

T.Y.B.SC. SEM – V (CBCS - 2016 Course) : SUMMER - 2019

SUBJECT - PHYSICS : ADVANCED ELECTRONICS

Day : Thursday
Date : 02/05/2019

S-2019-0870

Time : 11.00 A.M. To 02.00 P.M.
Max. Marks : 60

N.B.

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

- (a) Explain N-channel depletion type MOSFET with diagram. Draw the characteristic curve and explain.
- (b) Explain the high voltage regulator by using IC 723 with circuit diagram. Obtain necessary formula.
- (c) Explain the application of operational amplifier as differentiator with diagram.

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

- (a) Explain the astable multivibrator by using IC 555 with Block diagram and circuit diagram.
- (b) Explain the series regulated power supply with circuit diagram of transistor.
- (c) Explain the application of JFET as A.C. amplifier with circuit diagram.

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

- (a) Design the circuit of square wave generator by using IC 555.
Given : $f = 2 \text{ KHz}$, duty cycle = 0.6 and $C = 0.1 \mu F$.
- (b) Obtain an expression for efficiency of Transformer coupled amplifier.
- (c) Explain class A, Class B, class C and class AB amplifier with diagram.

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

- (a) Write a short note on crossover distortion in case of class B push pull amplifier.
- (b) Explain Wein Bridge Oscillator with circuit diagram. Derive the necessary formula.
- (c) Explain non-inverting amplifier by using operational amplifier.
- (d) Obtain an expression for efficiency in case of class A amplifier with resistive load.

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

- (a) Explain the application of SCR as over voltage protector with circuit diagram.
- (b) Design the power supply of 5 V, 20 mA by using IC 723.
- (c) Write a short note on DC load line.
- (d) Explain the Hartley oscillator with circuit diagram.
- (e) Explain the application of operational amplifier as Comparator with diagram.
- (f) What is feedback? What are the types of feedbacks? Obtain the expression for Barkhausen Criteria.

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