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Total No. of Questions: 5 (Printed Pages: 4) Maximum Marks: 50

- **INSTRUCTIONS**: (i) All questions are compulsory.
  - (ii) Answer each question on a fresh page.
  - (iii) Figures to the right indicate full marks.
  - (iv) Draw neat diagrams wherever necessary.
  - (v) Write the number of each question and sub-question clearly.
- 1. (A) Fill in the blanks:

 $2 \times 1 = 2$ 

- (i) Photo cell converts light energy in to ..................
- (ii) Line regulation is percentage change in output voltage to change in .......
- (B) Answer the following in brief:

 $2 \times 3 = 6$ 

- (i) With the help of a neat block diagram, explain the working of DC to DC converter.
- (ii) With the help of a neat diagram, explain over light detector circuit using SCR.

	(C)	Answ	ver the following:	1×2=2
		(i)	With the help of a neat constructional diagram, explain w	orking
			of pn-junction photo diode.	
2.	(A)	Defin	ne the following:	2×1=2
		(i)	Transducer	
		(ii)	Photo conductive effect.	
	(B)	Answ	ver the following in brief:	2×3=6
		(i)	Draw the block diagram of CRO. Explain, delay line circu	uit and
			power supply.	
		(ii)	With the help of a neat diagram, explain the range extends	tension
			of DC voltmeter.	
	(C)	Answ	ver the following:	1×2=2
		(i)	State any two applications of Astable multivibrator using	g timer
			IC NE555 and write its output time period formula.	
3.	(A)	Fill i	n the blanks:	2×1=2
		(i)	When force or pressure is applied to the piezoelectric cry	stal, it
			produces	
		(ii)	The instrument used to measure the intensity of light ra	diation
			is called	

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(B)	Answ	er the following in short:	3×1=3
	(i)	With the help of block diagram. Explain AF signal gen	erator.
(C)	Answ	er the following in detail :	1×5=5
	(i)	With the help of block diagram explain metal detector an	d state
		any two applications of it.	
		Or	
	(i)	Draw the block diagram of electrocardiogram (ECG) and	explain
		the function of each block.	
(A)	Answ	er the following in <i>one</i> word/sentence each:	2×1=2
	(i)	State the frequency calculating formula using CRO.	
	(ii)	State the function of electron gun assembly in catho	de ray
		tube (CRT).	
(B)	Answ	er the following:	1×3=3
	(i)	Draw the pin configuration diagram of timer IC NE5	55 and
		explain the function of pin no. 2 and pin no. 7.	
(C)	Answ	er the following:	1×5=5
	(i)	State any two applications of DC series motor and with the	he help

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the speed of it.

of circuit diagram explain the flux control method used to control

(i) State any two applications of DC shunt motor and with the help of circuit diagram explain the armature resistance control method used to control the speed of it.

## 5. Answer the following:

 $2 \times 5 = 10$ 

- (1) State any *two* examples of active transducer and passive transducer.
- (2) Draw a neat labelled diagram of capacitive transducer and state any *two* applications of it.
- (3) Why should resistor be connected in series with LED? Name *two* types of LED lamp driver circuits.
- (4) State any two points of comparison between LED and LCD.
- (5) State any two advantages of electronic timer over mechanical timer.

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