# APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

## Scheme for Valuation/Answer Key

*Scheme of evaluation (marks in brackets) and answers of problems/key*

**EIGHTH SEMESTER B.TECH DEGREE EXAMINATION, MAY 2019**

**Course Code: ME402**

**Course Name: Design of Machine Elements-II**

Max. Marks: 100 Duration: 3 Hours

### PART A

***Answer any two full questions, each carries 15 marks.***

| | | | Marks |
|---|---|---|---|
| 1 | a) | Finding the tension (T1, T2)- 3 marks (i) 2 marks (ii) 2 marks (iii) 2 marks (iv) 2 marks | (11) |
| | b) | Advantages – 2 marks Disadvantages – 2 marks | (4) |
| 2 | a) | Cubic mean load – 5 marks, Life (in revolutions and in hours) – 5 marks | (10) |
| | b) | Static capacity – **2.5** marks, Dynamic capacity – **2.5** marks | (5) |
| 3 | | (i) 2 marks (ii) 2 marks (iii) 2marks (iv) 4 marks (v) 3 marks (vi) 2 marks | (15) |

### PART B

***Answer any two full questions, each carries 15 marks.***

| | | | |
|---|---|---|---|
| 4 | | Finding module – 7 marks Check for dynamic load – 3 marks Check for endurance strength – 3 marks Check for wear load – 2 marks | (15) |
| 5 | a) | Figure – 3 marks, Statement and explanation with equation – 4 marks | (7) |
| | b) | Modes of failure – 4 marks | (4) |
| | c) | Explanation – 4 marks | (4) |
| 6 | a) | Finding module – 7 marks Check for dynamic load – 3 marks Check for endurance strength – 3 marks Check for wear load – 2 marks | (15) |

### PART C

***Answer any two full questions, each carries 20 marks.***

| | | | |
|---|---|---|---|
| 7 | a) | Selection of I section & checking of Ixx < Iyy- 4 marks, Depth and width of section- 3 marks, Big end dimensions- 3 marks, Small end dimensions- 2 marks, Bolts for big end cap- 2 marks, Thickness of big end cap- 2 marks | (16) |
| | b) | Reasons for I section – 4 marks | (4) |
| 8 | a) | Functions – 4 marks | (4) |
| | b) | Classification – 2 marks Regulations – 2 marks | (4) |
| | c) | Diameter- 5 marks, thickness- 7 marks | (12) |

9 a) Types of flat belt drives – 3 marks (3)

b) Galling – 3 marks (3)

c) Pulley diameters - 2 marks, Standard size - 1 marks, Angle of contact - 2 marks, Coefficient of friction - 2 marks, belt widths - 3 marks, Length of belt - 2 marks, Tensions - 2 marks. (14)

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*Note: In Design problems the students may follow different methods for solving it. Hence proper weightage may be given for understanding of the concepts, making of suitable assumptions and intermediate steps/procedure/methodology followed for arriving at solutions.*