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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 DEGREE EXAMINATION, DECEMBER 2018 |
| **Course Code: ME303** |
| **Course Name: MACHINE TOOLS AND DIGITAL MANUFACTURING** |
| Max. Marks: 100 |  | Duration: 3 Hours |
| **PART A** |
|  |  | ***Answer any three full questions, each carries 10marks.*** | Marks |
| 1 | a) | Diagram - 2 marksExplanation – 3 marks | (5)  |
|  | b) | Figure – 1 markExplanation of chip formation mechanism – 4 marks  | (5) |
| 2 | a) | Merchant circle diagram – 2 marks Major forces acting on chip tool interface – 3 marks | (5) |
|  | b) | For appropriate steps give 3 marksSol: When V is increased by 25%; T = 10.67minsWhen *f* is increased by 25%; T = 20.46minsWhen *d* is increased by 25% ; T = 33.85 mins | (5) |
| 3 | a) | Prerequisites like – Centering, facing, support from dead centre etc. Any 3 – 4prerequisites give 4 marks | (4) |
|  | b) | Any three different methods of taper turning with neat sketch – 6 marks | (6) |
| 4 | a) | Any 4 advantages of radial drilling machine –Give 4 marks | (4) |
|  | b) | Explanation – 3 marksDiagram –3 marks | (6) |
| **PART B** |
| ***Answer any three full questions, each carries 10marks.*** |
| 5 | a) | Mentioning about important parts of clapper box assembly – 2 marksExplaining its importance – 2 marks | (4) |
|  | b) | Explain 5 differences – Give 6 marks  | (6) |
| 6 | a) | List any 4 work holding devices – Give 4 marks | (4) |
|  | b) | Explanation about four types of planer machines –Give 6 marks | (6) |
| 7 | a) | 3 milling operations performed on a H –milling m/c – Give 3 marks3 milling operations performed on a V –milling m/c –Give 3 marks | (6) |
|  | b) | Diagrams – 2 marksExplanation of straddle & form milling – 2 marks | (4) |
| 8 | a) | Explanation of simple indexing mechanism – 5 marksSupport the answer by a figure – 2 marks | (7) |
|  | b) | List different types of milling machines – Give 3 marks | (3) |
| **PART C** |
| ***Answer any four full questions, each carries 10marks.*** |
| 9 | a) | Explanation of the given wheel with respect to its bond, grit size, abrasives used , etc. –Give 6 marks | (6) |
|  | b) | List any 2 differences –Give 4 marks | (4) |
| 10 | a) | Explanation of dressing – 2 marksExplanation of truing – 2 marks | (4) |
|  | b) | List any 4 differences between capstan & turret lathe –Give 6 marks | (6) |
| 11 | a) | Diagram – 2 marksExplanation – 3 marks | (5) |
|  | b) | Any 3 Advantages – 2.5 marksAny 3 Disadvantages – 2.5 marks | (5) |
| 12 | a) | Explanation about Engineering science , organizational science & Information science – Give 6 marksExamples – 1 mark | (7) |
|  | b) | 3 areas of active research in DM – Give 3 marks | (3) |
| 13 | a) | Diagram – 3 marksExplanation – 3 marks | (6) |
|  | b) | 4 features of DM – Give 4 marks | (4) |
| 14 | a) | Architecture block diagram – 3 marksExplanation – 4 marks | (7) |
|  | b) | Explanation of GRAI method – Give 3 marks | (3) |
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