B.Sc DEGREE (CBCS) REGULAR / IMPROVEMENT / REAPPEARANCE EXAMINATIONS, OCTOBER 2024

Third Semester

B.Sc Physics Model III Electronic Equipment Maintenance

Core Course - PH3CRT26 - NETWORK THEORY

2017 Admission Onwards

85B1E644

Time: 3 Hours   Max. Marks : 60

Part A

*Answer any **ten** questions.*

*Each question carries **1** mark.*

1. Briefly explain about types of signals.

2. The resistors that are connected in series the values are $R1=15\Omega$, $R2=10\Omega$, and $R3=2\Omega$.The current is 0.2A. Determine the Voltage drop across the each resistor and the total voltage.

3. What is difference between mesh & loop?.

4. What is use of network theorems?

5. Define Nortons Theorem.

6. Define transient response.

7. Define a time constant of a RL circuit.

8. State Miller's theorem.

9. Define the h-parameters of a two-port network.

10. Define the ABCD -parameters or Transmission parameters of a two-port network.

11. Write short note on types of attenuators.

12. Define insertion loss in networks.

(10×1=10)

Part B

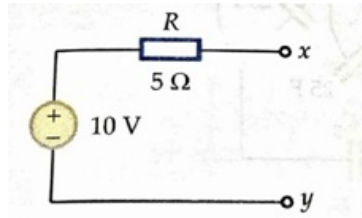*Answer any **six** questions.*

*Each question carries **5** marks.*

13. Determine the Inverse Laplace transform of the function.

$$F(s) = \frac{s-3}{(s^2 + 4s + 13)}$$

14. Obtain an equivalent current source of the given voltage source as given in Fig.

15. State and prove reciprocity theorem with suitable example.

16. Compare Thevenin's theorem and Norton's theorem.

17. Compare steady state and transient state.

18. Explain about resistance in a circuit.

19. Write short note on Interconnection of two-port network.

20. Write short note on short circuit admittance parameters of a two port network.

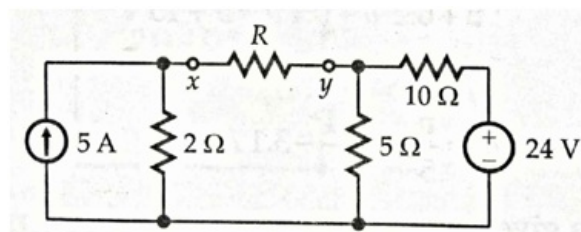21. Write equation of h parameters in terms of Y parameters.

(6×5=30)

Part C

*Answer any **two** questions.*

*Each question carries **10** marks.*

22. Explain the properties of Laplace transformation.

23. What should be the value of R such that maximum power transfer can take place from the rest of the network to R in Fig.? Obtain the amount of this power.

24. Draw the sinusoidal response of R-L circuit and determine the current equation.

25. Explain the concept of poles and zeros in a network function. Also an admittance function is given by

$$Y(s) = \frac{1}{s+2}$$ Find the pole-zero plot.