

T.Y.B.SC. SEM – V (CBCS - 2016 Course) : WINTER - 2018
SUBJECT - PHYSICS : ADVANCED ELECTRONICS

Day : Wednesday
Date : 17/10/2018

W-2018-0749

Time : 03.00 P.M. To 06.00 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 JFET with diagram. Draw the characteristic curve and explain.
 - (b) Explain Wein Bridge Oscillator with circuit diagram. Derive the necessary formula.
 - (c) Explain the application of operational amplifier as adder with diagram.
- Q 2.** Attempt any **Two** of the following. (12)
- (a) Obtain an expression for efficiency of class A amplifier with resistive load.
 - (b) Explain the shunt regulated power supply with circuit diagram.
 - (c) Design the circuit of square wave generator by using IC 555.
Given : $f = 5 \text{ KHz}$, duty cycle = 0.6 and $C = 0.1 \mu F$.
- Q 3.** Attempt any **Two** of the following. (12)
- (a) Explain the astable multivibrator by using IC 555 with Block diagram and circuit diagram.
 - (b) Explain UJT with diagram. Draw its characteristic curve and explain.
 - (c) Explain the low voltage regulator by using IC 723 with circuit diagram. Obtain the necessary formulae.
- Q 4.** Attempt any **Three** of the following. (12)
- (a) Explain the application of operational amplifier as Comparator with diagram.
 - (b) Explain class A, Class B, class C and class AB amplifier with diagram.
 - (c) Write a short note on crossover distortion in case of class B push pull amplifier.
 - (d) Explain operational amplifier with diagram. Draw its symbol.
- Q 5.** Attempt any **Four** of the following. (12)
- (a) Explain the application of MOSFET as an AC amplifier.
 - (b) Explain the application of SCR as over voltage protector with circuit diagram.
 - (c) Design the power supply of 4 V, 20 mA by using IC 723.
 - (d) What is feedback? What are the types of feedbacks? Obtain the expression for Barkhausen Criteria.
 - (e) Write a short note on AC load line.
 - (f) Explain the Hartley oscillator with circuit diagram.

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