

BANKURA UNIVERSITY

B.Sc. 3rd Semester (Honours) Examination, March 2021

Subject: *Electronics (H)*

Course ID: 31711

Course Code: SH/ELC/301/C-5(TH)

Course Title: *Electronic Circuits*

Full Marks: 25

Time: 1 Hr 15 Min

(The figures in the right hand side margin indicate marks

Answer all the questions)

1. Answer *any three* of the following questions 1×3=3
 - a) What is feedback in an Amplifier?
 - b) What is an electronic filter?
 - c) Draw the forward and reverse characteristics of an ideal diode.
 - d) What is the maximum conversion efficiency of a class A power amplifier?
 - e) Draw the circuit diagram of a voltage divider method of biasing with n-p-n transistor.
 - f) What is class A operation?

2. Answer *any three* of the following questions. 2×3=6
 - a) Give the h - parameter based model of an amplifier in CE configuration.
 - b) What are 'Barkhausen criterion' for the condition of oscillation?
 - c) Show the output waveform of a full wave rectifier when the input is a sinusoidal wave.
 - d) What is ripple factor? What is its value for a half wave rectifier and for a full wave rectifier circuit?
 - e) How many types of power amplifiers are there? Classify them according to their nature of operation.

- f) What is quality factor (Q) of a tuned amplifier? How it is related to the bandwidth of the same amplifier?

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

- a) Draw the circuit diagram of single tuned voltage amplifier circuit. Obtain its h-parameter ac equivalent circuit. Hence obtain the expression for measure voltage gain for this type of amplifier.
- b) With proper circuit diagram obtain an expression for the frequency of the generated signal for an R-C phase shift oscillator. What type of frequencies are generated by this oscillator?
- c) Draw the circuit diagram of a Zener diode based voltage regulator circuit and explain it. What are load and line regulation?
- d) Derive the expression for ripple factor and rectification efficiency for a full wave rectifier circuit.

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

- a) Draw and explain the operation of a complementary symmetry Class B push-pull power amplifier. What is harmonic distortion?
- b) Draw the circuit diagram of either a centre-tapped/ or a bridge type full wave rectifier circuit and hence draw its output wave – form. What is PIV (Peak Inverse Voltage)
- c) What are clipping and clamping circuits? How many types of clipping circuits are there? With proper circuit diagram describe the operation of a clipper? 2+2+2