# IPEC EXPLOSIVE MIND TEST
## SAMPLE PAPER
## CLASS-VIII
# (For VIII to IX Moving Students)

**Time : 3 Hrs.**                                                                                    **Maximum Marks :284**

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

## INSTRUCTIONS

1. The booklet is your Question Paper. Do not break the seal of this booklet before being instructed to do so by the invigilator.

2. Blank spaces and blank pages are provided in the question paper for your rough work. No additional sheets will be provided for rough work.

3. Blank papers, clipboards, log tables, slide rules, calculators, cameras, cellular phones, pagers and electronic gadgets are **NOT** allowed inside the examination hall.

4. The answer sheet, a machine-readable Optical Response Sheet **(ORS),** is provided separately.

5. On breaking the seal of the booklet check that it contains **11** pages and all the **80** questions.

6. A candidate has to write his / her answers in the ORS sheet by darkening the appropriate bubble with the help of **Black ball point pen** as the correct answer of the question attempted.

7. **Question Paper Format :**

   This question paper consists of **4 Parts. Part-I**: **IQ** (Mental Ability), **Part-II**: Mathematics **Part - III** Physics and **Part-IV**: Chemistry

   **Part -I** (IQ):          **Section - I** Contains 12 Single choice questions(SCQ) from 1 to 18,
                              **Section - II** Contains 4 Comprehensions of 3 questions each from 19 to 30

   **Part -II** :          (Maths) Contains 3 Comprehensions and 16 Single correct type questions. Comprehensions -1 & 2 comprise of 3 questions each from 31 to 33 & from 34 to 36 and Comprehension 3 comprises of 4 questions from 37 to 40. Single Correct Type questions 41 to 56.

   **Part -III** :          (Physics) Contains 12 Single Correct type questions(SCQ) from 57 to 68.

   **Part -IV** :          (Chemistry) Contains 12 Single Correct type questions(SCQ) from 69 to 80.

8. **Marking Scheme :**

   Please see the marking scheme as mentioned in all sections and comprehensions.

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# PART -I [IQ]
## SECTION-I

**[SINGLE CORRECT TYPE]**

Each question has four choices (A), (B), (C) and (D) out of which only one is correct. You will be awarded **+2** marks for correct answer. No negative mark will be awarded for wrong answer.

1. Part is related to Whole in the same way as Arc is related to ...........?
   (A) Trapezium　　　(B) Circle　　　　(C) Triangle　　　(D) Square

2. Shoes is related to Cobbler in the same way as Eyeglasses is related to ...........?
   (A) Oculist　　　(B) Ophthalmologist　(C) Optometrist　(D) Optician

3. Major is related to Lieutenant in the same way as Squadron Leader is related to ...........?
   (A) Group captain　(B) Flying Attendant　(C) Flying Officer　(D) Pilot Officer

4. Tennis is related to Court in the same way as Boxing is related to ...........?
   (A) Pool　　　　(B) Ring　　　　(C) Arena　　　(D) Course

**Directions (Questions 5 to 9):**

In each of the following letter series, some of the letters are missing which are given in that order as one of the alternatives below it. Choose the correct alternative.

5. __ __ aba __ __ ba __ ab
   (A) abbba　　　(B) abbab　　　(C) baabb　　　(D) bbaba

6. ab __ __ baa __ __ ab __
   (A) aaaaa　　　(B) aabaa　　　(C) aabab　　　(D) baabb

7. m __ n m __ n __ an __ a __ ma __
   (A) aamnan　　(B) ammanm　　(C) aammnn　　(D) amammn

8. a __ ba __ b __ b __ a __ b
   (A) abaab　　　(B) abbab　　　(C) aabba　　　(D) bbabb

9. __ stt __ tt __ tts __
   (A) tsts　　　(B) ttst　　　(C) sstt　　　(D) tsst

**Directions (Questions 10 to 14) :**

In each of the following questions, there is a certain relationship between two given words on one side of : : and one word is given on another side of : : while another word is to be found from the given alternatives, having the same relation with this word as the words of the given pair bear. Choose the correct alternative.

10. Cricket : Bat :: Hockey : ?
    (A) Field　　　(B) Stick　　　(C) Player　　　(D) Ball

11. Bird : wing : : Fish : ?
    (A) Gill　　　(B) Fin　　　(C) Tail　　　(D) Scale

**(Space for rough work)**

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**12.** Coconut : Shell : : Letter : ?

