1 SEM TDC GEET (CBCS) GE 1

2022

(Nov/Dec)

ELECTRONICS

(Generic Elective)

Paper : GE–1

(Electronic Circuits and PCB Design)

Full Marks : 53
Pass Marks : 21

Time : 3 hours

The figures in the margin indicate full marks for the questions

1. Choose the correct answer : 1×5=5

(a) Which of the following is not bilateral element?

(i) Capacitor

(ii) Resistor

(iii) Inductor

(iv) Constant current source

(b) A Zener diode is popular as a/an

(i) rectifier

(ii) inverter

(iii) amplifier

(iv) regulator

(c) Which of the following parameters will be very high in the common base configuration of a BJT?

(i) Current gain

(ii) Voltage gain

(iii) Input resistance

(iv) Output resistance

(d) The solvent used for cleaning of a PCB is

(i) iso-propyl alcohol

(ii) steam

(iii) kerosene

(iv) carbonated water

(e) Which is the name of process that removes the copper present in the unmasked portion of PCB?

(i) Etching

(ii) Filling

(iii) Grinding

(iv) Resoldering

2. Answer the following questions : 2×5=10

(a) State superposition theorem.

(b) What is ripple factor? Write the value of the ripple factor of bridge rectifier.

(c) Why is an ordinary junction transistor called bipolar junction transistor?

(d) Can a transistor be obtained by connecting two semiconductor diodes back-to-back?

(e) Mention the advantages of assembling a circuit using PCB.

3. (a) Explain the current divider rule with circuit diagram. 2

(b) State and prove maximum power transfer theorem. 4

4. (a) Explain briefly how Zener diode works as a voltage regulator with circuit diagram. 4

(b) Explain the working of a half-wave rectifier with proper circuit diagram. 4

5. (a) Explain how transistor works as an amplifier. What do you mean by thermal runway? 3+2=5

(b) Find out the *h*-parameters of a transistor used in common emitter mode. Also draw the equivalent circuit of transistor using *h*-parameter. 4+2=6

Or

What is transistor biasing? Mention the needs for biasing. Explain voltage divider bias with circuit diagram. 1+2+3=6

6. (a) What is surface-mount technology? What are the advantages of surface mount technology? 1+3=4

(b) What is the function of etchant? Mention briefly about soldering tools and techniques. 3

(c) What are positive and negative photoresist? Explain the wet film resist technique for designing PCB with proper block diagram. 6

Or

What is PCB layout? Explain the different steps of layout planning. 2+4=6

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