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- Notes :
1. All questions carry equal marks.
 2. Answer **any five** questions.
 3. Assume suitable data wherever necessary.
 4. Use of slide rule, Logarithmic tables, Steam tables, Non programmable calculator is permitted.

1. a) Explain the performance & operational characteristics of digital protection. 7
b) State and explain merits of digital protection. 7
2. a) Explain forward, backward & centre difference interpolation. 7
b) Explain with neat sketch Mann Morris Sinusoidal wave based algorithm. 7
3. a) Explain in detail the signal conditioning system. 7
b) State and explain sampling theorem. 7
4. a) Write short note on digital filters. 7
b) Explain phenomenon of aliasing and principle of multiplexing in digital relay. 7
5. a) Draw and explain surge protection circuit for digital relay. 7
b) Draw and explain flow chart for digital protection relay. 7
6. a) Explain with block diagram ultrahigh speed wave difference scheme. 7
b) Explain digital line differential protection. 7
7. a) Explain digital differential protection of transformer. 7
b) Explain how fundamental and second harmonic components are extracted using FIR filter. 7
8. a) Explain recent developments in the field of digital power system protection. 7
b) Explain frequency modulation current differential protective scheme with its relay characteristics. 7
