

This question paper contains 2 printed pages]

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S. No. of Question Paper : 1522

Unique Paper Code : 222261

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Name of the Paper : Electronics II : Analog Circuits (ELPT-202)

Name of the Course : B.Sc. Physical Sciences

Semester : II

Duration : 3 Hours

Maximum Marks : 75

(Write your Roll No. on the top immediately on receipt of this question paper.)

Attempt Five questions in all.

Question No. 1 is compulsory.

1. Attempt any five of the following :

3×5=15

- (a) Give one application each of a transistor in CE, CB, CC configuration.
- (b) Write any three basic characteristics of ideal Operational Amplifier.
- (c) Discuss advantages of a bridge rectifier over a centre tap full wave rectifier.
- (d) Explain how do the I-V characteristics of an ideal diode resemble those of a switch ?
- (e) What is thermal runaway ? How can it be prevented ?
- (f) Draw the circuit of a clipper and briefly describe its working.
- (g) Explain the terms I_{CEO} and I_{CBO} . Which of them is greater ?
- (h) What are the sources of leakage current in BJTs ?

P.T.O.

2. (a) Draw the block diagram of a regulated power supply and explain the function of each block in detail. 10
- (b) Explain the working of a half wave rectifier and derive the expression for its ripple factor 5
3. (a) Explain the terms α and β for a transistor. Find the relation between the two. 5
- (b) Explain working of an n-p-n BJT configured in CE mode as an amplifier and thus describe its static input and output characteristics. 10
4. (a) Explain with the help of a circuit diagram the working of a class B push pull amplifier. What are its advantages over class A amplifier ? 10
- (b) Classify amplifiers with respect to operating point selection. 5
5. (a) Derive the expression of voltage gain for an inverting op-amp with a suitable diagram. 8
- (b) Draw the circuit diagram of an op-amp configured as an integrator and obtain an expression for output voltage. 7
6. (a) Explain the working and characteristics of an n-channel enhancement type MOSFET with the help of a well-labelled diagram. 10
- (b) List the advantages of a FET over BJT. 5
7. Write short notes on any *two* of the following : 2×7½
- (a) Early effect
- (b) Formation of depletion layer in PN junction
- (c) JFET.