**18ME604**

**Hall Ticket Number:**

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| **III/IV B.Tech (Regular/Supplementary) DEGREE EXAMINATION** | | | |
| **June, 2022** | **Mechanical Engineering** | | |
| **Sixth Semester** | **Manufacturing Technology** | | |
| **Time:** Three Hours | | **Maximum: 5**0 Marks | |
| *Answer Question No. 1 Compulsorily.* | | | (10X1 = 10 Marks) |
| *Answer* ***ANY ONE*** *question from each Unit.* | | | (4X10=40 Marks) |

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| 1. | a) | List out different types of errors in measurement. | CO1 | |  |
|  | b) | Why is unilateral tolerance preferred over bilateral tolerance? | CO1 | |  |
|  | c) | Draw the symbol for surface finish as designated on drawings. | CO2 | |  |
|  | d) | Distinguish between the comparator and gauge. | CO2 | |  |
|  | e) | Define effective diameter of screw thread. | CO2 | |  |
|  | f) | State the Taylor’s Principle of Gauge Design | CO1 | |  |
|  | g) | What are functions jig and a fixture | CO3 | |  |
|  | h) | What is process of thread rolling | CO3 | |  |
|  | i) | Give sheet metal working operations | CO4 | |  |
|  | j) | Explain bending operation | CO4 | |  |
| **Unit - I** | | | | | |
| 2. | a) | Explain about hole and shaft basis systems with neat sketches | CO1 | **5M** | |
|  | b) | Apply hole basis system and find the size of shaft and bearing in the given problem. A 50 mm diameter shaft and bearing are to be assembled with a clearance fit. The tolerance and allowance used are as given. Allowance = 0.035 mm, Tolerance on hole = 0.025 mm, Tolerance on shaft = 0.017 mm. | CO1 | **5M** | |
|  |  | **(OR)** |  |  | |
| 3. | a) | Explain the principle and construction of sine bar. How do you use them in the measurement of angle? | CO1 | **5M** | |
|  | b) | Explain briefly the difference between the interchangeable manufacture and selective assembly | CO1 | **5M** | |
| **Unit - II** | | | | | |
| 4. | a) | Explain the construction and working of a Talysurf with a neat sketch. | CO2 | **5M** | |
|  | b) | Explain the construction and working principle of autocollimator with a neat sketch. | CO2 | **5M** | |
|  |  | **(OR)** |  |  | |
| 5. | a) | List and discuss any two types of numerical methods of  assessment of surface finish. Also draw sketches | CO2 | **5M** | |
|  | b) | In the measurement of surface roughness, height of 20 successive peaks and troughs were measured from a datum nd were :35,25,40,22,32,21,22,18,38,25,45,36,34,  34,45,21,25,22,35,28 Microns. If these measurements were obtained over a length of 20mm. Determine the C.L.A and R.M.S VALUE of roughness | CO2 | **5M** | |
| **Unit - III** | | | | | |
| 6. | a) | For what purposes are indexing jigs and fixtures used? Explain | CO3 | **5M** | |
|  | b) | Explain the gear shaping process with a diagram and mention its applications, advantages and limitations | CO3 | **5M** | |
|  |  | **(OR)** |  |  | |
| 7. | a) | How can a lathe fixture be clamped to the lathe | CO3 | **5M** | |
|  | b) | What are the main types of jigs ?discuss these with the help of suitable sketches | CO3 | **5M** | |
| **Unit - IV** | | | | | |
| 8. | a) | Explain the compound die with a neat diagram. | CO4 | **5M** | |
|  | b) | A hole of 10mmx25mmis to be cut in a 3 mm thick sheet. The shear strength of the material is 80 mpa .estimate the press load required . | CO4 | **5M** | |
|  |  | **(OR)** |  |  | |
| 9. | a) | A steel washer 44mm outside diameter, 22.25mm inside diameter and 1.6 mm thick  Is to be blanked from a sheet. It the shear stress of sheet metal is 400n/mm2. Calculate the max punch force required and the work done if the % of penetration is 25% | CO4 | **5M** | |
|  | b) | Explain the following terms i) punching force ii)blanking froce | CO4 | **5M** | |

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