

Time: 3Hrs

Marks:-100

Q1. A) Select correct answer

(12)

- 1 (d) All of these
- 2 (d)  $g = \frac{GM}{r^2}$
- 3 b) MOV B,C
- 4 a) 00h
- 5 b) Bequerel
- 6 b) Radio Waves < Micro Waves < Infrared Wave

B) Answer in one sentence

(3)

1 Definition -----(1 Mark)  
The science dealing with the influences of ordinary environmental factors on the geographical distribution of health problems in man and animals.

2 Answer in the accumulator or content in any register after certain instructions like DCR C etc should be 0

3 Definition of Amplitude modulation

C) Fill in the Blanks

(5)

- 1 Palaeoclimate
- 2 SQUID
- 3 16 bit
- 4 Arithmetic and logic unit
- 5 Dosimeter

Q2. A) Attempt any one

(8)

1 Explanation of urbanization -----(2marks)  
Urbanization is a process that leads to the growth of cities due to industrialization and economic development that causes labour division

Environmental impacts of urbanization -----(3mark)

On soil, on water resources, on air, biodiversity & monsoon rainfall

Industrial waste on environment

Air pollution, water pollution, noise pollution, oil pollution, nuclear pollution & thermal pollution -----(3Mark)

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

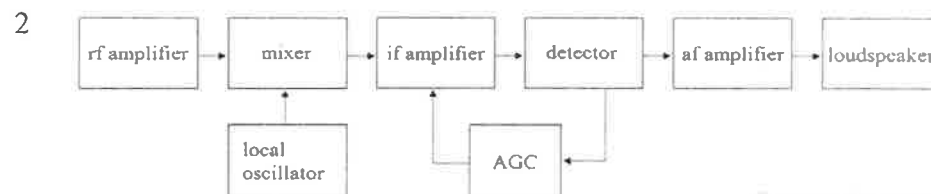
- B) Attempt any one (8)
- 1 Continental drift explanation ----2 marks  
 Any three theories for cause of continental drift ( 2 marks each )
  - 2 Geophysics is an interdisciplinary physical sciences concerned with the nature of the earth and its environment------(1 Mark)  
 Many divisions of geophysics such as oceanography, atmospheric physics, climatology, and planetary geophysics, -----  
 -(4 Mark)  
 most popular branches of geophysics:  
 Petroleum Geophysics Environmental Geophysics  
 Mining Geophysics Biogeophysics  
 Exploration geophysics Geophysical fluid dynamics – study of naturally occurring, large-scale flows• on Earth and other planets.  
 Geodesy Geodynamics Geomagnetism Mathematical Geophysics  
 Seismology Tectomophysics Mineral physics  
 Explanation of any one----- (3Mark)
- C) Attempt any one (4)
- 1 Definition-----1 mark  
 Explanation -----3 mark
  - 2 Neat and labeled diagram----- (4Mark)
- Q3. A) Attempt any one (8)
- 1 All 8 bit , Special purpose A,F functions .....3  
 General purpose B,C D E H L functions .....2  
 Reg pairing HL,BC,DE purpose.....2  
 16 bit registers : program counter , Stack pointer.....1
  - 2 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
- B) Attempt any one (8)
- 1 Initialisation .....2  
 Data acquisition & processing .....2  
 Decision making .....2  
 Result storage.....2
  - 2 a) MVI C, 56 h 1M  
 b) MOV A ,C each

- c) LXI H , 2050h
- d) INR C
- e) ADD C
- f) MOV M,A
- g)INX H
- h) NOP

- C) Attempt any one (4)
- 1 MVI A, 48h 1M  
SUI , 37h 2M  
CY = 0 1M
  - 2 a) SUB A opcode : SUB operand A bytes :1 2M  
b) STA 4050h STA 4050 :3 2M

- Q4. A) Attempt any one (8)
- 1 Properties of  $\alpha$  particles- 3 marks  
Properties of  $\beta$  particles- 3 marks  
Properties of  $\gamma$  particles- 2 marks
  - 2 Definition of Digital signal and Digital communication- 2 marks  
Advantages over analogue communication- 6 marks

- B) Attempt any one (8)
- 1 Definition of Radiotherapy- 2M  
External Radiotherapy 2M  
Internal Radiotherapy 2M  
Systematic Radiotherapy 2M



Block diagram-3 marks

Explanation of each block-5 marks

- C) Attempt any one (4)
- 1 Stay time= Dose limit/Dose rate = 4 min- 2+2 marks
  - 2  $l = \frac{\lambda}{2} = \frac{c}{2f}$  2M  
 $l = \frac{3 \times 10^8}{2 \times 88 \times 10^6} = 1.70m$

- Q5. Attempt any Four (20)
- 1 Diagram and labeling 5M

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2	Diagram of Earth's four major layers and labeling	5M
3	Address bus : 16 bit , unidirectional	2M
	data bus :8 bit bidirectional	2M
	Multiplexing	1M
4	a) RAR : rotate right with carry. Ex	2M
	b) DCX 3456 : Mem is decremented by 1 ie 3455	1M
	c) JNC , 4500h : Go to the location 4500 if CY flag is not se	2M
5	Ionization detector	2 1/2
	Scintillation detector	2 1/2
6	Simplex transmission	2 1/2
	and duplex transmission	2 1/2

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