

BACHELOR OF SCIENCE (CBCS-2018 COURSE)
T. Y. B. Sc. Sem-V : WINTER :- 2021
SUBJECT: PHYSICS : ADVANCED ELECTRONICS

Day : Thursday
Date 27-01-2022

W-18409-2021

Time : 02:00 PM-05:00 PM
Max. Marks: 60

N.B.

- 1) All questions are **COMPULSORY**.
 - 2) Figures to the **RIGHT** indicate **FULL** marks.
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Q 1. Attempt any **Two** of the following. **(12)**

- (a) Explain N-channel depletion type JFET with diagram. Draw its characteristic curve & explain.
- (b) Describe class B push pull amplifier with circuit diagram.
- (c) Explain low voltage regulator by using IC 723 with circuit diagram. Obtain necessary formulae.

Q 2. Attempt any **Two** of the following. **(12)**

- (a) Explain the shunt regulated power supply with circuit diagram.
- (b) Describe class A, Class B, class C and class AB amplifier with diagram.
- (c) Explain the astable multivibrator by using IC 555 with Block diagram and circuit diagram

Q 3. Attempt any **Two** of the following. **(12)**

- (a) Explain the application of SCR as over voltage protector with circuit diagram.
- (b) Obtain an expression for efficiency of class A amplifier with resistive load.
- (c) Explain the phase shift oscillator with circuit diagram. Derive the necessary formula.

Q 4. Attempt any **Three** of the following. **(12)**

- (a) Explain differential amplifier with circuit diagram. Draw its symbol.
- (b) Explain the application of operational amplifier as Comparator with diagram.
- (c) Obtain an expression for gain with feedback in case of operational amplifier.
- (d) Design the power supply of 10 V, 30 mA by using IC 723.

Q 5. Attempt any **Four** of the following. **(12)**

- (a) Explain the principle of regulated power supply with diagram.
- (b) Write a short note on crossover distortion in case of class B push pull amplifier.
- (c) Explain inverting amplifier by using operational amplifier.
- (d) Design the circuit of square wave generator by using IC 555. Given $f = 1 \text{ KHz}$
duty cycle = 0.6 and $C = 0.1 \mu\text{F}$
- (e) Describe crystal oscillator by using N-channel MOSFET with circuit diagram.
- (f) Write a short note on DC load line.

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