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R-17

Code: 7G354

III B.Tech. I Semester Supplementary Examinations Nov/Dec 2022

Electronic Measurements and Instrumentation

(Electronics and Communication Engineering)

Max. Marks: 70

Time: 3 Hours

Answer any five full questions by choosing one question from each unit (5x14 = 70 Marks)

	Marks	CO	Blooms Level
UNIT-I			
1. a) Define the following terms: (i) Accuracy. (ii) Precision (iii) Resolution	6M	1	1
b) Explain in detail the types of Error possible in measurement process.	8M	1	2
OR			
2. a) Explain about the Digital Multimeter.	6M	1	2
b) A set of independent voltage measurements was taken by six observers and recorded as 12.8 V, 12.2 V, 12.5 V, 13.1 V, 12.9 V, and 12.4 V. Calculate (a) Arithmetic Mean; (b) Deviation from the mean;(c)Average Deviation;(d) Standard Deviation.	8M	1	3
UNIT-II			
3. a) Draw the block diagram of a spectrum analyzer and explain its working.	8M	2	2
b) Discuss in brief the Sweep frequency generator.	6M	2	2
OR			
4. Draw and explain in detail about Simple frequency counter.	14M	2	2
UNIT-III			
5. Discuss in detail the construction and working of Digital Storage Oscilloscope.	14M	3	2
OR			
6. a) Discuss the different oscilloscope controls.	6M	3	2
b) Explain how Voltage and frequency are measured with the help of Oscilloscope.	8M	3	2
UNIT-IV			
7. a) Explain the basic principle of Wheatstone Bridge and derive the expression for unknown resistance.	7M	4	2
b) Explain the Kelvin bridge with neat diagram and derive the expression for unknown resistance.	7M	4	2
OR			
8. a) What is the need of Guarded Wheatstone Bridge? Explain.	8M	4	2
b) Discuss Sources of error in Q –meter.	6M	4	2
UNIT-V			
9. Define a Transducer. Explain about the classification of transducers.	14M	5	2
OR			
10. a) Explain about thermocouples.	7M	5	2
b) Describe about Resistance thermometers.	7M	5	2

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III B.Tech. I Semester Supplementary Examinations Nov/Dec 2022

Analog & Digital Integrated Circuits Applications

(Electronics and Communication Engineering)

Max. Marks: 70

Time: 3 Hours

Answer any five full questions by choosing one question from each unit (5x14 = 70 Marks)

UNIT-I

- 1. a) List the types of ICs and Interpret circuit complexity. 7M
- b) Identify the applications of Op-amp and its advantages. 7M

OR

- 2. Discuss about Inverting & Non- Inverting Op-Amp circuits and derive the expression for the gain. 14M

UNIT-II

- 3. a) Summarize the working principle of R-2R ladder DAC 8M
- b) Classify various ADC and DACs. 6M

OR

- 4. a) Explain the functional diagram of IC 555 with a neat sketches 6M
- b) Design a monostable multivibrator using 555 timer with neat sketches 8M

UNIT-III

- 5. a) Explain the behavioral and data flow style description type of HDL programming, with examples and keywords used 8M
- b) Define Noise Margins with an example 6M

OR

- 6. a) Explain about the syntax procedure of Dataflow modeling 7M
- b) Differentiate between functions and procedures 7M

UNIT-IV

- 7. Describe the working principle of IC 74x148 with neat sketches 14M

OR

- 8. Analyze the behavior IC 74x151 Multiplexer with VHDL program. 14M

UNIT-V

- 9. Explain about Impediments to synchronous Design 14M

OR

- 10. Explain the operation of any Shift Register with a VHDL Program 14M

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Code: 7G552

III B.Tech. I Semester Supplementary Examinations Nov/Dec 2022

Applied Thermodynamics-II
(Mechanical Engineering)

Max. Marks: 70

Time: 3 Hours

Answer any five full questions by choosing one question from each unit (5x14 = 70 Marks)

