4. Calcualte the β disintegration energy of mirror nuclei. 10

5. (a) Discuss the basic assumptions of liquid drop model and shell model. 6

   (b) Write short notes on proton-proton cycle. 4

Or

6. (a) Discuss about the fission process. 6

   (b) Write short notes on C-N cycle for energy production in stars. 4

7. (a) Obtain the decimal equivalent of 1111. 2

   (b) Convert 5.365 from decimal to binary. 2

   (c) State and explain De Morgan's theorem. 6

Or

8. (a) Prove the following identities : 3

   (i) $A + \bar{A}B = A + B$

   (b) Simplify $Y = \bar{A}BC + A\bar{B}C + AB\bar{C} + ABC$ using Karnaugh map. 7

9. Write short notes on : 2x5=10

   (a) tunnel diode

   (b) solar cell.

Or

10. Explain the working mechanism of cathod ray oscilloscope.
    Hence discuss about the wave form on display. 8+2=10

★★★

UG (CBCS) EVEN SEMESTER EXAMINATION, 2024

EDUCATION
(B.Sc. B.Ed.)

8th Semester

Course No. : BSPH – 802

(Nuclear and Particle Physics, Digital Electronics & Solid State Device)

Full Marks : 50
Pass Marks : 20

Time : 2 hours

The figures in the margin indicate full marks for the questions

(*Answer five questions*)

1. (a) 4 MeV alpha particle scattered through 50^0 from gold foil. 3x2=6

   (i) Calculate the distance of closest approach for head on collision.

   (ii) Calculate the impact parameter 'b' for 50^0 scattering.

   (b) Write short notes on internal conversion. 4

Or

2. (a) Discuss the fermi theory of beta decay. 7

   (b) Discuss about neutrino hypothesis. 3

3. Explain the semi-empirical mass formula. 10

Or