Sacs.2213   **Applied Electronics and Instrumentation (2+1)**   Marks: 50
Time: 2 hours

I   **State True or False**   (10x1=10)
1.   A PN junction diode allows current to flow only in one direction.
2.   The gain of the amplifier in a phase shift oscillator must be greater than 1 for oscillations to start.
3.   In a non-inverting amplifier configuration, the input signal is applied to the inverting input terminal.
4.   The sum output of a full adder is obtained using the XOR operation.
5.   A thermocouple is used to measure humidity.

Fill in the blanks
6.   The symbol of a Zener diode is ....
7.   In a bridge rectifier, ... diodes are used to convert AC to DC.
8.   In a Wien bridge oscillator, the phase shift around the loop at the oscillation frequency is .... degrees.
9.   In a differentiator circuit, the phase shift introduced by the capacitor is .... degrees.
10.   In an LVDT, the output voltage is proportional to the .... of the core.

II   **Write short notes on ANY FIVE of the following**   (5x2=10)
1.   What is the difference between Zener breakdown and avalanche breakdown?
2.   What are the characteristics of an ideal OP - AMP?
3.   What is Barkhausen criteria?
4.   Draw the symbols of NPN and PNP transistors.
5.   What is the difference between sensor and transducer?
6.   What is the difference between half wave rectifier and full wave rectifier?
7.   What is the working principle of a strain gauge?

III   **Answer ANY FIVE of the following**   (5x4=20)
1.   Explain the VI characteristics of a PN Junction diode.
2.   Explain the working of half wave rectifier.
3.   Explain the working of a RC phase shift oscillator with a neat sketch.
4.   Explain the working of an inverting and non-inverting amplifier with neat diagrams.
5.   Explain the working of integrator and differentiator with neat sketches.
6.   Briefly explain the working of Bourdon tube for pressure measurement.
7.   Explain the working of Linear Variable Differential Transformer (LVDT).

IV   **Write an essay on ANY ONE of the following**   (1x10=10)
1.   Explain in detail about center tapped full wave rectifier and bridge rectifier.
2.   Explain in detail about half adder, full adder and full subtractor.

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