

Code No: V3213

**R07****Set No. 1****III B.Tech II Semester Supplementary Examinations, April - 2017****METROLOGY AND SURFACE ENGINEERING****(Mechanical Engineering)****Time: 3 hours****Max. Marks: 80****Answer any FIVE Questions****All Questions carry equal marks**

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- 1 a) Explain the types of fits and allowances. [8M]  
b) Describe the standards used in International standard system for plain and screwed work. [8M]
- 2 Describe and sketch the functioning of sine plate, roller & spheres used to determine the tapers. [16M]
- 3 a) How the optical projector can be used? Explain. [8M]  
b) Explain the constructional principle of NPL flatness interferometer. [8M]
- 4 a) In rectilinear pen recording of a diamond turned surface a sampling length of 0.8 mm is selected and V/H magnification ratio was 5000/100. Calculate the Ra value if the area (in mm<sup>2</sup>) above and below the mean line are as follow: [8M]
- |  | A  | B   | C  | D  | E   | F  |
|--|----|-----|----|----|-----|----|
|  | 60 | 115 | 96 | 92 | 109 | 70 |
- b) The measurement of surface roughness the height of 10 successive peaks and valleys over datum line over a specified sampling length were found to be : [8M]
- |           |    |    |    |    |      |
|-----------|----|----|----|----|------|
| Peaks :   | 45 | 42 | 40 | 35 | 35μm |
| Valleys : | 30 | 25 | 25 | 24 | 18μm |
- 5 What are the various means of measuring pitch of a thread? Explain. [16M]
- 6 Explain the procedure to carry out alignment test on milling machine. [16M]
- 7 A spur gear of 3 mm module has 40 teeth. Calculate the following proportions. [16M]  
Pitch Circle diameter, addendum, dedendum working height and base pitch for a pressure angle 20°.
- 8 Describe the various categories of thermal coating processes. Give their applications. [16M]

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