	Marks	CO	Blooms Level
UNIT-I			
1. Discuss Reheat Rankine cycle with a neat sketch.	14M	CO1	L2
OR			
2. Explain the working construction of steam engines.	14M	CO1	L2
UNIT-II			
3. a) Sketch Babcock and Wilcox boiler and explain its working.	10M	CO2	L2
b) Illustrate about fusible plug.	4M	CO2	L3
OR			
4. Derive an expression for natural draught and maximum discharge rate of gases through the chimney for a given height of chimney, clearly stating the assumptions made.	14M	CO2	L6
UNIT-III			
5. a) Describe the function of nozzle & discuss various types of nozzles.	7M	CO3	L1
b) Discuss about super saturation flow of steam in nozzles.	7M	CO3	L2
OR			
6. a) In a steam nozzle, steam expands from 4 bar to 1 bar. The initial velocity of steam is 60 m/s and the initial temperature is 200°C. Determine the exit velocity if the nozzle efficiency is 92%.	10M	CO3	L3
b) Define metastable state.	4M	CO3	L1
UNIT-IV			
7. a) With the help of a neat sketch explain the working principle of Barometric jet condenser.	8M	CO4	L2
b) Differentiate jet condensers with surface condensers.	6M	CO4	L4
OR			
8. a) Steam enters a condenser at 36°C and with barometer reading 760 mm of Hg. If vacuum of 695 mm of Hg. is produced, find the vacuum efficiency?	8M	CO4	L3
b) Explain parallel flow jet condenser and explain its working principle.	6M	CO4	L2
UNIT-V			
9. a) Explain velocity compounding in steam turbines with neat sketch	8M	CO5	L2
b) Compare impulse turbine with reaction turbine.	6M	CO5	L5
OR			
10. Steam leaves the nozzle of a single stage impulse turbine at 850 m/s. The nozzle angle is 18° and the blade angles are 29° at the inlet and outlet. The friction coefficient is 0.9. Calculate blade velocity and steam mass flow rate in kg/hr to develop 300 W power.	14M	CO5	L3

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Code: 7G159

III B.Tech. I Semester Supplementary Examinations Nov/Dec 2022

Computer System Architecture

(Electronics and Communication Engineering)

Max. Marks: 70

Time: 3 Hours

Answer any five full questions by choosing one question from each unit (5x14 = 70 Marks)

	Marks	CO	Blooms Level
UNIT-I			
1. a) Perform the subtraction with the following unsigned decimal numbers by taking the 10's complement of the subtrahend. i) 5250 – 1321 ii) 1753 – 8640 iii) 20 – 100 iv) 1200 – 250	8M	1	2
b) Explain Bus Structures in computer.	6M	1	2
OR			
2. a) Perform the subtraction with the following unsigned binary numbers by taking the 2's complement of the subtrahend. i) 11010 – 10000 ii) 11010 – 1101 iii) 100 – 110000 iv) 1010100 - 1010100	8M	1	2
b) How many types of complements for each base 'r' system? Explain	6M	1	2
UNIT-II			
3. a) What is meant by Register Transfer? Explain.	7M	2	2
b) List and describe the computer registers.	7M	2	2
OR			
4. a) With neat sketch explain one stage of Arithmetic logic shift unit.	6M	2	2
b) Explain memory reference instructions in brief.	8M	2	2
UNIT-III			
5. a) How the arithmetic statement $X = (A + B) * (C + D)$ evaluate using zero, one, two or three address instructions?	7M	3	2
b) Perform (-9) X (-13) using Binary Multiplier. Draw Binary Multiplier flow chart.	7M	3	2
OR			
6. a) Describe Data Manipulation Instructions.	7M	3	3
b) Explain Micro programmed Control Organization with neat sketch.	7M	3	2
UNIT-IV			
7. a) Describe RAM and ROM chips in Main Memory.	6M	4	2
b) Briefly describe computer peripherals.	8M	4	2
OR			
8. a) Describe the Segmented Page Mapping with numerical example.	7M	4	4
b) Outline Direct Memory Access. Explain DMA controller with neat sketch.	7M	4	4
UNIT-V			
9. a) Describe the characteristics of multiprocessors.	7M	5	2
b) What is meant by parallel processing? Describe with neat sketch.	7M	5	2
OR			
10. a) Describe the pipelining with suitable sketch.	7M	5	3
b) Explain system bus in Inter processor Arbitration.	7M	5	2
