UNIVERSITY COLLEGE TATI

UNIVERSITY COLLEGE TATI (UC TATI)

FINAL EXAMINATION QUESTION BOOKLET	
COURSE CODE	: DEI 2032/DMT2132
COURSE	: CIRCUIT DESIGN
SEMESTER/SESSION	: 2-2022/2023
DURATION	: 3 HOURS

Instructions:

1. This booklet contains 4 questions. Answer **ALL** questions.
2. All answers should be written in answer booklet.
3. Write legibly and draw sketches wherever required.
4. If in doubt, raise up your hands and ask the invigilator.

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO

THIS BOOKLET CONTAINS 5 PRINTED PAGES INCLUDING COVER PAGE

QUESTION 1

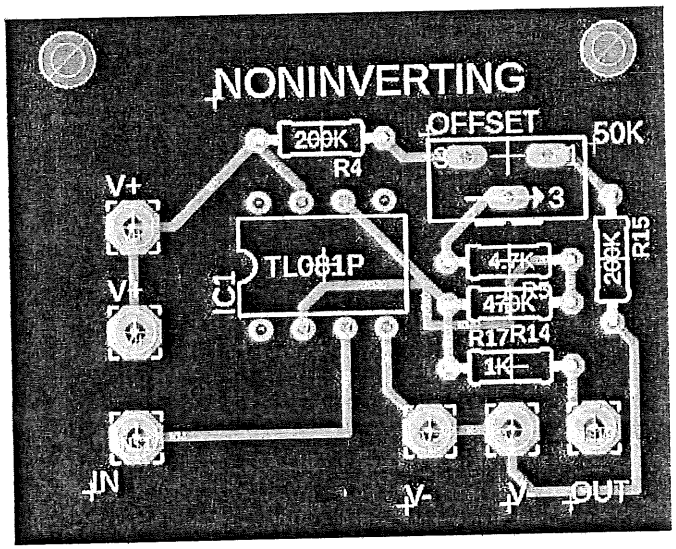
a) List the TWO (2) advantages and disadvantages of using CAD systems to designing and simulation electronics circuits. (4 marks)

b) Identify the best TWO (2) schematic and TWO (2) PCB layout software packages. (4 marks)

c) Refer to Figure 1.

i. List the Bill of Material (BOM) complete with type of package. (7 marks)

ii. Sketch the schematic circuit from the PCB with complete labelling. (10 marks)



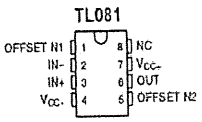


Figure 1

QUESTION 2

a) Recognize the difference between analog circuits and digital circuits. (4 marks)

b) Printed circuit boards were assembled using both surface mount and through- hole processes. Describe the differences between these two mounting approaches. (4 marks)

c) Explain the requirement for designing a circuit board. (6 marks)

d) Describe the difference between a schematic diagram and a PCB layout. (6 marks)

e) Produce a method of designing a PCB when the components used in the design are not available in PCB designing tools such as Proteus. (5 marks)

QUESTION 3

a) Explain the purpose of photolithography serve in the PCB manufacturing process. (4 marks)

b) Describe the process of multilayer PCB fabrication. (3 marks)

c) Explain the purpose of photolithography serve in the PCB manufacturing process. (4 marks)

d) By referring to the PCB diagram given in Figure 2.

i. Construct the schematic circuit according to the PCB diagram connection. (10 marks)

ii. Identify type of package for each component in the PCB layout. (8 marks)

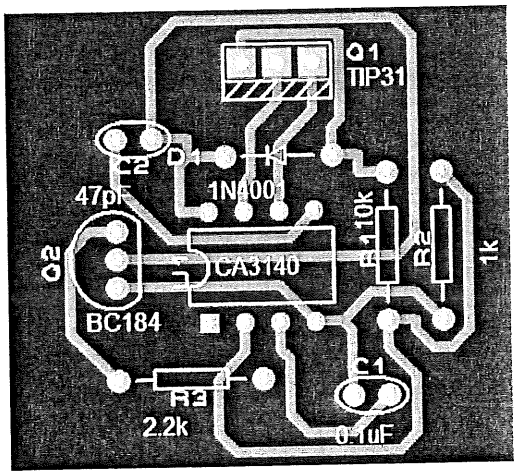


Figure 2

QUESTION 4

a) State **TWO (2)** small holes (Via and Pad). (4 marks)

b) Identify the type of chemical and concentration used in a PCB etching process. (5 marks)

c) Prepare the basic materials required to build a basic PCB at home. (10 marks)

d) Produce the process and significance of PCB Assembly. (6 marks)

----------End of question----------