  (A) Letter-box  (B) stamp  (C) Mail  (D) Envelope

**13.** Smoke : Pollution : : war : ?

  (A) Destruction  (B) Treaty  (C) Victory  (D) Peace

**14.** Kandla : Gujarat : : Cochin : ?

  (A) Karnataka  (B) Kerala  (C) Goa  (D) Chennai

**Directions (Questions 15 to 18) :**

 In each of the following questions, four words have been given out of which three are alike in some manner. while the fourth one is different. Choose out the odd one.

**15.** (A) Kanpur  (B) Allahabad  (C) Varanasi  (D) Mathura

**16.** (A)Shoulder  (B) Foot  (C) Elbow  (D) Arm

**17.** (A) Rose  (B) Lotus  (C) Marigold  (D) Lily

**18.** (A) Book  (B) Paper  (C) Pencil  (D) Pen

**Directions (Quesions 19 to 21):**

 Read the following information carefully and answer the questions given below :

 Ravi and Kunal are good in Hockey and Volleyball. Sachin and Ravi are good in Hockey and Baseball. gaurav and Kunal are good in Cricket and Volleyball. Sachin, Gaurav and Michael are good in Football and Baseball.

**19.** Who is good in Hockey, Cricket and Volleyball ?

  (A) Sachin  (B) Kunal  (C) Ravi  (D) Gaurav

**20.** Who is good in Baseball, Cricket, Volleyball and Football?

  (A) Sachin  (B) Kunal  (C) Gaurav  (D) Ravi

**21.** Who is good in Baseball, volleyball and Hockey ?

  (A) Sachin  (B) Kunal  (C) Ravi  (D) Gaurav

**Directions (Questions 22 to 24):**

 Read the following information to answer the given questions :

 Seven children A, B, C, D, E, F and G are standing in a line. G is to the right of D and to the left of B. A is on the right of C. A and D have one child between them. E and B have two children between them. D and F have two children between them.

**22.** Who is on the extreme right ?

  (A) B  (B) E  (C) F  (D) G

**23.** Who is exactly in the middle ?

  (A) A  (B) C  (C) D  (D) E

**24.** Who is on the extreme left ?

  (A) A  (B) B  (C) C  (D) D

**(Space for rough work)**

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**Directions (Questions 25 to 27) :**

Study the following information carefully and answer the questions given below:

Six friends A, B, C, D, E and F are sitting in a row facing towards North. C is sitting between A and E. D is not at the end. B is sitting immediate right to E. F is not at the right end.

**25.** How many persons are there to the right of D ?

(A) One          (B) Two          (C) Three          (D) Four

**26.** Which of the following pairs is sitting to one side of D ?

(A) FB          (B) FC          (C) cannot be determined          (D) None of these

**27.** Who is immediate left of C ?

(A) A          (B) E          (C) Either E or A          (D) None of these

**Directions (Questions 28 to 30) :**

Study the given information carefully and answer the questions      that follow :

(i) A, B, C, D, E, F and G are sitting on a wall and all of them are facing east.

(ii) C is on the immediate right of D.

(iii) B is at an extreme end and has E as his neighbour

(iv) G is between E and F

(v) D is sitting third from the south end.

**28.** Who is sitting to the right of E ?

(A) A          (B) C          (C) D          (D) None of these

**29.** Which of the following pairs of people  are sitting at the extreme ends ?

(A) AB          (B) AE          (C) CB          (D)Cannot be determined

**30.** Name of person who should change place with C such that he gets the third place from the north end.

(A) E          (B) F          (C) G          (D) D

**(Space for rough work)**

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## PART -II [Mathematics]

### [COMPREHENSION TYPE]

This Part contains 3 Comprehensions.Comprehensions 1& 2 comprise of 3 single choice questions each & Comprehension 3 comprises of 4 single choice questions. Each question has four choices (A), (B), (C) and (D) out of which only one is correct.

**Comprehension#1 -**          You will be awarded **+6 marks** for correct answer and **-1 Mark** for wrong answer

**Comprehension#2 -**          You will be awarded **+8 marks** for correct answer and **-2 Mark** for wrong answer

**Comprehension#3 -**          You will be awarded **+8 marks** for correct answer and **-3 Mark** for wrong answer

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**Comprehension #1**

$$a^{-m} \times a^{-n} = a^{-m+(-n)} = a^{-(m+n)}, a^{-m} \div a^{-n} = a^{(-m+n)}, a^{-m} = \frac{1}{a^m}$$ where m and n are any integers.

