Fertilization
- (d) (i) Prostate Gland; (ii) Seminal vesicle; (iii) gametes

27. Which of the following statements are correct?

- i) Sex of a baby is determined by the Y chromosome in males
- ii) Metamorphosis is observed in humans also
- iii) Menarche is the beginning of reproductive phase in women

- (a) i only
- (b) i and ii
- (c) i and iii
- (d) All three are correct

28. A bacteria undergoes binary fission in every two minutes. This bacterium can fill up a cup in 1 hour. In how much time will the cup be half filled?

- (a) 48 minutes
- (b) 58 minutes
- (c) 30 minutes
- (d) Data insufficient

29. Consider the following statements and select the option which correctly identifies true (T) and false (F) ones.

- (i) *Clostridium botulinum* is one of the bacteria that can cause food poisoning
- (ii) The body of fungus has thread like structural unit called hyphae
- (iii) Vaccine stimulates the immune system of an individual

- (iv) Adding sugar is one of the preservation method in case of jams
- (a) (i) – F; (ii) – F; (iii) – T; (iv) – F
 (b) (i) – T; (ii) – T; (iii) – T; (iv) – F
 (c) (i) – T; (ii) – T; (iii) – F; (iv) – T
 (d) (i) – T; (ii) – T; (iii) – T; (iv) – T

30. Who discovered the first living cell?
- (a) Robert Brown
 (b) Robert Hooke
 (c) Leeuwenhoek
 (d) Purkinje

Section – B Mathematics

31. If the radius of a circle is a rational number, then its area is given by a number which is:

- (a) Rational
 (b) Irrational
 (c) Integral
 (d) A perfect square

32. The sum of rational and irrational number is:

- (a) Rational
 (b) Irrational
 (c) Zero
 (d) Integers

33. Any number n divided by 3 leaves remainder 1. When n^3 divided by 3, leaves a remainder

- (a) 3
 (b) 2
 (c) 1
 (d) 0

34. The additive inverse of $\frac{-a}{b}$ is:

- (a) $\frac{a}{b}$
 (b) $\frac{b}{a}$
 (c) $\frac{-b}{a}$
 (d) $\frac{-a}{b}$

35. A and B are friends. A is older to B by 5 years. C is half the age of B while A's father D is 8 years older than twice the age of B. If the present age of D is 48 years, find the present age of A.

- (a) 25 years
 (b) 26 years
 (c) 24 years

- (d) 28 years

36. The least square number exactly divisible by 4, 6, 10, 15 is

- (a) 400
 (b) 100
 (c) 25
 (d) 900

37. Find the value of $\sqrt[3]{\sqrt{0.000064}}$ is:

- (a) 0.03
 (b) 0.02
 (c) 0.2
 (d) 0.3

38. If 'x' is a perfect square then, the next perfect square is

- (a) $x + 1$
 (b) $x^2 + 1$
 (c) $x^2 + 2x + 1$
 (d) $x + 2\sqrt{x} + 1$

39. If 9, $(x+20)$, $(x + 21)$ is a Pythagorean triplet, then value of x is:

- (a) 20
 (b) 30
 (c) 35
 (d) 40

40. Hemant purchased 120 rims of paper at ₹ 80 per rim. He spent ₹ 280 on transportation, paid octroi at the rate of 40 paise per rim and paid ₹ 72 to the coolie. If he wants to have a gain of 8%, the selling price per rim must be

- (a) ₹ 85
 (b) ₹ 88
 (c) ₹ 90
 (d) ₹ 95

Section - C Mental Aptitude

Part-I (Logical Puzzles)

41. Which of the following statement is/are true?
- There is two days' gap between Swimming and jogging
 - Skipping is done between the rest day and Gymnastics
 - Swimming is done on Thursday
 - All are true

Directions (Q.No. 12 to 16): Study the following information carefully and answer the questions given below:

A, B, C, D, E, F and G are sitting in a straight line facing north, but not necessarily in the same order. There is only one person between F and C. E sits between A and D. There are only two persons between E and G. F sits on the immediate left of A, who sits in the middle of the row.

