

B.Sc. Semester - 5 (CBCS) Examination
Oct/Nov. - 2021(Old Course)
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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- Q.1(A) **Answer the following questions in details. (Any One Out of Two)** (07)
1. Explain R-C coupled amplifier with neat circuit diagram.
 2. Explain push-pull amplifier and give advantages and disadvantages.
- Q.1(B) **Answer the following questions in Brief. (Any One Out of Two)** (04)
1. Find the gain in dB in the following cases.
 - i. Power gain of 150.
 - ii. Voltage gain of 20.
 2. Explain thermal runaway.
- Q.1(C) **Answer the following question shortly. (Any Three Out of Five)** (03)
1. 1 bel = _____ db.
 2. The best frequency response is of _____ coupling.
 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. The change of output wave from the input wave shape of an amplifier is known _____.
- Q.2(A) **Answer the following questions in details. (Any One Out of Two)** (07)
1. Explain monostable multivibrator with neat circuit diagram.
 2. What is clipper circuit? Explain the working of positive clipper with and without bias applied.
- Q.2(B) **Answer the following questions in Brief. (Any One Out of Two)** (04)
1. Explain how transistor works as switch.
 2. Show that the output of a differentiating circuit is derivative of the input voltage.
- Q.2(C) **Answer the following question shortly. (Any Three Out of Five)** (03)
1. When a transistor is driven to saturation, ideally the output is _____.
 2. Bistable multivibrator is also known as _____.
 3. _____ multivibrator has one stable state.
 4. A negative clipper removes the _____ half cycles of the input voltage.
 5. The switch that has the fastest speed of operation is _____ switch.
- Q.3(A) **Answer the following questions in details. (Any One Out of Two)** (07)
1. Explain transistor series voltage regulator.
 2. Explain Op-Amp as inverting amplifier.
- Q.3(B) **Answer the following questions in Brief. (Any One Out of Two)** (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. Write the advantages of ICs.
- Q.3(C) **Answer the following question shortly. (Any Three Out of Five)** (03)
1. Zener diode is operated in _____ region.
 2. A Zener diode is used as a _____ voltage regulating device.
 3. The open-loop gain of an ideal Op-Amp is _____.
 4. An ideal Op-Amp has an input resistance of _____.
 5. Monolithic ICs are produced by vacuum evaporation process. True / False
- Q.4(A) **Answer the following questions in details. (Any One Out of Two)** (07)
1. Explain construction and working of LVDT.
 2. Explain resistive position transducer.

- Q.4(B) **Answer the following questions in Brief. (Any One Out of Two)** (04)
1. Explain strain gauge.
 2. Write the applications of LVDT.
- Q.4(C) **Answer the following question shortly. (Any Three Out of Five)** (03)
1. Short form of thermal resistor is _____.
 2. In LVDT one primary but _____ secondary coils.
 3. _____ transducer is used in accelerometer.
 4. The temperature coefficient is _____ for thermistor means resistance increases when its temperature decreases.
 5. Microphone converts acoustic energy into a varying _____ energy.
- Q.5(A) **Answer the following questions in details. (Any One Out of Two)** (07)
1. Draw block diagram of CRO and explain each stage.
 2. Write a note on D-flip flop.
- Q.5(B) **Answer the following questions in Brief. (Any One Out of Two)** (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.
- Q.5(C) **Answer the following question shortly. (Any Three Out of Five)** (03)
1. The deflection type instruments with a scale and pointer are called _____ instruments.
 2. Full form of VTVM is _____.
 3. Flip-flop can be used as _____ device in computer.
 4. _____ flip-flop has only one input.
 5. A circuit with only one input but many outputs is called _____.