**31.** Evaluate : $\dfrac{9^{-1} \times 5^3}{3^{-3}}$

(A) 370          (B) 315          (C) 375          (D) 400

**32.** Simplify : $\dfrac{25 \times a^9}{5^{-3} \times 10 \times a^{-18}}$

(A) $\dfrac{625a^{27}}{12}$          (B) $\dfrac{625a^3}{20}$          (C) $625a$          (D) $\dfrac{625a^{27}}{2}$

**33.** Find the value of m for which $(-3)^{m+1} \times (-3)^5 = (-3)^7$.

(A) 1          (B) –1          (C) 0          (D) 4

**Comprehension #2**

The area of a rhombus is $\dfrac{1}{2}(d_1 \times d_2)$ and perimeter $= 2\sqrt{(d_1^2 + d_2^2)}$, where $d_1$ and $d_2$ are the diagonals of the rhombus.

**34.** The area of a rhombus, each side of which measures 20cm and one of whose diagonals is 24cm is

(A) $380\,m^2$          (B) $384\,m^2$          (C) $384\,cm^2$          (D) $38\,cm^2$

**35.** The area of the field in the form of rhombus if the length of each side be 14cm and the altitude be 16cm is

(A) $224\,cm^2$          (B) $210\,cm^2$          (C) $148\,cm^2$          (D) $258\,cm^2$

**36.** The area of a rhombus is $84\,m^2$. If its perimeter is 40m, its altitude is

(A) 4.8 m          (B) 8.4 m          (C) 6.8 m          (D) 4.9 m

**(Space for rough work)**

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**Comprehension #3**

Read the following bar graph and answer the questions.



Bar graph of number of boys and number of girls in a school from 2008 to 2011

37. In which year the difference between the number of boys and the number of girls is more ?

(A) 2008          (B) 2009

(C) 2010          (D) 2011

38. Find the minimum difference between the number of boys and girls in any year in the given period.
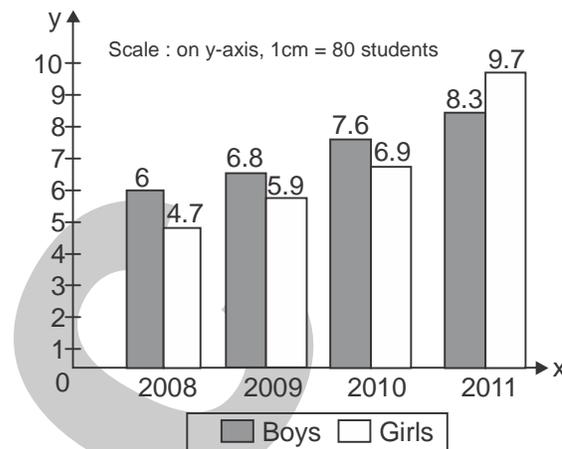
(A) 90          (B) 70

(C) 56          (D) 30

39. In which year the number of girls is more than the number of boys ?

(A) 2008          (B) 2009          (C) 2010          (D) 2011

40. Find the ratio between the number of students in the year 2008 and in 2009.

(A) 107: 145          (B) 127:145          (C) 29:36          (D) 107:127

## SINGLE CORRECT TYPE]

Each question has four choices (A), (B), (C) and (D) out of which only one is correct. You will be awarded **+3** marks for correct answer and **–1** mark for wrong answer .

41. Which of the following is not equal to $y^6$ ?

(A) $\left( y^{2/3} \right)^9$          (B) $\left( \sqrt{y^6} \right)^2$          (C) $\sqrt[3]{y^{18}}$          (D) $\left( y^{1/3} \right)^{12}$

42. Which of the following does not lie on y-axis ?

(A) $(0,5)$          (B) $(0,-2)$          (C) $(-3,0)$          (D) $(0,7)$

43. What is the approximate value of $(15.01)^2 \times \sqrt{730}$ ?

(A) 6125          (B) 6225          (C) 6200          (D) 6100

44. Mohit invests a sum of Rs 41,250 at the rate of 6% per annum. What approximate compound interest will he obtain at the end of 3 years ?
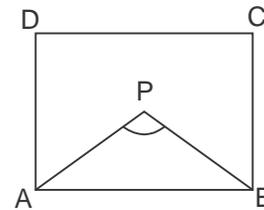
(A) Rs 8,100          (B) Rs 7,425          (C) Rs 8,210          (D) Rs 7,879

