

Time: 3Hrs

Marks:-100

- Q1. A) Select correct answer (12)
- 1 a) iron
 - 2 a) Tesla
 - 3 c) JNZ, 4700h
 - 4 b) ANA A
 - 5 d) Ultraviolet Waves
 - 6 a) Modulation of analog carrier by an analog signal
- B) Answer in one sentence (03)
- 1 Palaeomagnetism is the branch of geophysics concerned with the magnetism in rocks that was induced by the earth's magnetic field at the time of their formation----- Definition (1Mark)
 - 2 Opcode :MVI operand :B, 45h number of bytes : 2
 - 3 Gray, rad
- C) Fill in the Blanks (5)
- 1 Global warming
 - 2 Hawaiian
 - 3 Lower order
 - 4 Arithmetic
 - 5 Demodulation
- Q2. A) Attempt any one (8)
- 1 cause of earthquakes -----3marks
Explanation of measuring earthquakes -----3 marks
Ways to predict earthquakes-----2 marks
 - 2 **Definition----- (1mark)**
Seismology is the study of earthquakes and seismic waves that move through and around the earth. A seismologist is a scientist who studies earthquakes and seismic waves.
Definition ----- (1mark)
Seismic waves are the waves of energy caused by the sudden breaking of rock within the earth or an explosion. They are the energy that travels through the earth and is recorded on seismographs.
Different types and diagram ----- (6mark)
Body Waves
P waves and S Waves
Surface Waves
1] Love Waves
2] Rayleigh Waves
- B) Attempt any one (8)
- 1 Explanation of three main parts of internal structure --(4Mark)
Neat diagram and its explanation -----(4Mark)
 - 2 Definition -----(1mark)
Explanation in detail----- (7mark)

SET III

- C Attempt any one (4)
 1 Explanation and diagram -----(4mark)
 2 Any four points -----(1 mark each)

- Q3. A Attempt any one (8)
 1 Any four modes : **2 marks each**
 i) Register Mov C,B ii) Direct IN , input port address
 iii) Immediate : MVI ,8 bit iv) Implied or implicit : RAR ,CMA
 v) Indirect : MOV M,A
 2 The bit position of the flip flop in flag register is:1

D ₇	D ₆	D ₅	D ₄	D ₃	D ₂	D ₁	D ₀
S	Z		AC		P		CY

Description about each flag with example :

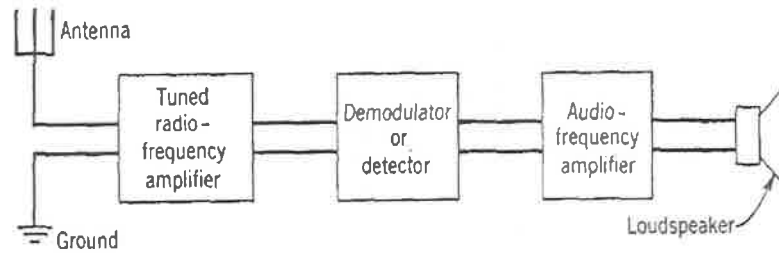
1. Sign(S)1
 2. zero(z)2
 3. Auxiliary carry(AC)1
 4. Parity(P)1
 5. Carry(C) 2

- B) Attempt any one (8)
 1 Initialisation2
 Data acquisition & processing2
 Decision making2
 Result storage.....2
 2 **1 mark each**
 i) LXI H ,2600h
 ii) MOV A , M
 iii) INX H
 iv) CMA
 v) ADI ,01h
 vi) MOV M,A
 vii) CMP B
 viii) NOP

- C) Attempt any one (4)
 1 DCX D : Memory location will be 3455h No flag will be affected
 DCR D : data will be decremented from 74h to 73h . All flags except CY
 will be affected.....3
 LDA 3456h or LDAX D1
 2 i) A : 28 **1M**
 ii) E : A5 **1M**
 iii) 28 OR A5 = A : AD h **2M**

- Q4 A) Attempt any one (8)
 1 X-ray **1M**
 Production **4M**
 Properties **3M**

2



Block diagram and explanation- 4 marks

Shortcomings- 4 marks

B) Attempt any one (8)

1 Interaction of heavy charged particles with matter-4 marks

Interaction of electrons with matter-4 marks

2 Baseband communication -4 marks

Broadband communication – 4 marks

C Attempt any one (4)

1 $E_{\text{effective}} = W_1 E_1 + W_2 E_2$
 $= 25.2 \text{ mSv}$

3marks

Comment- 1mark

2 $SNR = 5.23 \text{ dB}$, $P_s = 2.0 \mu \text{ W}$

1M

$$SNR = 10 \log_{10} \frac{P_s}{P_n}$$

$$10^{SNR/10} = \frac{P_s}{P_n}$$

$$\frac{P_n}{P_s} = 10^{0.53} = 3.388$$

2M

$$P_n = 0.6 \mu \text{ W}$$

1M

Q5.

Attempt any Four

(20)

1 Modern Theories and its explanation in detail----

There are four major theories.

1. Proto-planet Theory:2

2. Capture Theory1

3. The Solar Nebula Theory:1

4. The Modern Laplacian Theory:1

2 Diagram and labeling -----(5mark)

3 All 8 bit , Special purpose A functions2

General purpose B,C D E H L functions2

Reg pairing HL,BC,DE1

4 Address bus : 16 bit , unidirectional2

data bus :8 bit bidirectional2

Multiplexing1

5 Explanation3

Equation2

6 Block diagram and waveforms. -2 marks

Stage I: Received signal amplified

Stage II: Resultant signal is rectified

Stage III: From rectified signal high frequency component is removed.- 3

marks