

Dr Sapone jaistro

24/11/2022  
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Roll No.: .....

## National Institute of Technology, Hamirpur (HP)

Name of the Examination: B.Tech End Semester Examination 2023

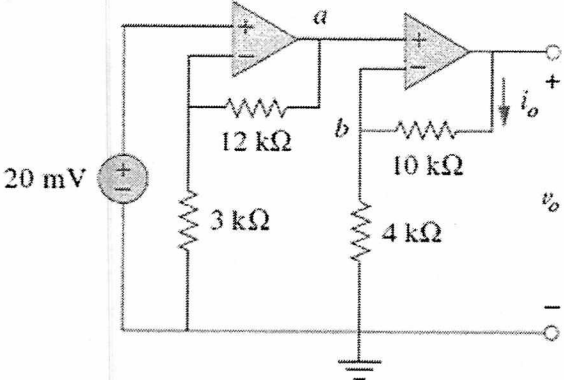
Branch : Electrical Engineering (Fifth Semester)

Course Name : Transducer and Signal Conditioning Course Code : EE- 314

Time: 3 hours

Maximum Marks: 50

Note: All the questions are compulsory. Solve questions in the given sequence only.

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| Q1.  | (a) Enumerate the different selection criteria for transducers. Explain the working of Electromagnetic Flow Meter with suitable application.<br>(b) Define loading error. Explain the piezo resistive effect using strain gauge as an example.   | 05<br>05 |
| Q2.  | (a) The strain experienced by a structure with applied compressive force is 5 microstrain. Two separate strain gauge are attached to structural member, one is nickel wire gauge with gauge factor -12.1 and other is nichrome wire with gauge factor of 2. Calculate the value of resistance of gauge after they are strained. The resistance of strain gauges before being strained is $120 \Omega$ .<br>(b) Define slew rate in OP-AMP with an illustration of voltage follower circuit. Determine the value of $v_o$ and $i_o$ in the circuit. | 05<br>05 |
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| Q3.  | (a) Explain working principle of LCD with suitable diagram. List its merits and demerits.<br>(b) Describe the time selector operation for digital frequency meter. Draw the basic circuit of digital frequency meter.  | 05<br>05 |
| Q4.  | (a) Describe the frequency modulated recording. If an input signal of modulation index 40 and centre frequency of 50,000 Hz is given to the input of modulator, determine the output frequency of modulated signal.<br>(b) Compare different telemetering systems in tabular form. Enlist various advantages and disadvantages of land-line telemetering.  | 05<br>05 |
| Q5.  | (a) Why transmission channels are essential for telemetering system. Enlist briefly the common communication channels used for telemetering.<br>(b) Differentiate between single and multi-channel DAS with suitable diagram.  | 05<br>05 |