Indian Maritime University

(A Central University, Govt of India)

Supplementary Examinations – March/April 2024

Programme Name: B Sc (NS)

Semester: 1

Subject Code: UG21T5104

Subject Name: ELECTRONICS

Date: 15.04.2024	Max Marks: 70
Duration: 03 Hrs	Pass Marks: 35

General Instructions

(i) All Sections (A, B & C) are to be attempted.

(ii) Options, if any, are specified in respective section.

(iii) Scientific Calculator is permitted.

Section A

Ten MCQs/Fill in the Blanks of 01 Mark each – Choose the correct answer. Objective Questions [MCQ / True -False/Fill up the blanks/Match the following] Covering from All Units--no units to be missed.

1. Why doping is required?
   (a) To decrease the conductivity of a pure or intrinsic semiconductor.
   (b) To increase the conductivity of a pure or intrinsic semiconductor.
   (c) To engineer a different form of semiconductor material with higher level of conductivity.
   (d) Both (b) and (c)

2. Consider the following statements for a Bipolar Junction Transistor.
   (1) It is a current controlled device.
   (2) It is made up of three different types of semiconductor materials.
   (3)Both the majority and minority carriers participate in the conduction process.
   (4) The minority current component is dependent upon temperature.
   Which of these statement(s) is(are) correct?
   (a) 1, 2, 3 and 4 (b) 2, 3 and 4 (c) 1, 3 and 4 (d) 1, 2 and 3

3. In an LC Transistor oscillator, the active device is _____
a) LC tank circuit b) Biasing circuit C) Transistor d) None of the above.

4. Which of the following multivibrator is called one shot multivibrator?
a) Monostable b) Astable c) Bistable d) Metastable

5. 8085 Microprocessor has _____ data lines and _____ address lines.
a) 16, 8 b) 4, 4 c) 8, 8 d) 8, 16

6. The minimum number of NAND gates required to design an AND gate.
a) 4 b) 3 c) 2 d)1

7. Demodulation is done in _____
a) Receiving antenna b) Transmitter C) radio receiver d)transmitting antenna

8. The Barrier Voltage at a pn junction for silicon is about
a) 3.5V b) 3V C) 0.6V d) 0.3 V

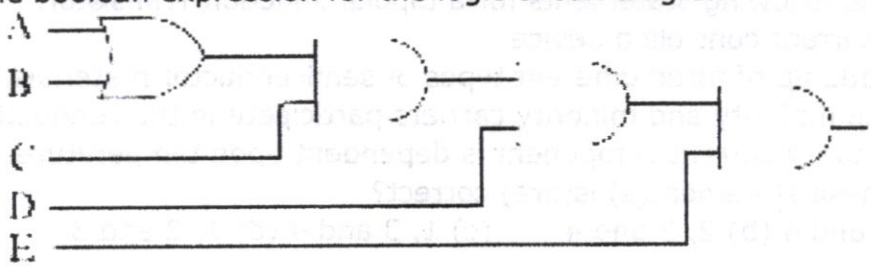
9. The conduction angle of Class B amplifier is
a) 3600 b) 1800 c) 900 d) less than 900

10. A flip-flop can store
(a) one bit of data (b) two bits of data (c) three bits of data (d) any number of bits

Section B

Five Questions of 02 Marks each. SHORT ANSWER TYPE QUESTIONS

11. Define threshold voltage of PN junction diode.
12. Explain Zener diode operation and its applications?
13. State the Barkhausen's criteria for oscillation.
14. Define modulation and explain the need for modulation?
15. Derive the boolean expression for the logic circuit diagram



Section C

Answer five out of seven questions. (Each 10M)

16 (a)Compare half-wave and full-wave rectifier. (5)
(b)What is operating point. Explain the importance of load line in transistor circuit analysis ? (5)

17. (a) Explain the construction and working of a Light Emitting Diode. (5)
(b) Derive the relationship between α and β, where α and β are (5)
respectively the current gain in common-base and common-emitter configuration.

18. .(a) Explain the working of full adder circuit with truth table and circuit (5)
diagram
(b) Explain NAND gate, NOR gate and EX-OR gate with truth tables and (5)
Define Flip Flop?

19. Derive the voltage equation of FM wave and list the advantages of FM (10)
over AM

20. Explain demodulation of AM wave and Diode detector circuit (10)

21. Explain elements of RADAR system- radar range, radar altimeters and (10)
radio beacons

22. Draw the architecture of 8085 microprocessor and mention its applications (10)

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Indian Maritime University

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Fwd: Clarification - UG21T5104 - Electronics - 12.04.2024 - AN - reg.

1 message

Capt. Mihir Chandra IMU <mchandra@imu.ac.in> Mon, Apr 15, 2024 at 2:24 PM
To: Mamta Patil IMU <mpatil@imu.ac.in>

---------- Forwarded message ---------
From: **ESE IMU HQ** <imuese@imu.ac.in>
Date: Mon, Apr 15, 2024, 2:18 PM
Subject: Clarification - UG21T5104 - Electronics - 12.04.2024 - AN - reg.
To:

Sir,

1. Please refer to today's QP Code UG21T5104.

2. In this regard, please read Q No 9 under Section A as follows:

9. The conduction angle of Class B amplifier is
a) 360^0 b) 180^0 c) 90^0 d) less than 90^0

3. Kindly disseminate the same to the concerned students.

Thanks & Regards,

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