42. How many persons are there between E and F?
- One
 - Two
 - Three
 - Can't be determined
43. Who among the following sit at the extreme ends of row?
- D, F
 - G, C
 - B, C
 - Can't be determined
44. Who among the following sits on the immediate right of D?
- G
 - E
 - F
 - B
45. Who among the following sits third to the right of A?
- C
 - G
 - B
 - E
46. Which of the following statements is true with regard to B?
- B is second to the right of A
 - B is fourth to the left of G
 - B sits at the extreme right end of the row
 - B sits at the extreme left end of the row

Directions (Q.No. 17 to 20): Study the following information carefully and answer the questions given below:

In certain code language, 'her village is Sarurpur' is written as 'aa be rs ki', 'Sarurpur people loves her' is written as 'rs ub ki wa', 'village people collect literature' is written as 'ba wa aa de', 'literature makes her perfect' is written as 'lo de ki fa'.

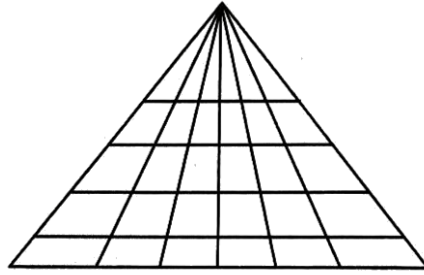
47. What is the code for 'people'?
- Pi
 - ub
 - wa
 - ki
48. What does 'be' stand for?
- Village
 - Loves
 - Sarurpur
 - Is
49. Which of the following is the code for 'village collect perfect loves'?
- ub aa fa ba
 - fa ub rs aa
 - aa ba ub lo
 - Cannot be determined
50. Which of the following is represented by the code 'rs ba de be'?
- Collect literature is Sarurpur
 - Village people makes perfect

- c. Village is made literature
- d. People collect perfect literature

Part-II (Mathematical Puzzles)

51. A few monkeys are moving. The 1st monkey says. "There are 8 monkeys behind me". The last monkey says, "There are 8 monkeys in front of me". The monkey in the middle says, "There are 8 monkeys in front of me and 8 monkeys behind me". How many monkeys are moving?
52. Mr. & Mrs. Khan live happily with their 4 sons and each son has 3 sisters. There is no one else in the family. Every child of Khan family shakes hand with each of his/her brothers and sisters. How many total handshakes have been performed?
53. You have six 8's and you may use any of the (+, ., -, /, ×) as many times as you like. How many arithmetical expressions which use the six 8's to form 1000 are possible?
54. On a dark night, 11 soldiers and 2 boys are on one side of a bridge which they need to cross. The soldiers weigh 80 kg each and the boys weigh 40 kg each. The bridge can bear a maximum load of 80 kg. It is mandatory for at least one person to carry a torch. Unfortunately, they have only 1 torch between them and the bridge is long so that they cannot throw the torch to the other side of it. All the 13 people take exactly 1 minute to cross the bridge. What is the minimum possible time in which all 13 of them can cross the bridge? (Assume the weight of the torch to be negligible)?
55. In an India –Pakistan T20 Match, Sachin Tendulkar faces the 1st ball. Let the maximum number of runs that he can score in the match are Y. Then what is the value of Y/39. (Assume there are no wides, no no-balls, no overthrows and the batsman can take a maximum of only 3 runs while running).
56. Read the following information and answer the questions that follow.
There are 70 clerks working with M/s. Jha Lal Khanna & Co. chartered accountant, of which 30 are female.
- I. 30 clerks are married.
 - II. 24 clerks are above 25 years of age
 - III. 18 Married clerks are above 25 years of age; among them 7 are males.
 - IV. 12 males are above 25 years of age
- How many unmarried girls are there above 25?
57. A shopkeeper wants to measure all the integral weights from 1 kg to 100 kg using a common balance only once. He can keep the weights on only one side of the balance. For ex. If a customer comes and asks for 35kg sugar, he should be able to put some combination of weights on one side of the balance such that total of these weights becomes 35. Similarly he should be able to measure 1kg, 2kg, 3kg,..... 99kg and 100 kg. What is the minimum number of weights needed?
58. Sam bought a box which contained some bananas for his 5 friends. None of his friends knew how many bananas are there. Sam asked them to guess the number of bananas in the box. Their guesses were 33, 37, 41, 51 and 39 but none of the guesses were correct. Sam then told them that their guesses deviated from the actual number of bananas by 5, 9, 1, 9 and 3 in no particular order. Can you tell the number of bananas in the box?
59. You have 8 black socks, 14 white socks and 18 grey socks in your drawer. The room is completely dark and you have no source of artificial light. What is the minimum number of socks that you'll have to pick up to ensure that you have a correct pair (a pair of same coloured socks)?

60. Let the no of triangles in the figure given below is X. Then find the value of $X-20$.



SPACE FOR ROUGH WORK