Exam Date & Time: 23-Apr-2022 (02:00 PM - 05:00 PM)

MANIPAL ACADEMY OF HIGHER EDUCATION

THIRD SEMESTER B.TECH END SEMESTER MAKE UP EXAMINATIONS, APRIL 2022

ELECTRONIC MEASUREMENTS [ICE 2153]

Marks: 50 **Duration: 180 mins.**

A

Answer all the questions.

Instructions to Candidates: Answer ALL questions Missing data may be suitably assumed

1) Derive the expression of unknown inductance using Anderson bridge and draw the phasor diagram for the same. (4)

A)

B) Draw the circuit diagram for the measurement of energy in a 3 phase 3 wire system using 2 element energy meter. (2)

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ii A single-phase energy meter makes 500 revolutions per kWh. It is found on testing as making 40 revolutions in 58.1 seconds at 5kW full load. Find the percentage error. (2)

C) Explain the operation of potentiometric recorder with its schematic. (2)

2) With a block diagram explain the working of different components of CRT. (4)

A)

B) Explain the working of high impedance probe and active probe with necessary diagram. (4)

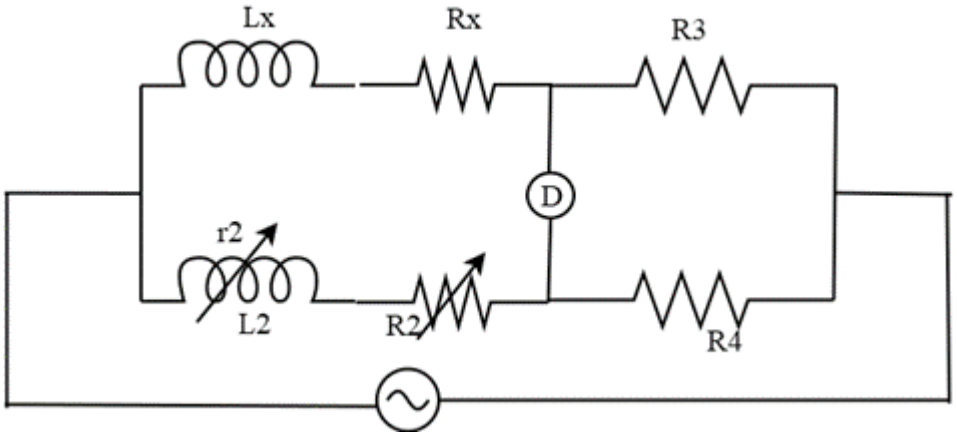
C) Derive an expression for harmonic distortion. (2)

3) Differentiate the working of passive matrix and active matrix LCD display with necessary figures. Also explain the operation for 5X5 LCD active matrix display to represent the character ‘Z’. (5)

A)

B) Explain the working of swept heterodyne spectrum analyser with its diagram. (3)

C) Find the value of Lx and Rx at balanced condition for the bridge shown below, when L2=70mH, r2=600Ω, R2=300Ω, R3=200Ω and R4=300Ω. (2)



4) State the disadvantage of single slope ADC and also explain the mitigation process to overcome the same with necessary figures and equations. (4)

A)

B) Explain the working of different components of magnetic recorder with its block diagram. (3)

C) Draw a circuit for 4-bit R-2R type DAC. With necessary equations, derive the expression for output voltage for the digital input 0010. (Consider logic 1 as 'V'). (3)

5) An unknown impedance component is connected in series with working coil for measurement of Q-factor. With necessary figure and equations, derive the expression for Q-factor. (4)

A)

B) With a block diagram explain the working of frequency selective wave analyzer. (3)

C) Explain the working of digital frequency meter with gate control flip-flop with necessary figures. (3)

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