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| **Scheme of Valuation/Answer Key**  (Scheme of evaluation (marks in brackets) and answers of problems/key) | | | | | |
| **APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**  FIFTH SEMESTER B.TECH(S) DEGREE EXAMINATION, MAY 2019 | | | | | |
| **Course Code: EE311** | | | | | |
| **Course Name: ELECTRICAL DRIVES & CONTROL FOR AUTOMATION** | | | | | |
| Max. Marks: 100 | | | |  | Duration: 3 Hours |
|  | | | | | |
| **PART A** | | | | | |
|  |  | | ***Answer any three full questions, each carries 10 marks.*** | | | | Marks | |
| 1 | a) | | Ia=19.38A(1mark),E=V+IaRa=245.81(2mark),Φ=Eg60A/ZNP=0.0105Wb(1mark) | | | | ( 4) | |
|  | b) | | E= ΦZN/60\*P/A derivation(2mark),final expression(1mark) | | | | ( 4) | |
|  | c) | | Working principle(1mark),Explanation(1mark) | | | | ( 2) | |
| 2 | a) | | Diagram of Armature reaction (3mark), Explanation(2mark),Effects (2mark) | | | | ( 6) | |
|  | b) | | Chara of DC shunt generator ; No load chara (2mark) external chara(2) | | | | ( 4) | |
|  | c) | |  | | | |  | |
| 3 | a) | | Shunt motor application (1mark),Series motor application (1mark),Compund motor application (1mark) | | | | (3) | |
|  | b) | | Eb=V-IaRa=583.05V(1mark),Ta=9.55EbIa/N=284.71Nm(1mark),N=Eb60A/ΦZP=442rpm(Approx)(1markArmature CUloss=383.07,FieldCUloss=1440,Totalloss=2743..07W(1mark),motor input=VIL=15000(1mark),Output power=input power-Total loss=122256.93W(1mark),Efficiency=81.71%(1mark) | | | | (7) | |
|  |  | |  | | | |  | |
| 4 | a) | | Use of starter with diagram(2mark) | | | | (2) | |
|  | b) | | Chara dc shunt motor (3mark),dc series motor (3mark) compound motor(2mark) | | | | (8) | |
|  | c) | |  | | | |  | |
| **PART B** | | | | | | | |
| ***Answer any three full questions, each carries 10 marks.*** | | | | | | | |
| 5 | a) | Diagram(1mark),Explanation(3mark) | | | | | ( 4) | |
|  | b) | Potenial Transformer diagram(1mark),Explanation(2mark),C.T diagram (1mark),Explanation(2mark) | | | | | (6 ) | |
|  | c) |  | | | | | ( ) | |
| 6 | a) | Circuit diagram of OC and SC test(1mark),Explanation(2mark),Derivation of equivalent circuit parameters(4mark) | | | | | (7) | |
|  | b) | Types of losss(1mark),Explanation(2mark) | | | | | (3) | |
|  | c) |  | | | | |  | |
| 7 | a) | Ckt diagram (1mark),Explanation(2mark),procedure(3mark),Samplecircle diagram(2mark) | | | | | (8) | |
|  | b) | Slip expression(1mark),Explanation(1mark) | | | | | (2) | |
|  | c) |  | | | | |  | |
| 8 | a) | How rotating magnetic field is produced by three phase supply(2mark) ,The magnitude of resultant flux is 1.5 Φm at four different angles(4x2=8mark) | | | | | (10) | |
|  | b) |  | | | | |  | |
|  | c) |  | | | | |  | |
| **PART C** | | | | | | | |
| ***Answer any four full questions, each carries 10 marks.*** | | | | | | | |
| 9 | a) | Circuit Diagram of OC and SC test(2mark)Sample graph and Explanation(4mark),From phasor diagram finding regulation(4mark) | | | | | ( 10) | |
|  | b) |  | | | | | ( ) | |
|  | c) |  | | | | | ( ) | |
| 10 | a) | Definition(1mark),Explanation(2mark) | | | | | (3) | |
|  | b) | Graph(1mark),Explanation(2mark) | | | | | (3) | |
|  | c) | Circuit diagram of any two method(2mark),Explanation of above two method(2mark) | | | | | (4) | |
| 11 | a) | Double field revolving theory and phasor diagram(2mark),Explanaion(2mark) | | | | | (4) | |
|  | b) | Circuit Diagram(2mark),Explanation(3mark) | | | | | (5) | |
|  | c) | Any two application(1mark) | | | | | (1) | |
| 12 | a) | Circuit diagram(2mark),Explanation with graph(4mark) | | | | | (6) | |
|  | b) | Circuit diagram(2mark),Explanation(2mark) | | | | | (4) | |
| 13 | a) | Open loop block diagram(1mark),Explanation(2mark),Closed loop block diagram(1mark),Explanation(2mark) | | | | | (6) | |
|  | b) | Any four applications(2mark) | | | | | (2) | |
|  | c) | Any two applications(1mark),Explanation(1mark) | | | | | (2) | |
| 14 | a) | Diagram of digital controller (2mark),Explanation(3mark) | | | | | (5) | |
|  | b) | One application of axial controller(0.5mark),Explanation(2mark),One application of machine tool controller(0.5mark),Explanation(2mark) | | | | | (5) | |
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