

# DPP

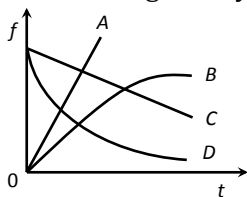
DAILY PRACTICE PROBLEMS

Class : XII<sup>th</sup>  
Date :

Subject : PHYSICS  
DPP No. : 7

## Topic :-Nuclei

- The ratio of minimum to maximum wavelength in Balmer series is  
a) 5 : 9                      b) 5 : 36                      c) 1 : 4                      d) 3 : 4
- The half-life period of radium is 1600 years. Its average life time will be  
a) 3200 years                      b) 4800 years                      c) 2319 years                      d) 4217 years
- The transition from the state  $n = 4$  to  $n = 3$  in a hydrogen like atom result in ultraviolet radiation. Infrared radiation will be obtained in the transition from  
a) 2→1                      b) 3→2                      c) 4→2                      d) 5→4
- The count rate of a Geiger-Muller counter for the radiation of a radioactive material of half life of 30 minutes decreases to  $5 \text{ s}^{-1}$  after 2 hours. The initial count rate was  
a)  $25 \text{ s}^{-1}$                       b)  $80 \text{ s}^{-1}$                       c)  $625 \text{ s}^{-1}$                       d)  $20 \text{ s}^{-1}$
- In Raman effect, Stoke's lines are spectral lines having  
a) Frequency greater than that of the original line  
b) Wavelength equal to that of the original line  
c) Wavelength less than that of the original line  
d) Wavelength greater than that of the original line
- The fraction  $f$  of radioactive material that has decayed in time  $t$ , varies with time  $t$ . The correct variation is given by the curve



- a) A                      b) B                      c) C                      d) D
- White light is passed through a dilute solution of potassium permanganate. The spectrum produced by the emergent light is  
a) Band emission spectrum                      b) Line emission spectrum  
c) Band absorption spectrum                      d) Line absorption spectrum
  - The ratio of the frequencies of the long wavelength limits of Lyman and Balmer series of hydrogen spectrum is  
a) 27 : 5                      b) 5 : 27                      c) 4 : 1                      d) 1 : 4

9. A radioactive nucleus of mass  $M$  emits a photon of frequency  $\nu$  and the nucleus recoils. The recoil energy will be
- a)  $h\nu$                       b)  $Mc^2 - h\nu$                       c)  $\frac{h^2\nu^2}{2Mc^2}$                       d) Zero
10. In which of the following decay, the element does not change
- a)  $\beta$ -decay                      b)  $\alpha$ -decay                      c)  $\gamma$ -decay                      d) None of these
11. Light energy emitted by stars is due to
- a) Breaking of nuclei                      b) Joining of nuclei  
c) Burning of nuclei                      d) Reflection of solar light
12. A nucleus decays by  $\beta^+$ -emission followed by  $\alpha\gamma$  - emission. If the atomic and mass numbers of the parent nucleus are  $Z$  and  $A$  respectively, the corresponding numbers for the daughter nucleus are respectively
- a)  $Z - 1$  and  $A - 1$                       b)  $Z + 1$  and  $A$                       c)  $Z - 1$  and  $A$                       d)  $Z + 1$  and  $A - 1$
13. In radioactive decay process, the negatively charged emitted  $\beta -$  particles are
- a) The electrons present inside the nucleus  
b) The electrons produced as a result of the decay of neutrons inside the nucleus  
c) The electrons produced as a result of collisions between atoms.  
d) The electrons orbiting around the nucleus.
14. The electron in a hydrogen atom makes a transition from  $n = n_1$  to  $n = n_2$  state. The time period of the electron in the initial state is eight times that in the final state. The possible values of  $n_1$  and  $n_2$  are
- a)  $n_1 = 6, n_2 = 2$                       b)  $n_1 = 2, n_2 = 1$                       c)  $n_1 = 8, n_2 = 2$                       d)  $n_1 = 4, n_2 = 2$
15. The ratio of the speed of the electron in the first Bohr orbit of hydrogen and the speed of light is equal to (where  $e, h$  and  $c$  have their usual meanings)
- a)  $2\pi hc/e^2$                       b)  $e^2 h/2\pi c$                       c)  $e^2 c/2\pi h$                       d)  $2\pi e^2/hc$
16. In Rutherford scattering experiment, what will be the correct angle for  $\alpha$  scattering for an impact parameter  $b = 0$
- a)  $90^\circ$                       b)  $270^\circ$                       c)  $0^\circ$                       d)  $180^\circ$
17. For maintaining sustained chain reaction, the following is required
- a) Protons                      b) electrons                      c) neutrons                      d) positons
18. Which of the transitions in hydrogen atom emits a photon of lowest frequency ( $n =$  quantum number)
- a)  $n = 2$  to  $n = 1$                       b)  $n = 4$  to  $n = 3$                       c)  $n = 3$  to  $n = 1$                       d)  $n = 4$  to  $n = 2$
19. The spectral series of the hydrogen spectrum that lies in the ultraviolet region is the
- a) Balmer series                      b) Pfund series                      c) Paschen series                      d) Lyman series
20. The density of uranium is of the order of
- a)  $10^{20} \text{ kgm}^{-3}$                       b)  $10^{17} \text{ kgm}^{-3}$                       c)  $10^{14} \text{ kgm}^{-3}$                       d)  $10^{11} \text{ kgm}^{-3}$