BT MRE-II(R/S)-06-23-2325 Reg. No. | | | | | | | | |

C

B.Tech. Degree II Semester Regular/Supplementary Examination in Marine Engineering June 2023

19-208-0204 BASIC ELECTRONICS AND MEASUREMENTS

(2019 Scheme)

Time: 3 Hours Maximum Marks: 60

Course Outcome
On successful completion of the course, the students will be able to:

CO1: Characterise semiconductors, diodes and transistors
CO2: Explain the construction, characteristics and working of various semi-conductors devices
CO3: Understand the working of oscillators and other wave shaping and switching circuits.
CO4: Use different meters and balance bridge to find unknown values
CO5: Use digital voltmeters, CRO, multimeters
Bloom's Taxonomy Levels (BL): L1 – Remember, L2 – Understand, L3 – Apply, L4 –Analyze, L5 – Evaluate, L6 – Create
PI – Programme Indicators

(Answer ***ALL*** questions) (5 × 15 = 75)

			Marks	BL	CO	PI
I.	(a)	Explain Electric field emission and Photoelectric emission	5	L1	1	1.3.1
	(b)	Draw and explain the VI characteristics of a zener diode.	5	L1	1	1.3.1
	(c)	Derive the expression for conductivity in intrinsic semiconductor.	5	L2	1	1.3.1
		OR				
II.	(a)	Explain fixed biasing with all loop equations. Also mention its limitations.	5	L2	1	2.2.3
	(b)	Differentiate positive and negative feedback in transistor amplifier.	4	L1	1	1.3.1
	(c)	Draw and explain V-I relationship of PN junction under forward and reverse biased conditions.	6	L2	1	1.3.1
III.	(a)	Explain the construction, working and characteristics of DMOSFET.	10	L2	2	1.3.1
	(b)	Compare SCR and TRIAC.	5	L1	2	1.3.1
		OR				
IV.	(a)	Explain Transistor series voltage regulator.	5	L2	2	1.3.1
	(b)	Draw the circuit of an RC coupled transistor amplifier and explain its working along with its frequency response curve.	10	L2	2	1.3.1
V.	(a)	What is an oscillator? State the Barkhausen conditions of oscillations.	4	L1	3	2.2.3
	(b)	Explain RC phase shift oscillator along with frequency expression.	4	L2	3	1.3.1
	(c)	Draw and explain Monostable multivibrator along with waveforms.	7	L2	3	2.2.3
		OR				
VI.	(a)	Draw and explain biased positive clipper circuit with necessary waveform.	4	L1	3	1.3.1
	(b)	Explain Integrator circuit and derive the expression for output voltage.	4	L2	3	1.3.1
	(c)	Explain the circuit and operation of the Wein bridge oscillator.	7	L2	3	1.3.1

(P.T.O.)

			Marks	BL	CO	PI
VII.	(a)	What are the essentials of indicating instrument? Explain the different types of controlling torque provided in an instrument.	6	L1	4	1.3.1
	(b)	Explain the theory and working of an electro-dynamometer type wattmeter with the help of a diagram.	9	L2	4	2.2.3
		OR				
VIII.	(a)	How will you use a PMMC instrument which gives full scale deflection at 50mV p.d. and 10mA current as (i) Ammeter 0-10A range (ii) Voltmeter 0-250V range	6	L3	4	2.2.3
	(b)	With neat diagram explain the working of a d'Arsonnal Galvanometer.	9	L2	4	1.3.1
IX.	(a)	What is transducer? With neat diagram explain any one transducer used for temperature measurement.	8	L2	5	4.1.3
	(b)	Explain digital voltmeter and frequency meter.	7	L1	5	1.3.1
		OR				
X.	(a)	Describe with the help of neat sketches the construction and working of a CRO.	10	L2	5	4.1.3
	(b)	With block diagram explain the working principle of a signal generator.	5	L2	5	4.1.3

Bloom's Taxonomy Levels
L1 = 28%, L2 = 68%, L3 = 4%.

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