

**R18**

Code No: 157FA

**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD**

**B. Tech IV Year I Semester Examinations, February/March - 2022**

**SURFACE ENGINEERING**

**(Electrical and Electronics Engineering)**

**Time: 3 Hours**

**Max. Marks: 75**

**Answer any Five Questions  
All Questions Carry Equal Marks**

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- 1.a) List out surface properties and explain the concept of surface property modification.
- b) What is the need of surface modification? How do you modify the surface of a material? [7+8]
2. What are the different methods of surface modification and explain the hard facing in detail. [15]
3. Describe about PVD and CVD coating techniques? Explain with neat sketches. [15]
- 4.a) What is electroless deposition? What are the principles of electrodeposition?
- b) What are the differences between electroplating and hot dipping? [8+7]
- 5.a) Explain in detail about carburizing process.
- b) Write about boronising process? Give its advantages and limitations. [8+7]
- 6.a) What are the difference between nitriding and carbo-nitriding?
- b) What is the process of plasma nitriding of gears? [8+7]
- 7.a) Enumerate the differences between hardening and tempering?
- b) What is laser cladding and what are the common defects in laser cladding? [8+7]
- 8.a) What are the principles of good design and poor design on surface engineering?
- b) Write about the design guidelines for surface preparation. [8+7]

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