Registration no: | | | | | | | | | | |

Total Number of Pages: 02 **M.Sc.I**

FPYC402

4th Semester Regular Examination – 2016-17

ELECTRONICS

BRANCH(S): M.Sc.I(AP), M.Sc.I(AP)

Time: 3 Hours

Max Marks: 70

Q.CODE:Z755

Answer Question No.1 which is compulsory and any five from the rest.

The figures in the right hand margin indicate marks.

Q1 **Answer the following questions**: (2 x 10)

a) Distinguish between p- type and n- type semiconductor.
b) What is a zener diode.
c) What are the limitations of h –parameters ?
d) Define band width.
e) What is NAND gate ?
f) Calculate I_E in a transistor for which β =50 and I_B = 20 μA .
g) What do you mean by class A, class B and class- C power amplifiers ?
h) Write the difference between positive and negative feedback .
i) A carrier of 100 V and 1200 kHz is modulated by a 50 V, 1000 Hz sine wave signal. Find th modulation factor.
j) What is demodulation?

Q2 a) Explain the working of a half wave rectifier and derive expressions for efficiency and ripple factor. (6)

b) A half – wave rectifier is used to supply 50 V d.c to a resistive load of 800 ohm. The diode has a resistance of 25 ohm. Calculate a.c. voltage required. (4)

Q3 a) Draw the equivalent circuit of an ideal zener in the breakdown region. And explain how zener diode maintains constant voltage across the load. (6)

b) Describe the action of L – section filter. (4)

Q4 a) Draw the input and output characteristics of transistor in CB configuration. Also explain how you will draw d.c. load line of a transistor. (6)

b) The Q – point parameters for a transistor are I_C = 5.202mA , I_{CO} = 2 μA , I_B = 50 μA. Find α, β and I_E . Also find what value of base current will make I_C = 8 mA. (4)

Q5 a) Explain with a neat diagram the operation of push – pull amplifier circuit. (5)

b) What do you understand by hybrid parameters? Find out them and also write about their dimensions. (5)

Q6 a) Draw the circuit diagram of two stages R-C coupled amplifier. Derive an expression for its voltage gain in the mid-frequency and low frequency regions (5)

b) Discuss with a neat circuit diagram the operation of a N – channel JFET. Draw the output characteristics curve of JFET. (5)

Q7 a) .Write down the criterion for sustained oscillation. Draw a neat diagram for Hartley oscillator and explain its operation. (6)

b) The overall gain of a multistage amplifier is 140. When negative voltage feedback is applied, the gain is reduced to 17.5. Find the fraction of the output that is feedback to the input. (4)

Q8 a) What do you mean by modulation? Distinguish between amplitude modulation and frequency modulation. (6)

b) Explain OR function with a 2- input OR gate. (4)

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