

M.Tech. Electrical Power System (CBCS Pattern) Semester-II
PEPS22 - Advanced Power System Protection

P. Pages : 1

Time : Three Hours



GUG/W/24/11022

Max. Marks : 70

- Notes :
1. All questions carry equal marks.
 2. Due credit will be given to neatness and adequate dimensions.
 3. Assume suitable data wherever necessary.
 4. Illustrate your answers wherever necessary with the help of neat sketches.
 5. Use of slide rule, Logarithmic tables, Steam tables, Mollier's chart, Drawing instruments, Thermodynamic tables for moist air, Psychrometric charts and Refrigeration charts is permitted.
 6. Answer **five** questions as per internal choice.

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| 1. | a) | Explain forward backward and center difference interpolation. | 7 |
| | b) | Explain with neat sketch Mann Morris Sinusoidal wave based Algorithm. | 7 |
| 2. | a) | Explain modern digital protection philosophy. Explain briefly digital relay. | 7 |
| | b) | Explain digital relay signal conditioning sub system. | 7 |
| 3. | a) | Explain the travelling wave based protection of transmission line in detail. | 7 |
| | b) | Why differential relay scheme of protection is not reliable for protection of the device. Explain with the help of neat diagram. What additional signal is need to the percentage differential relaying scheme to make it reliable. | 7 |
| 4. | a) | Draw and explain flow chart for digital protection relay. | 7 |
| | b) | Draw and explain surge protection circuit for digital relay. | 7 |
| 5. | a) | Discuss forward backward and central difference interpretation. | 7 |
| | b) | With the help of block diagram explain analogue to digital conversion and explain any one method converting analog to digital signal form. | 7 |
| 6. | a) | Explain how fundamental and second harmonic components are extracted using FIR filter. | 7 |
| | b) | Explain digital differential protection of transformer. | 7 |
| 7. | a) | Explain frequency modulation current differential protective scheme with its relay characteristics. | 7 |
| | b) | Explain recent developments in the field of digital power system protection. | 7 |
| 8. | a) | What is correlation technique. How is this technique useful in phase comparison travelling wave relaying scheme. | 7 |
| | b) | Explain the function of- | 7 |
| | i) | Transducers | |
| | ii) | Surge protection | |
| | iii) | Sample and hold circuits | |
