NGSF
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NGSE

CLASS 8 Time :
90 Minutes **National Genius Search Examination® : Advanced**

Your NGSE Roll No. ⬚⬚⬚⬚⬚⬚⬚ Date of the Test ⬚⬚⬚⬚⬚⬚⬚

Student's Name ⬚⬚⬚⬚⬚⬚⬚⬚⬚⬚⬚⬚⬚⬚⬚⬚⬚

Signature of the Student

Signature of the Invigilator
Check the correctness of the Roll No. with the Answer Sheet.

INSTRUCTIONS TO THE CANDIDATE

1. **DO NOT OPEN THIS TEST BOOKLET UNTIL YOU ARE ASKED TO DO SO.**
2. Fill and sign this Question Booklet. Fill the information required in first page of the Answer Booklet. Start your answers from the third page of the Answer Sheet. Do not write answers on the second page of the Answer Sheet, which is kept blank. You may carry this booklet with you after the scheduled time of the test.
3. Do not seek clarification on any item in the test booklet from anyone including the test invigilator or the center supervisor. Use your best judgement.
4. This booklet consists of two sections as given below :
   SECTION-1: MATHEMATICS – 5 Questions and **SECTION - 2: SCIENCE – 5 Questions.** In case of any problem with your test booklet, inform the invigilator immediately. You will be provided with a replacement.
5. Use black/blue ball point pen only for writing the answers.
6. Use of mathematical instruments/compass box is allowed. Standalone calculators are also allowed.
7. All questions are compulsory. Each question carries 10 marks. Negative marks are not awarded.
8. Each answer should not be more than 150 words. You may demand additional Answer sheets if required.
9. Staple all the answer sheets together, page wise.
10. Failure to follow instructions and examination norms will lead to disqualification.

PLEASE WAIT FOR THE SIGNAL TO OPEN THE TEST BOOKLET

Open from this side ⟶

SECTION – 1: MATHEMATICS

1. The following are the two questions asked for an examination of class 6 last year.
   (a) Evaluate: 3-{2-3(2-7)}
   (b) Simplify: -3x{7-(3x-5)}
   We would like to know how '*Evaluate*' differs from '*Simplify*'? What do these words mean? Use the above to explain your points.

2. On a particular day, the sales (in rupees) of different items of a baker's shop are given below.

Ordinary bread	:	320
Fruit bread	:	80
Cakes and pastries	:	160
Biscuits	:	120
Others	:	40
Total	:	720

   Draw a pie chart for this data

3. Frame a question on inverse proportion for water pumped from an underground water tank to an overhead water tank of identical shape. Explain how to solve the question you have framed.

4. Vidya wonders why numbers one and zero are neither composite numbers nor prime numbers. Could you please explain to Vidya what can happen if they were either composite numbers or prime numbers? Use an example to punch your points.

5. Without knowing the height and which sides are parallel, how would you find the area of a trapezium if all sides are given as 1m, 2m, 3m, and 4m? You need to explain the steps you take to solve the question. You need not find the numerical answer.

SECTION 2: SCIENCE

6. The table below shows the data on likely heights of boys and girls as they grow in age. Draw graphs showing height and age for both boys and girls. What conclusions can be drawn from these graphs?

Age (years)	Heights (cm)	
	Boys	Girls
0	53	53
4	96	92
8	114	110
12	129	133
16	150	150
20	173	165

7. When we press the bulb of a dropper with its nozzle kept in water, air in the dropper is seen to escape in the form of bubbles. Once we release the pressure on the bulb, water gets filled in the dropper. The rise of water in the dropper is due to
   (a) pressure of water   (b) gravity of the earth
   (c) shape of rubber bulb   (d) atmosphere pressure

   (i)   Is option (a) right? In not, what change in the question can make option (a) right?
   (ii) Is option (b) right? In not, what change in the question can make option (b) right?
   (iii) Is option (c) right? In not, what change in the question can make option (c) right?
   (iv) Is option (d) right? In not, what change in the question can make option (d) right?

8. Rainbow is a natural phenomenon showing dispersion.
   (a) What is dispersion?
   (b) How to create an artificial rainbow in your garden?
   (c) Give a simple experiment that can create dispersion of light inside your room

9. Vidya's Text book says – Like many other scales in science, Richter scale is not linear. This means that an earthquake of magnitude 6 does not have one and half times the destructive energy of an earthquake of magnitude 4. In fact, an increase of 2 in magnitude means 1000 times more destructive energy. Therefore, an earthquake of magnitude 6 has thousand times more destructive energy than an earthquake of magnitude 4.

   Using Mathematics, how can you compare, the reading on the Richter scale and the destructive energy produced by an earthquake? Support your answer with explanation.

10. (a) What are antibiotics? How it differs from antibodies?
    (b) Is it possible to develop a bacteria that can eat up plastic waste? Discuss the advantages, disadvantages and threats if we are successful in developing such a bacteria.

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