AR – 548

Third Semester B.Sc. (Part – II) Examination

3S : ELECTRONICS

(Electronics Devices and Circuits)

P. Pages : 7

Time : Three Hours] [Max. Marks : 80

Note : (1) Question No.**One** is compulsory.
(2) Draw neat diagram wherevre necessary.

1. (A) Fill in the blanks with correct word :—

   (i) Voltage gain of emitter follower is nearly ——

   (ii) The conduction angle of class B amplifier is —— degree.

   (iii) In ideal op–Amp value of input impedance is ——

   (iv) A Bistable multivibrator has —— stable state. $\frac{1}{2} \times 4 = 2$

   (B) Choose correct alternative and rewrite the answer :—

   (i) The h-parameters are called hybrid

because they ——

(a) Obtained from different characteristics.

(b) Are mixed with units

(c) Are added with other parameters

(d) None

(ii) Multistage amplifiers are used in order to achieve ——

(a) Voltage amplification.

(b) Power gain.

(c) Frequency response.

(d) All of the above.

(iii) One of the following is not an oscillator ——

(a) Colpitts

(b) Wein bridge

(c) Push pull

(d) Hartley.

(iv) R-2R ladder circuit used to convert ——

(a) Digital to analog

(b) Analog to digital

(c) Sine to square wave

(d) None. $\frac{1}{2} \times 4 = 2$

(C) Answer the following question in **one** sentence

(i) List the hybrid parameters.

(ii) Give the basic criteria for oscillator.

(iii) Define CMRR.

(iv) Efficiency of class-A transformer coupled power amplifier is ? 1X4 =4

EITHER

2. (A) Explain cascaded amplifier with various types of coupling. 4

(B) Explain working of single tuned amplifier with circuit diagram. 8

OR

(P) Define h–parameter of CE–configuration. 4

(Q) Draw equivalent hybrid circuit for CE transistor amplifier. Derive the expression for (i) current gain (ii) Input impedance for a single stage CE–transistor amplifier. 8

EITHER

3. (A) Explain construction and working of class-B. Push pull amplifier. Derive the equation for its efficiency. 8

(B) State advantages and disadvantages of class-B push pull power amplifier. 4

OR

(P) State the difference between voltage amplifier and power amplifier. 4

(Q) Explaian construction and working of transformer coupled class A amplifier. Show the efficiency of transformer coupled resistive load class-A power amplifier is 50%. 8

EITHER

4. (A) What is oscillator ? Explain Barkhausen criterion of oscillations. 4

(B) Explain construction and working of phase shift oscillator using transistor. 8

OR

(P) State the advantages and disadvantages of negative feed back. 4

(Q) Explain the effect of negative feed back on stability of an amplifier gain. 4

(R) Draw the block diagram for the following.

(i) Voltage series feed back.

(ii) Current shunt feed back. 4

EITHER

5. (A) State parameters of ideal Op–Amp. 2

(B) Explain the terms :—

(i) CMRR.

(iii) Slew Rate.

(iii) Open loop gain. 6

(C) Explain the working of Op–Amp as differentiator. 4

OR

(P) Explain the working of Op–Amp as non – inverting amplifier. 4

(Q) Explain the working of Op–Amp as substractor. 4

(R) What is difference amplifier ? State its advantages. 4

EITHER

6. (A) Draw neat diagram and explain the operation of Op–Amp as a monostable multivibrator. 6

(B) Show a possible computer set up required for solving following simultaneous equation

$$5x + 2y = 1 \quad \text{—— } ①$$

and $3x - 6y - 2 = 0$ —— ② 6

OR

(P) Explain how Op–Amp can be used as an astable multivibrator. Derive expression for the frequency of multivibrator. 6

(Q) Explain the working of Op–Amp as a logarithmic amplifier. 6

EITHER

7. (A) Explain the working of R-2R ladder type A/D converter. 6

(B) Draw block diagram of counter type A/D converter and explain its operation with timing diagram. 6

OR

(P) Explain the working of successive approximation A/D converter. 6

(Q) Draw block diagram of single slope A/D converter and explain its working. 6