

**Model Question Paper**  
**Nuclear Chemistry - Part IV**

12th Standard

**Chemistry**

Reg.No. : 

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I. Answer all the questions.

II. Use Blue pen only.

III. Question No 15 is compulsory

Time : 01:00:00 Hrs

Total Marks : 50

5 x 1 = 5

**Section-A**

- 1) If  $t_{1/2}$  is shorter, then the substance is  
(a) non radioactive (b) unstable (c) poisonous (d) stable
- 2) Uranium series belongs to  
(a)  $4n+3$  (b)  $4n+2$  (c)  $4n+1$  (d)  $4n$
- 3) According to Einstein equation  
(a)  $\lambda = \frac{h}{mv}$  (b)  $\lambda = \frac{h}{p}$  (c)  $\Delta E = \Delta mc^2$  (d)  $\Delta E = E_2 - E_1$
- 4) Radiation with very short wavelength and very high energy is  
(a)  $\alpha$  (b)  $\beta$  (c)  $\gamma$  (d)  $\delta$
- 5) A chemical reaction is balanced in terms of  
(a) mass (b) density (c) energy (d) pressure

**Section-B**

- 6) Mention the four decay series.
- 7) Explain binding energy.
- 8) What are the terminologies used in nuclear reactions?
- 9) What is a spallation reaction?
- 10) The  $t_{1/2}$  of  $I^{125}$  is 60 days. What percentage of radioactivity would be present after 180 days?
- 11) What is meant by nuclear fission?

6 x 3 = 18

**Section-C**

- 12) Distinguish between nuclear fusion reaction and fission reactions.
- 13) Give the differences between chemical and nuclear reactions
- 14) Explain nuclear fusion reactions taking place in Sun (Stars)
- 15) a) Give the uses of radioactive isotopes in medicines.

4 x 5 = 20

(OR)

- b) What is radioactivity? How will you calculate average life using half-life period?

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