

INDIAN MARITIME UNIVERSITY
(A Central University, Government of India)
End Semester Examinations- June-July 2019

Semester – III

B.Tech (Marine Engineering)

Analog Electronics and Communication (UG11T3302)

Date: 11-07-2019

Maximum Marks: 100

Time: 3 Hrs

Pass Marks: 50

PART-A

All questions are compulsory

10 x 3 = 30 Marks

1)

(a) Which class of amplifier has highest power efficiency?

1) Class-A 2) Class-B 3) Class-AB 4) Class-C

(b) List the ideal characteristics of op- amp with their ideal values.

(c) Define term intrinsic stand-off ratio for UJT.

(d) Name different operating regions of BJT.

(e) List various transistor biasing methods.

(f) State the effect of V_{GS} on channel conductivity on N-channel JFET.

(g) State the conditions for sustained oscillations.

(h) List different types of negative feedback.

(i) List the advantages of modulation.

(j) List applications of RADAR.

PART-B

Answer ANY FIVE of the following

5 x 14 = 70 Marks

2 (a) Explain the construction and working of UJT. (7)

(b) List the advantages of negative feedback in amplifiers. (7)

3(a) Explain construction and working of class A push pull amplifier. (7)

(b) Distinguish between small signal amplifier and power amplifier. (7)

4 (a) Explain construction and working of crystal oscillator. (7)

(b) Find the value of C to design a phase-shift oscillator using a BJT having $R = 10\text{ k}\Omega$ for oscillator operation at 1 kHz. Draw diagram of RC phase shift oscillator using BJT. (7)

5(a) Explain working of diode as positive clamper. (7)

(b) Explain construction and working of Schmitt trigger. (7)

- 6(a) Explain working of op-amp as inverting amplifier. (7)
- (b) An Astable 555 Oscillator is constructed using the following components, $R_1 = 1\text{k}\Omega$, $R_2 = 2\text{k}\Omega$ and capacitor $C = 10\mu\text{F}$. Calculate the output frequency from the 555 oscillator and the duty cycle of the output waveform. (7)
- 7(a) Draw and explain the V/I characteristic of SCR. (7)
- (b) Define inverter and explain working of single phase half bridge inverter with help of circuit diagram and waveforms. (7)
- 8(a) A 10 kW carrier wave is amplitude modulated of 75% depth of modulation by a modulating signal. Calculate side band power, total power and transmission efficiency of AM wave. (7)
- (b) Draw the block diagram of AM super heterodyne radio receiver and state the function of each block. (7)
