

2022

COMPUTER SCIENCE — HONOURS

Paper : CC-4

(Basic Electronic Devices and Circuits)

Full Marks : 50

The figures in the margin indicate full marks.

*Candidates are required to give their answers in their own words
as far as practicable.*

Answer *question no. 1* and *any four* from the rest.

1. Answer *any five* questions : 2×5
- (a) What is the cut in voltage in PN junction diode?
 - (b) What is Zener breakdown?
 - (c) Explain the function of the depletion region of PN junction diode.
 - (d) What is LED? How is it different from PN junction diode?
 - (e) What is CMRR of an OPAMP?
 - (f) What is forward break over voltage in SCR?
 - (g) Which function is performed by R-2R ladder?
 - (h) What are the differences between JFET and BJT?
2. (a) Draw the transfer characteristics of a transistor acting as a NOT Gate. Explain how the transistor function as a switch specifying the threshold voltage from the transfer characteristics. 8+2
- (b) What is self-bias?
3. (a) Draw the circuit diagram of a P-N-P transistor in C-E configuration. Explain its function. 6+4
- (b) Explain how a transistor works as a linear amplifier.
4. (a) Draw the circuit diagram of a forward biased p-n junction diode. Draw the characteristic curve and explain its nature. 6+4
- (b) How a Zener diode is used as a voltage regulator? Draw suitable circuit.
5. (a) Compare among (i) half-wave, (ii) full-wave and (iii) bridge rectifier. 8+2
- (b) What is ripple factor?

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6. (a) Describe the use of an OPAMP as an amplifier.
(b) What is voltage gain of an OPAMP?
(c) Describe the use of an OPAMP as adder. 3+2+5
7. (a) Distinguish between astable and monostable multivibrator.
(b) What is the effect of RC product on the output wave of multivibrator? 8+2
8. (a) Draw the circuit diagram of a CMOS NOT Gate and briefly explain its operation.
(b) Explain the Successive Approximation Register (SAR) type ADC. 5+5
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