Sample Question for Admission Test, 2015
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INSTRUCTIONS
- The question paper will consist of 32 questions. Time will be 1 hour.   - There are two parts in the question paper — Part A consisting of 18 Mathematics questions and Part B consisting of 14 English questions   - There is only one correct response for each question   - Each question in Part A is allotted 2 marks and each question in Part B is allotted 1 mark for correct response. Full marks will therefore be 50.   - Negative marking will be incurred by incorrect responses.   - A multiple response in any question will be treated as a wrong response.

PART A
MATHEMATICS

1. The cost of education of a child (denoted C) from the beginning of the year 2013 is given by the equation $C = C_0 + mx$, where C_0 and m are positive constants and x denotes time. One unit of x is one day and at the beginning of 2013, $x = 0$. As soon as the cost reached $\overline{C} > C_0$, you started bearing half of the excess of his cost over $\overline{C}$. Your expenditure on the poor child's education (denoted E) all through the year 2013 is given by the equation

(a) $E = 0$ for $x \le \overline{C}$ and $E = \dfrac{C_0 + mx}{2}$ for $x > \overline{C}$

(b) $E = 0$ for $x < \dfrac{\overline{C} - C_0}{m}$ and $E = \dfrac{C_0 + mx - \overline{C}}{2}$ for $x \ge \dfrac{\overline{C} - C_0}{m}$

(c) $E = 0$ for $x \le \dfrac{\overline{C} + C_0}{m}$ and $E = \dfrac{C_0 + mx - \overline{C}}{2}$ for $x > \dfrac{\overline{C} + C_0}{m}$

(d) None of the above

2. You are giving private tuition to students at an hourly rate of Rs. a, $(a > 0)$. The cost of giving private tuition (denoted C) is given by the equation $C = m + nS$, where S denotes the number of hours you spend giving tuition in a given period (a day, say) and m and n are positive constants. You will not give private tuition if

(a) $a > m$ (b) $a > n$ (c) $a < n$ (d) $a < m$

3. Consider the situation of question 2. Suppose the maximum number of hours you can spend giving private tuition is $\overline{S}$. You will spend $\overline{S}$ number of hours giving private tuition if

(a) $\bar{S} > \dfrac{m}{a-n}$ (b) $\bar{S} > \dfrac{m}{a-n}$ and $a > n$

(c) $m > \dfrac{\bar{S}}{a-n}$ and $\bar{S} > a$ (d) none of the others

4. Consider the equation $W = a + bf$; $a > 0, b > 0$, where W and f denote the average weight and the average food intake respectively of the adult population of a country, while a and b are constants. Again, consider the equation $I = g + hW$; $g > 0, h > 0$, where I denotes the average incidence of illness in the same adult population, while g and h are constants. f on the other hand is given by $f = \bar{q} - qp$; $\bar{q} > 0, q > 0$, where p denotes the price of food and $\bar{q}$ and q are constants. If p goes up by m units, incidence of illness will go down by

(a) $-hbqm$ (b) $hb\bar{q}$ (c) haq (d) ham

5. You have employed A, B and C to do a piece of work for Rs.529. A and B together are supposed to do 19/23 of the work and B and C together 8/23 of the work. What amount should A be paid?

(a) 355 (b) 345 (c) 375 (d) 335

6. x and y are integers bigger than 1 such that, $5x$ is a square and $75xy$ is a cube. The smallest value of $x + y$ is

(a) 18 (b) 14 (c) 16 (d) 20

7. While you are planning for building a new house, you wish to have a window in your study which will be in the form of a rectangle surmounted by a semi-circle. The semi-circular portion will be fitted with coloured glass, while the rectangular part is fitted with clear glass. In general, suppose the clear glass transmits three times as much light per square meter as the coloured glass does. What will be the ratio of the sides of the rectangle so that your study gets the maximum light?

(a) $\dfrac{6}{6+\pi}$ (b) $\dfrac{1}{2+\pi}$ (c) $\dfrac{2+\pi}{6+\pi}$ (d) $\dfrac{3}{2+\pi}$

8. A recent study of European Population Association announced that population of country be decreasing at the rate proportional to its population. If the population has decreased to 25% in 10 years, how long will it take to be half?

(a) 7.3 years apprx. (b) 8.9 years apprx. (c) 8.3 years apprx. (d) 6.5 years apprx.

PART B

ENGLISH

Directions (Q No. 9-11): Complete the paragraph by filling in the blanks with appropriate words

Let me tell you the story about a woman named Jill and a friend of hers called Jack. The 9._____ thing that happened was that Jill was running out of fresh water at her cabin. She decided she would have to walk into town to pick up some fresh spring water. 10._____ she left she wanted to contact her neighbour, Jack, to let him know she would be out of the area for the day. 11._____ she left the cabin, she grabbed an old wooden pail, and tied a rope around the handle of the pail.

Q. No.	a	b	c	d
9	First	Important	Preliminary	Initial
10	When	Before	As	While
11	As	When	After	While

Direction: Choose the best answer

12. A minor match preceding the main event
   (a) Approximate   (b) Bulk   (c) Preliminary   (d) supplement

Directions (Q No. 13-14): Choose the correct answer

13. The 2000 Census showed that married couples _____ half of the 2 million households in the state, and 46 percent of those couples had children under roof.
   (a) and made up   (b) to make up   (c) made up   (d) which they made up

14. Long hours and unsociable shifts _____ take their toll on health, relationships and family life.
   (a) must   (b) can   (c) are able to   (d) shouldn't