

S-496

Total Pages : 4

Roll No.

MSCPH-509

Electronics

M.Sc. Physics (MSCPH)

2nd Semester Examination, 2022 (Dec.)

Time : 2 Hours]

Max. Marks : 70

Note : This paper is of Seventy (70) marks divided into two (02) Sections A and B. Attempt the questions contained in these sections according to the detailed instructions given therein.

SECTION-A

(Long Answer Type Questions)

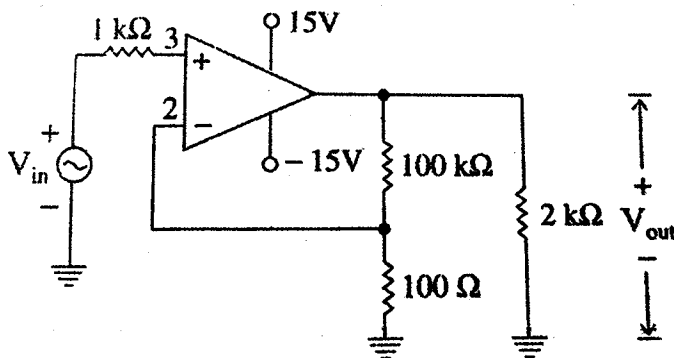
Note : Section 'A' contains Five (05) long answer type questions of Nineteen (19) marks each. Learners are required to answer any Two (02) questions only.

(2×19=38)

1. What are the transistors? Explain the structure and working

of PNP transistor. Also explain the input and output characteristics of PNP transistor in Common bias configuration.

2. The op-amp of figure has $I_{in(bias)} = 80 \text{ nA}$, $I_{in(off)} = 2 \text{ mV}$. What is the output offset voltage?



3. Discuss the construction and working principle of a field effect transistor? Why they are named so? Also discuss the drain characteristic of JFET and effect of pinch off voltage on its depletion region.
4. What is IC 741 Op-amp? What is pinout of it and their functions? Give its gain vs. frequency characteristics. What are the applications?
5. What is non-inverting amplifier with feedback, and give its closed loop voltage gain? What is inverting amplifier with feedback and give its input resistance with feedback?

SECTION-B

(Short Answer Type Questions)

Note : Section 'B' contains Eight (08) short answer type questions of Eight (08) marks each. Learners are required to answer any Four (04) questions only. (4×8=32)

1. What is the difference between monolithic and hybrid ICs? Explain advantages and disadvantages of ICs and also describe the process used in monolithic technology.
2. Discuss the construction, working and characteristic curves of enhancement type MOSFET.
3. What is Tunnel Diode? Give its characteristics and explain it. What are the applications?
4. What are the rectifiers? Explain the advantages and disadvantages of active rectifiers versus passive rectifiers?
5. Explain the construction and working principle of a Solar cell. Write down the advantages and disadvantages of a Solar cell.
6. What is ICs? How many types of it? What are the advantages & limitations of ICs?

7. (a) What is Light Emitting diode tester, and how it is working?
(b) What is logarithmic amplifiers and where logarithmic amplifiers used?
 8. What is an analog computer and what is it used for? Also explain the advantages and disadvantages of the analog computer versus the digital computer.
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