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| **Scheme of Valuation/Answer Key** |
| **APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**FOURTH SEMESTER B.TECH DEGREE EXAMINATION, 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 |
| 1 |  | (Unit of deflection torque is not given - it may be in N-m or Kg-m) (if Td in Kg-m) …… 5 marks(if Td in N-m) …….. 5 marks | 5 |
| 2 |  | Measurement of insulation resistance by loss of charge method - Figure (2 marks)Explanation (3 marks) | 5 |
| 3 |  | Figure (2 marks)Explanation (3 marks)  | 5 |
| 4 |  | Circuit diagram (3 marks)Explanation (2 marks)  | 5 |
| 5 |  | Wein’s Bridge circuit (3 marks)Frequency expression, rad/s **or**  Hz (2 marks) (no derivation) | 5 |
| 6 |  | Cathode ray tube - diagram (4 marks) Labelling (1 mark) | 5 |
| 7 |  | Figure (2 marks)Explanation (3 marks) | 5 |
| 8 |  | General principle (2 marks)Diagram (1 mark)Working (2 marks) | 5 |
| **PART B** |
| ***Answer any two questions, each carries 10 marks*** |
| 9 |  | Attraction type - diagram (2 marks) Construction (2 ½ marks)Repulsion type - diagram (2 marks) Construction (2 ½ marks) Torque equation (1 mark) (No derivation) | 10 |
| 10 | a) | Any two errors -- explanation (3 marks)Compensation methods (2 marks) | 5 |
|  | b) | Figure (2 marks)Explanation (3 marks) | 5 |
| 11 | a) | Deflecting torque, damping torque (air friction, fluid friction, eddy current), controlling torque (spring & gravity) – only definition required (no detailing) (5 marks) | 5 |
|  | b) | Figure (3 marks)Explanation (2 marks) | 5 |
| **PART C** |
| ***Answer any two questions, each carries 10 marks*** |
| 12 |  | Phasor diagram of current transformer (4 marks)Derivation of ratio error (3 marks)Derivation of phase angle error ( 3 marks) | 10 |
| 13 | a) | Figure (2 marks)Explanation (3 marks) | 5 |
|  | b) | Explanation (5 marks) | 5 |
| 14 |  | Circuit (3 marks) Explanation (4 marks) Derivation (3 marks) | 10 |
| **PART D** |
| ***Answer any two questions, each carries 10 marks*** |
| 15 | a) | Maxwell’s LC Bridge circuit - diagram (2 marks)Derivation of  and  …… 3 marks | 5 |
|  | b) | Basic or commercial (anyone) DC potentiometer Figure (3 marks) Explanation (2 marks) | 5 |
| 16 |  | Explanation of measurement of frequency (5 marks), Explanation of measurement of phase angle (5 marks) | 10 |
| 17 | a) | Explanation – measurement using load cell (5 marks) | 5 |
|  | b) | Explanation (5 marks) | 5 |
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