8. The lac operon

Important questions based on it:

A.
i	p	o	x	y	a

Given above is a schematic representation of the *lac* operon in *E.coli*. What is the significant role of '*i*' gene in switching on or off the operon?   *(AI 2013C)*
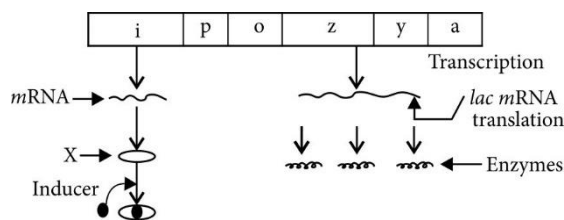
B. Study the figure given below and answer the question:
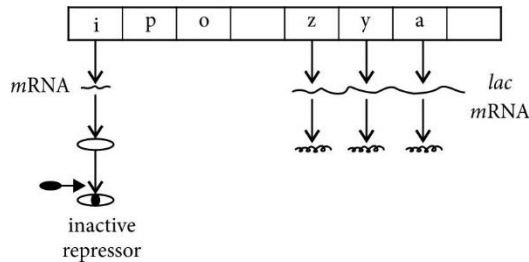
   a. How does the repressor molecule get inactivated?

   b. When does the transcription of *lac mRNA* stop?

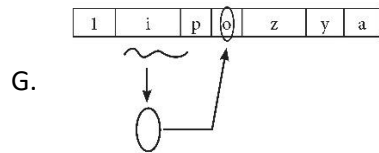C. Name the enzyme transcribed by the gene 'Z'?   *(Delhi 2009)*

D.

   a. Name the molecule 'X' synthesised by '*i*' gene. How does this molecule get inactivated?

   b. Which one of the structural genes codes for β-galactosidase?

E. When will the transcription of this gene stop?   *(AI 2009)*

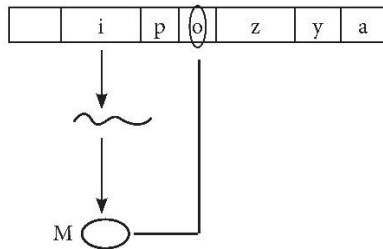F. Given below is a schematic representation of *lac* operon:

G.

| l | i | p | (o) | z | y | a |

a. Identify *i* and *p*.

H. Name the 'inducer' for this operon and explain its role. *(Foreign 2011)*

I.

| | i | p | (o) | z | y | a |

M

a. Name the molecule 'M' that binds with the operator.

b. Mention the consequences of such binding.

c. What will prevent the binding of the molecule 'M' with the operator gene? Mention the event that follows. *(Foreign 2009)*

J. Sketch a schematic diagram of *lac* operon in switched on position. How is the operon switched off? Explain. *(AI 2015C)*

K.

| i | p | o | z | y | a |

Given above is the schematic representation of *lac* operon of *E. coli*. Explain the functioning of this operon when lactose is provided in the growth medium of the bacteria. *(Delhi 2013C)*