

E-0434

Sub. Code

1MELE2D

M.Sc. DEGREE EXAMINATION, APRIL 2019

Second Semester

Electronics

Elective: NUCLEAR ELECTRONICS

(CBCS – 2012 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

1. What is Photo electric process?
2. Define mass attenuation Coefficient.
3. What is depletion layer?
4. Why Energy resolution is important factor in selecting a detector material?
5. Write the procedure that can be adopted for the surface barrier detectors.
6. How Guard-Ring structure detectors are fabricated?
7. What is base line?
8. Define amplitude.
9. Give the types of Preamplifiers.
10. What is meant by pile-up

Part B $(5 \times 5 = 25)$

Answer **all** questions, choosing either (a) or (b).

11. (a) Write a note on Low velocity Region.

Or

- (b) Explain in brief Compton scattering.

12. (a) Explain how electron-hole pairs are produced.

Or

- (b) Write a short note on photons.

13. (a) Explain Position sensitive Detectors.

Or

- (b) Write a brief note on Cd Te Detectors.

14. (a) Explain the working of High-Pass filter with the diagram.

Or

- (b) Write a note on NIM Modules.

15. (a) Write a note on Discriminators.

Or

- (b) Explain in detail the Time-to-Digital converter.

Part C $(3 \times 10 = 30)$

Answer any **three** questions.

16. Enumerate the Range energy relation for Heavy Charged Particles.

17. Discuss the role of p-n junction and Detector medium requirement.

18. Discuss the working mechanism of Gamma Ray Spectroscopy with the suitable diagram.
 19. Elaborate on the Frequency Domain and Bandwidth.
 20. Discuss in detail the mechanism of Pulse Height Spectroscopy with Multi Channel Analyzers.
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