45. A man sells a book at a profit of 20%. If he had bought if at 20% less and sold it for Rs 18 less, he would have gained 25%. The cost price of the book is ____

(A) Rs 80          (B) Rs 70          (C) Rs 60          (D) Rs 90

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**46.** Two pipes A and B can fill a tank in 36 hours and 45 hours respectively. If both the pipes are opened simultaneously; how much time will be taken to fill the tank ?
(A) 20 hours          (B) 18 hours          (C) 25 hours          (D) 19 hours

**47.** If $x^2 + y^2 = 47$ and $xy = \dfrac{19}{2}$, then the value of $2(x+y)^2 + (x+y)^2$ is _____
(A) 160          (B) 270          (C) 226          (D) 86

**48.** A letter is chosen at random from the word MATHEMATICS. What is the probability that it will be a vowel ?
(A) $\dfrac{1}{2}$          (B) $\dfrac{3}{8}$          (C) $\dfrac{3}{11}$          (D) $\dfrac{4}{11}$

**49.** If 75% of a number is added to 75, then the result is number itself. The number is
(A) 50          (B) 60          (C) 300          (D) 400

**50.** A regular octagon is formed by cutting an isosceles right triangle from each of the corners of a square with side 15cm. The area (in cm²) of the octagon is
(A) $15\left(2\sqrt{2}-1\right)$          (B) $(15)^2\left(2\sqrt{2}-1\right)$          (C) $15\left(2\sqrt{2}-2\right)$          (D) $(15)^2\left(2\sqrt{2}-2\right)$

**51** If $x-\dfrac{1}{x}=3$, then the value of $x^2+\dfrac{1}{x^2}$ is
(A) 8          (B) 9          (C) 10          (D) 11

**52.** $66cm^3$ of silver is drawn into a wire 1 mm in diameter. The length of the wire (in metres) will be
(A) 78          (B) 84          (C) 96          (D) 108

**53.** How many cubes of 10cm edge can be put in a cubical box of 1 m edge ?
(A) 10          (B) 100          (C) 1000          (D) 7200

**54.** A 2 digit number has 3 at ones place and the sum of its digits is 1/7 of the number itself. What is the number ?
(A) 43          (B) 53          (C) 63          (D) 73

**55.** If AP and BP are the bisectors of the angle A and angle B of the parallelogram ABCD, then value of the angle APB is
(A) 30°          (B) 45°
(C) 60°          (D) 90°

**56.** If $\dfrac{a}{x+y}=\dfrac{b}{y+z}=\dfrac{c}{z-x}$, then which of the follwoing equations is true ?
(A) $a=b+c$          (B) $c=a+b$          (C) $b=a\times c$          (D) $b=a+c$

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**(Space for rough work)**

# PART -III
## [Physics]

**[SINGLE CORRECT TYPE]**

Each question has four choices (A), (B), (C) and (D) out of which only one is correct.You will be awarded **+3** marks for correct answer and **–1** mark for wrong answer .

**57.** Weight of a body is the product of

(A) mass and acceleration due to gravity      (B) mass and gravitational constant

(C) mass and velocity      (D) None of the above

**58.** If a body is allowed to fall down a height freely, its speed increases continuously. It is because

(A) air does not exert frictional force      (B) magnetic force of earth increases its speed

(C) pressure of air forces it downward.      (D) gravitational force of earth increases its speed

**59.** A book pushed on a table stops because

(A) no force acts on it      (B) it is very heavy

(C) the table exerts a frictional force on it      (D) the earth attracts it.

**60.** Friction acts when there is relative motion between

(A) solid      (B) liquids      (C) gases      (D) solid, liquids or gases

**61.** The hearing range of human ear is

(A) 20 Hz to 20, 000 Hz      (B) less than 20 Hz

(C) more than 20,000 Hz      (D) 20,00 Hz to 25,000 Hz

**62.** The velocity of sound in vacuum is

(A) $332\,\mathrm{m\,s^{-1}}$      (B) $330\,\mathrm{m\,s^{-1}}$      (C) $288\,\mathrm{m\,s^{-1}}$      (D) 0

**63.** The full form of LED is

(A) light emmitting diode      (B) layer emission diode

(C) light emission diode      (D) None of these

**64.** A cell converts

(A) electricals energy into chemical energy      (B) chemical energy into electrical energy

