SHRI RAMSWAROOP MEMORIAL UNIVERSITY

End Semester Examination (2021-22)-Odd Semester

M.Sc. (Physics) – I Year (I Sem)	
Course Name: Electronics	**Code: MPH1004**
Time: 02 Hours	**Max Marks: 60**

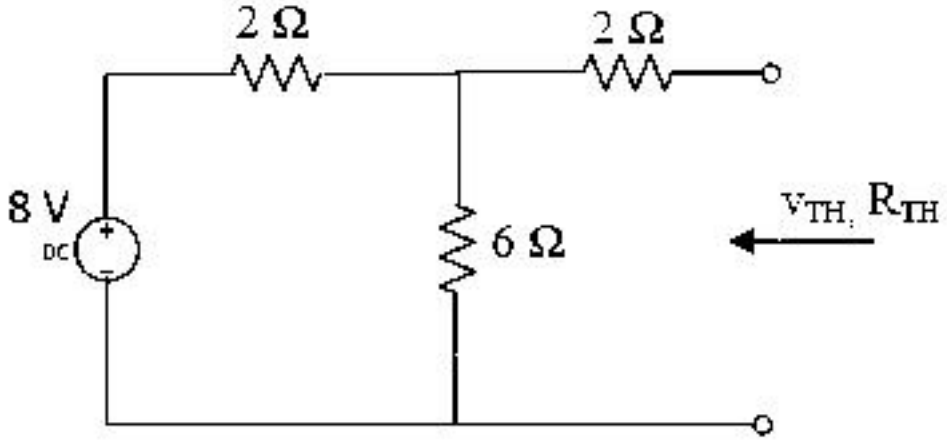
University Roll No.															
(To be filled by the Student)															

Note: Please read instructions carefully:

a) *The question paper has 03 sections and it is compulsory to attempt all sections.*

b) *All questions of Section A are compulsory; questions in Section B and C contain choice.*

Section A: Very Short Answer type Questions **Attempt all the questions.**		**BL**	**CLO**	**Marks (10)**
1.	Describe superposition theorem.	BL2	CLO1	02
2.	What are advantages of CMOS technology over bipolar technology?	BL1	CLO2	02
3.	Define cutoff frequency of a filter.	BL1	CLO3	02
4.	Discuss advantages and disadvantages of phase shift oscillator.	BL2	CLO4	02
5.	Compare design of combinational and sequential circuits.	BL2	CLO5	02
Section B: Short Answer Type Questions **Attempt any 03 out of 06 questions.**		**BL**	**CLO**	**Marks (30)**
1.	Illustrate source transformation in networks with suitable example.	BL3	CLO1	10
2.	Explain working of pMOS transistors.	BL2	CLO2	10
3.	List salient features of Junction Field Effect Transistor (JFET).	BL4	CLO2	10
4.	Sketch ideal and practical gain response graphs for low-pass and high-pass filters. Explain the function of both types of filters.	BL4	CLO3	10
5.	Examine the application of 555 timer as monostable multivibrators.	BL3	CLO4	10
6.	Explain the working principle of multiplexer. Design logic circuit for 2:1 multiplexer and make characteristic table to illustrate its operation.	BL4	CLO5	10
Section C: Long Answer Type Questions/Case Study **Attempt any 01 out of 04 questions.**		**BL**	**CLO**	**Marks (20)**
1.	Explain Thevenin theorem. Apply it to following network to calculate equivalent Thevenin voltage (V_{th}) and resistance (R_{th}).	BL3	CLO1	20

				
2.	Draw the circuit diagram of CMOS inverter and explain its operation. Distinguish between static and dynamic power dissipation in CMOS circuit.	BL4	CLO3	20
3.	List ideal characteristics of an operational amplifier. Examine the effect of negative feedback on the operational amplifier. Mention some of its applications.	BL4	CLO4	20
4	Describe the concept of encoder and decoder. Illustrate the logic of BCD decoder with suitable diagram and truth table.	BL3	CLO5	20
