## 0906E519

## M.Sc Sem.-2 Examination P - 409

**Medical Physics** 

Time: 2-00 Hours] June 2022

[Max. Marks: 50

Instructions: All questions in **Section – I** carry equal marks. Attempt any Three questions in Section - I. Questions in Section - II is COMPULSORY.

## Section - I

Q-I	1	What are major differences between MOSFET and BJT? Draw schematic symbols for the n-channel and p-channel E-MOSFET. Discuss construction, and operations of n-channel E-MOSFET. Define I and I <sub>d</sub> parameters for E-MOSFET	7 <
	F	<ol> <li>Give brief introduction about BJT. Discuss construction, and operations of BJT. Also discuss common-emmiter (CE) configuration with relevan circuit diagram</li> </ol>	7 t
Q-II	A	. Give brief introduction about JFET. Discuss construction, and operations of JFET. Write advantages and disadvantages of JFET. Also discuss the transfer characteristics of P-channel JFET.	7
	В.	What is a photodiode? List various types of photodiodes; discuss construction and working of photodiode.	7
Q-III	A.	Describe Hartley Oscillator in brief.	7
	В.	Explain UJT as a relaxation oscillator.	7
Q-IV	A.	Write briefly about Colpitts oscillators.	7
	B.	State Barkhausen Criterion. How are 360° phase shifts produced in Wein-Bridge Oscillator?	7
Q-V	A.	Differentiate inverting and non-inverting amplifiers.	7
	B.	Discuss briefly voltage to current converter	7

Q-VI	A.	Write short notes on summing amplifier and scaling amplifier.			7			
	В.	Describe voltage to current conver	ter.		7			
Q-VII	A.	a. Give brief introduction about 8085 MPU. Draw pin diagram and discuss various signals of 8085 microprocessor.						
	В.	Discuss R-S flip-flops using NAN tables.	ND and	NOR gates. Also write truth	7			
Q-VIII A. Discuss JK flip-flops using NAND gate. Also discuss master flop using relevant diagram.				Also discuss master slave flip	7			
	В.	List various types of shift-registers	and dis	scuss any two in details	7			
Section – II								
Q-IX	MC	<sup>C</sup> Qs			8			
1.	The BJT isoperated device							
	A.	current	B.	power				
	C.	voltage	D.	both current and voltage				
2.	A photo diode operates incondition							
	A.	Forward bias	B.	Reverse bias				
	C.	Both forward and reverse bias	D.	Saturation				
3. In the phase-shift oscillator, the operating frequency is defined by								
	A.	resistance only	В.	capacitance only				
	C.	LC combinations	D.	RC combinations				

4.	VV	which oscillators are the tuned oscillators?					
	A.	Colpitts	В.	Hartley			
	C.	Crystal	D.	RC			
5.	use						
	A.	To control the output voltage	В.	To obtain finite output voltage			
	C.	To receive zero noise output voltage	D.	None of the mentioned			
6. Which of the subsequent is a mixture of inverting and non-inverting a							
	Α.	Differential amplifier with one amp	е ор- В.	Differential amplifier with two op- amps			
	C.	Differential amplifier with three amps	e op- D.	Differential amplifier with four op- amps			
7.	7. The RAM which uses bipolar transistor is known as						
	A.	Static RAM	В.	Dynamic RAM			
	C.	Flash RAM	D.	Permanent RAM			
3.	The	re areflags in 8085 MPU					
	A.	03	В.	04			
	C.	05	D.	06			
		,	_>	XXX			