(C) magnetic energy into electrical energy      (D) electrical energy into machanical energy

**65.** The sudden shaking of earth is called

(A) tsunami      (B) volcano      (C) earthquake      (D) cyclone

**66.** Electric charge is measured in

(A) coulombs      (B) amperes      (C) volts      (D) watts

**67.** A man of height 1.6m wishes to see his full image in a plane mirror. The minimum height of the mirror needed for this purpose is

(A) 3.2m      (B) 2.4m      (C) 1.6m      (D) 0.8m

**68.** The radius of curvature of a concave mirror is 20cm. What will be its focal length ?

(A) 40 cm      (B) 20 cm      (C) 10 cm      (D) 80 cm

**(Space for rough work)**

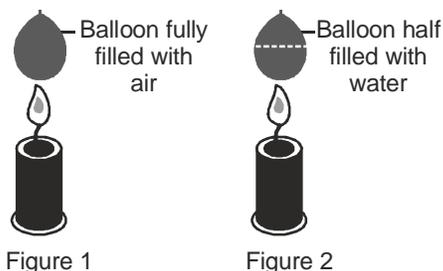**IPEC**

# PART -IV

## [Chemistry]

**[SINGLE CORRECT TYPE]**

Each question has four choices (A), (B), (C) and (D) out of which only one is correct.You will be awarded **+3** marks for correct answer and **–1** mark for wrong answer .

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**69.** Mark the incorrect combination from the following:

(A) Chair - Plastic      (B) Parachute - Cotton

(C) Electrical switches - Bakelite        (D) Carpet - Rayon

**70.** Burning of plastic causes

(A) air pollution        (B) water pollution      (C) sound pollution      (D) all of these

**71.** Which of the following properties of nylon make it most suitable for making toothbrush bristles?

(i) It absorbs little water.

(ii) it is strong when wet.

(iii) It is not acted upon by bacteria and fungus.

(iv) It is clear, transparent and heavy.

(A) (i), (ii), (iii)        (B) (i) and (ii)        (C) (i) and (iii)        (D) (i) and (iv)

**72.** The metal that forms a self protecting film of oxide to prevent corrosion is

(A) Cu        (B) Al        (C) Pt        (D) Au

**73.** The correct order of increasing chemical reactivity is

(A) Zn < Fe < Mg < K        (B) Fe < Mg < Zn < K

(C) Fe < Mg < K < Zn        (D) Fe < Zn < Mg < K

**74.** Tungsten is used in electric bulbs because

(A) It is sonorous        (B) it has high melting point

(C) it has high tensile strength        (D) it has high density.

**75.** Out of the following fractions of petroleum, the one having the lowest boiling point is

(A) kerosene        (B) diesel oil        (C) gasoline        (D) heavy oil

**76.** Which of the following is a greenhouse gas?

(A) Carbon dioxide        (B) Carbon monoxide (C) Hydrogen        (D) Nitrogen

**(Space for rough work)**

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**77.** Butane gas is used for filling cylinders to be used as LPG because

(A) it is easily available

(B) it is easily compressed into a liquid and stored in cylinders

(C) it is stored in gaseous state only in the cylinder

(D) it is the cheapest gas available.

**78.** Rahul, a class 8 student conducted the following experiment and recorded the observations in the given table.



Figure 1            Figure 2

| Observation | Does balloon explode? | | Is ignition temperature of balloon reached? | |
|---|---|---|---|---|
| | Fig. 1 | Fig. 2 | Fig. 1 | Fig. 2 |
| I. | Yes | Yes | No | Yes |
| II. | Yes | No | Yes | No |
| III. | No | Yes | Yes | Yes |

The correct observation and inference drawn are

(A) I, balloon has a higher ignition temperature than water hence, it explodes

(B) II, water increases the melting point of balloon

(C) III, water in the balloon absorbs the heat

(D) II, water conducts the heat away from the balloon.

**79.** Why do fire brigades pour water on the fire?

(A) Water cools the combustible material so that its temperature is brought below its ignition temperature.

(B) This prevents the fire from spreading.

(C) Water vapours help in cutting off the supply of air.

(D) All of the above.

**80.** The upper most part of match stick is made up of

(A) antimony trisulphide and potassium chlorate

(B) antimony trisulphide and potassium perchlorate

(C) red phosphorus and white phosphorus

(D) antimony trisulphite and potassium perchlorate.

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