Time 2Hr **Artificial Intelligence** MA61008 MA60038 Spring 2014

Instruction: There are 6 questions on 1 printed side. Every question carries 3 marks. In case of any doubt or mistake any query should not be made. All mistakes of the question paper should be written on a page by drawing a box. For identifying every mistake in a question (or in example) 1 mark will be given. Either the mistake should be corrected or justification should be given. Use of calculators in not permitted. Rough work involved in the question must be shown. However final answer should be written in a box. If rough work is not shown then 0 mark shall be given.

1. A king gives numbers to Ram, Hari, Gopal and Ravi. The king says that the sum is 762. The king also says that all numbers are between 150 and 250. The king asks Ram the number of Hari. Ram says between 150 and 250. Now king asks Kapil the number of Ram. What will Kapil Reply? [Example: The king asks Gopal the number of Hari. Gopal says between 150 and 223. Now king asks Kapil the number of Gopal. Kapil will say 239.]
   Method: $[x+(\geq 150)+(\geq 150)+y=762 \rightarrow y \leq 223] \Rightarrow x=239.$
   $[x+(\leq 250)+(\leq 250)+y=762 \rightarrow y \geq t, t \leq 150] \Rightarrow x \geq 112$ i.e $x \geq 150$.

2. A person, who abuses in reply to abuses, is called reactionary. When some reactionary person (P) abuses Ram then Ram gives him 17 more than four times abuses which (P) will give in reply to 6 more than double of the abuses which (P) gave to Ram. Write mental representation of Ram. [Example: Let mental representations be Kapil(x)=x^2+9 Bimu(x)=9x+3. If Kapil gives 10 abuses to Ram then Ram will give 2757 abuses to Kapil. Because Kapil in reply to 26 abuses will give 685 abuses. 17+4*685=2757. If Bimu gives 7 abuses to Ram then Ram will give 749 abuses to Bimu. Because Bimu in reply to 20 abuses gives 183 abuses. 183*4+17=749]
   Example 1: When some reactionary person (P) abuses Anil then Anil gives him those many abuses which (P) will give in reply to double of the abuses which (P) gave to Anil. Hence mental representation of Anil is Anil(p,x)=p(2x).
   Example 2: When (P) abuses Dipu then Dipu gives him double of abuses which (P) will give in reply to the same number of the abuses which (P) gave to Dipu. Hence Dipu(p,x)=2p(x).
   Example 3: When (P) abuses Hari then Hari gives him 11 more abuses which (P) will give in reply 3 more abuses which (P) gave to Hari. Hence Hari(p,x)=11+p(x+3).

3. Anil, Dipu, Hari, Gopal, Kapil and Umesh have an option to put 100 rupees in a box. The total amount will be multiplied by 10. The final amount will be distributed among them in the ratio 2:6:8:9:27:48. Hari, Gopal and Umesh are intelligent. Anil, Dipu and Kapil are honest. What is the net amount every person will get?
   Example: Let Ram, Jalaj, Sani, Mohan, Yogesh, Pankaj have an option to put 100 rupees in a box. The total amount will be multiplied by 5. The final amount will be distributed among them in the ratio 2:3:4:21:30:40. Let every one is honest. Ram will not put because he is getting only (600*5)*0.02=60(<100). Similarly Jalaj will also not put. Now Sani will also not put because (400*5)*0.04<100. Final amount is 300*5=1500. They get 30, 45, 60, 215, 350, 500 respectively.

4. What is the sentence (E)? Let following holds: action(E)=action(A) agent(E)=object(B) object(E)=object(A) attribute(E)=attribute(C) from(E)=to(D) to(E)=agent(A)
   (A) Gyan painted a ball by green color. (B) Kapil adopted Ravi's son Mohan.
   (C) Gopal has eaten glass balls. (D) Jalaj went from Delhi.

5. Let P, Q and R be brothers. The next brother of P is Q. The next brother of Q is R. P gives answer of a question by multiplying by 3. Q gives by adding 43. R gives by multiplying by 2. Let following question is asked from P. What answer will he give?

When question what is the value of 13*7 is given by your next brother? is asked by your next brother then what answer will he give?

6. There are 1000 stones ($stone_0 \ldots Stone_{999}$). The $stone_i$ injures a person and the injured person on an average takes $i^2 - 1214i + 42173645$ days to recover. Hari wants to injure Anil by $Stone_x$. Mohan want to reduce the amount of injury as much as possible. Hence he changes the number of i^{th} stone as (i+319) mod 1000. What is the value of 'x'? [Notation: 'mod' is remainder. 18 mod 5 is 3. 217 mod 10 is 7. 32 mod 7 is 4]

The end of question paper