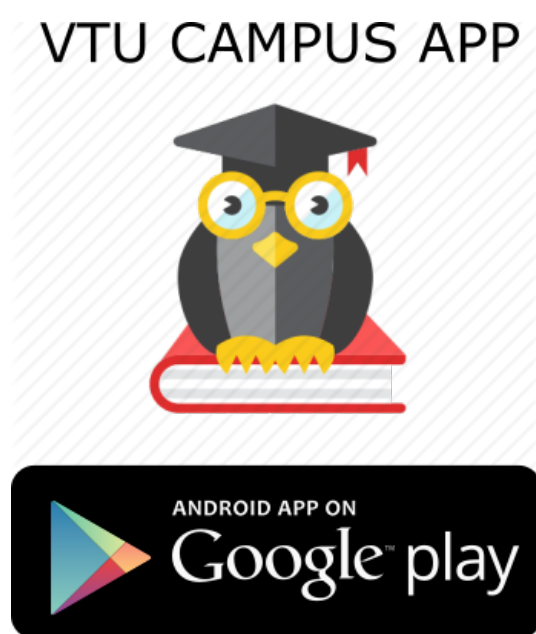


Lithography techniques VTU CBCS Question Paper Set 2018



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10NT64

Sixth Semester B.E. Degree Examination, June/July 2016
Lithography Techniques

Time: 3 hrs.

Max. Marks: 100

**Note: Answer FIVE full questions, selecting
at least TWO questions from each part.**

PART – A

- 1 a. Define lithography. Mention types of clean rooms. (04 Marks)
b. Explain working of optical lithography with neat diagram. (10 Marks)
c. Write a note on multistage scanners resolution. (06 Marks)
- 2 a. What is phase shift mask? Explain attenuated phase shift masks. (08 Marks)
b. Explain optical proximity correction. Mention its applications. (08 Marks)
c. Discuss the working principle of holographic lithography. (04 Marks)
- 3 a. Explain maskless optical projection lithography. Mention its advantages. (10 Marks)
b. Describe extreme ultraviolet lithography in detail. Mention its applications. (10 Marks)
- 4 a. Explain the following :
i) Scanning electron – beam lithography
ii) Electron beam projection lithography. (12 Marks)
b. Discuss projection reduction exposure. (08 Marks)

PART – B

- 5 a. Listout proximity effects. Explain proximity correction method. (08 Marks)
b. Discuss the effect of charging on deflection of e – Beam. (06 Marks)
c. Write a note on e – Beam nanolithography. (06 Marks)
- 6 a. What is Ion beam lithography? Explain. (06 Marks)
b. Discuss the advantages and applications of
i) Ion projection lithography and
ii) Masked Ion beam lithography (08 Marks)
c. Write a note on masked ion beam direct structuring. (06 Marks)
- 7 a. Discuss nonoimprint lithography. (06 Marks)
b. Explain replica moulding. (06 Marks)
c. Discuss in brief working principle of dip-pen lithography. (08 Marks)
- 8 a. Explain how Reactive Ion Etching is enhanced. (06 Marks)
b. Discuss wet etching of silicon. (08 Marks)
c. Write a note on electrochemical etching. (06 Marks)

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Sixth Semester B.E. Degree Examination, June/July 2017

Lithography Techniques

Time: 3 hrs.

Max. Marks:100

Note: Answer FIVE full questions, selecting at least TWO questions from each part.

PART – A

- 1 a. What is the principle of Lithography? Explain about optical lithography with neat diagram. (08 Marks)
 b. Explain about multistage scanner resolution with examples. (07 Marks)
 c. Which are the factors affecting construction and maintenance of a clean room. (05 Marks)
- 2 a. Explain about phase shift mask and the principle involved in it. (07 Marks)
 b. Describe about binary mask with diagram. (06 Marks)
 c. Explain in detail about attenuated phase shift mask with a neat diagram. (07 Marks)
- 3 a. Explain about extreme ultraviolet lithography. (10 Marks)
 b. Describe zone plate array lithography with diagram. State its advantages over other types of lithography. (10 Marks)
- 4 a. Explain in detail about scanning electron beam lithography. (10 Marks)
 b. Explain about parallel direct – write e-beam systems electron beam projection lithography. (10 Marks)

PART – B

- 5 a. Discuss about electron scattering and proximity correction. (06Marks)
 b. Explain about electron beam nano-lithography with diagram. (10 Marks)
 c. Define and explain about shot noise and substrate charging. (04 Marks)
- 6 a. Describe about focused ion beam lithography. (10 Marks)
 b. Explain in detail about ion beam lithography. (07 Marks)
 c. State applications of masked ion lithography. (03 Marks)
- 7 a. What is soft lithography? Explain nano imprint lithography with various steps involved. (08 Marks)
 b. Explain about NIL-Hot Embossing with diagram. State its advantages. (12 Marks)
- 8 a. Explain about types of etching with neat diagram. State their advantages and limitations. (12 Marks)
 b. Explain about reactive ion etching. (04 Marks)
 c. Discuss about wet etching of silicon. (04 Marks)

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