

Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
FOURTH SEMESTER B.TECH DEGREE EXAMINATION(R&S), MAY
2019

Course Code: EE208

Course Name: MEASUREMENTS AND INSTRUMENTATION (EE)

Max. Marks: 100

Duration: 3 Hours

PART A

Answer all questions, each carries 5 marks

Marks

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|---|---|-----|
| 1 | The weight of 5g is used as control weight in a gravity controlled instrument. Find its distance from the spindle, if the deflecting torque for a deflection of 60° is 1.13×10^{-3} . | (5) |
| 2 | Explain the measurement of insulation resistance by loss of charge method. | (5) |
| 3 | How high voltage is tested using the method of sphere gaps? | (5) |
| 4 | Explain the measurement of flux in a ring specimen. | (5) |
| 5 | How frequency is measured using a Wien's bridge? | (5) |
| 6 | Draw the diagram of a Cathode Ray Tube. | (5) |
| 7 | Explain the flow measurement using ultrasonic transducer. | (5) |
| 8 | Explain the working of piezoelectric transducer. | (5) |

PART B

Answer any two questions, each carries 10 marks

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| 9 | Explain the working of attraction type and repulsion type of moving iron instrument with the help of neat diagrams | (10) |
| 10 | a) Explain any two errors that occur in electrodynamic type wattmeter and its compensation. | (5) |
| | b) Explain the working of electronic energy meter. | (5) |
| 11 | a) Write short note on deflecting, damping and controlling torque | (5) |
| | b) Write short note on 3 phase induction type energy meter | (5) |

PART C

Answer any two questions, each carries 10 marks

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| 12 | Draw the phasor diagram of a current transformer. Derive the expressions for ratio and phase angle errors. | (10) |
| 13 | a) How high voltage is measured using electrostatic voltmeter? | (5) |
| | b) Explain the measurement of rotational speed by optical sensors. | (5) |
| 14 | What is a Lloyd- Fisher square? Explain the measurement of iron losses in a magnetic material employing Lloyd-Fisher square using wattmeter method. | (10) |

PART D

Answer any two questions, each carries 10 marks

- 15 a) Derive the equations for balance in the case of Maxwell's inductance –capacitance bridge. (5)
b) Explain the working of a dc potentiometer with figure. (5)
- 16 Explain how CRO can be used to measure frequency and phase angle (10)
- 17 a) Explain the measurement of any non-electrical quantity employing load cell. (5)
b) How strain is measured using a strain gauge? (5)
