SH-III/Electronics/301/C-5(T)/19

B.Sc. 3rd Semester (Honours) Examination, 2019-20

ELECTRONICS

Course ID : 31711 **Course Code : SH/ELC/301/C-5(T)**

Course Title: Electronic Circuits

Time: 1 Hour 15 Minutes **Full Marks: 25**

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

1. Answer *any three* of the following questions: 1×3=3

(a) What is the slope of DC load line in diode circuits?

(b) Why h-parameters are called hybrid parameters?

(c) What do you mean by 'feed back' in an amplifier circuit?

(d) What is rectification?

(e) What are clipping circuits?

(f) Draw the out-put wave form of a capacitor shunted filter.

2. Answer *any three* of the following questions: 2×3=6

(a) What is PIV (Peak Inverse Voltage)?

(b) What is ac load line? How does it differ from a dc load line in any amplifier circuit?

(c) Draw the circuit diagram of Voltage divider method of biasing.

(d) What are "Bark hausen criterion for the condition of oscillation"?

(e) What are the basic differences between a voltage amplifier and a power amplifier?

(f) What is push-pull operation? Where is it used?

3. Answer *any two* of the following questions: 5×2=10

(a) Derive an expression for voltage gain of a CE amplifier in the midfrequency range with h-parameter ac equivalent circuit.

(b) Draw the circuit diagram of a transformer coupled class-A power amplifier. Obtaint the expression for Maximum Conversion Efficiency (%η). 2+3=5

(c) Draw the circuit diagram of a feed back amplifier. Derive an expression for voltage gain of a feedback amplifier.

(d) With the proper circuit diagram of a Hartley Oscillator explain its working principle. Write down the expression for generated frequency of the oscillator. Give one application of it.

4. Answer *any one* of the following questions: 6×1=6

(a) Draw the circuit diagram of a single tuned voltage amplifier. Then obtain its h-parameters ac equivalent circuit. Hence derive the expression for voltage gain for this type of amplifier. 2+2+2=6

(b) With proper circuit diagram obtain an expression for frequency of the generated signal for an R-C phase shift oscillator. What type of frequencies are generated by this oscillator? 2+3+1=6

(c) Draw the circuit diagram of a Zener diode based voltage regulator for dc and explain its operation. How a constant dc voltage is obtained at its output? 2+2+2=6

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