

B.Sc. Semester - 5 (Remedial) (CBCS) Examination**February/March. -2020****SOLID STATE ELECTRONICS (CORE)****Time: 2:30 Hours****Marks: 70****Instructions:**

1. All questions are compulsory.
 2. Figures to the right indicate marks.
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1. (a) **Answer any one question:** 07
 - (1) Explain R-C coupled amplifier with neat circuit diagram.
 - (2) Show that the maximum collector efficiency of Class A transformer coupled power amplifier is 50%.
- (b) **Attempt any one:** 04
 - (1) Find the gain in dB in the following cases.
 - i. Power gain of 150.
 - ii. Voltage gain of 20.
 - (2) Explain complementary symmetry amplifier with neat circuit diagram.
- (c) **Attempt any three:** 03
 - (1) 10 dB = _____ bel.
 - (2) Coupling capacitor is also known as _____.
 - (3) The push-pull circuit must use class _____ operation.
 - (4) The metal sheet that serves to dissipate the additional heat from the power transistor is known as _____.
 - (5) If the collector current flows for less than half cycle of the input signal, it's called class _____ power amplifier.
2. (a) **Answer any one question:** 07
 - (1) Explain astable multivibrator with neat circuit diagram.
 - (2) What do you understand by a clamping circuit? With the help of circuit diagram, explain the working of positive & negative clamper.
- (b) **Attempt any one:** 04
 - (1) A differentiating circuit with 10k Ω resistance and 10 μ F capacitor is applied with the input that varies from 0 to 12V with constant rate 0.4sec. Determine the output voltage.
 - (2) Explain integrating circuit.
- (c) **Attempt any three:** 03
 - (1) If the input to a differentiator circuit is triangular wave, the output will be _____ wave.
 - (2) Bistable multivibrator is also known as _____.
 - (3) _____ multivibrator has one stable state.
 - (4) The switching action of transistor can be explained with the help of _____ characteristics.
 - (5) A negative clipper is a circuit that removes or clips off the _____ half cycle.
3. (a) **Answer any one question:** 07
 - (1) Explain the Zener diode as a voltage regulator.
 - (2) Explain Op-Amp as an integrator. Derive the necessary expression.
- (b) **Attempt any one:** 04
 - (1) If the DC output voltage is 40 with no-load attached to a power supply but decreases to 30V at full load, find the % of voltage regulation.
 - (2) Explain Op-Amp as linear inverting amplifier.

- (c) Attempt any three:** **03**
- (1) Zener diode is operated in _____ region.
 - (2) In a power supply, the full load voltage is slightly _____ than the no load voltage.
 - (3) The open-loop gain of an ideal Op-Amp is _____.
 - (4) In symbol of an Op-Amp, minus (-) sign indicates _____ input terminal.
 - (5) Monolithic ICs are produced by vacuum evaporation process.
True / False
- 4. (a) Answer any one question:** **07**
- (1) Write a note on resistive position transducer. Write its advantages and disadvantages.
 - (2) Explain construction and working of LVDT.
- (b) Attempt any one:** **04**
- (1) Explain strain gauge.
 - (2) Explain piezoelectric transducer.
- (c) Attempt any three:** **03**
- (1) Short form of thermal resistor is _____.
 - (2) A thermocouple is a most widely sensor used to measure the _____.
 - (3) _____ transducer is used in accelerometer.
 - (4) The temperature coefficient is _____ for thermistor means resistance increases when its temperature decreases.
 - (5) Photovoltaic device convert light energy directly into _____ energy.
- 5. (a) Answer any one question:** **07**
- (1) Draw block diagram of CRO and explain each stages.
 - (2) Write a note on J-K flip-flop.
- (b) Attempt any one:** **04**
- (1) Determine the output pulse width for the monostable 555 timer, when $R_A=100k\Omega$ and $C=0.47\mu F$.
 - (2) Write applications of CRO.
- (c) Attempt any three:** **03**
- (1) A multimeter is an electronic measuring instrument which can measure voltage, current and resistance. True / False
 - (2) Full form of VTVM is _____.
 - (3) Flip-flop can be used as _____ device in computer.
 - (4) A flip-flop is a _____ type of multivibrator.
 - (5) A circuit with only one input but many outputs is called _____.
