

Seat No. _____

Enrolment No. _____

THE CHARUTAR VIDYA MANDAL UNIVERSITY
M. Sc. ENVIRONMENTAL SCIENCE AND TECHNOLOGY –
SEMESTER 2, SUMMER 2022 EXAMINATION

Course Title: REMOTE SENSING AND GEOGRAPHIC INFORMATION SYSTEM

Course Code: 101350201

Total Printed Pages : 2

Date: 5/05/2022

Time: 2:00 pm to 4:00 pm

Maximum Marks: 60

Instructions:

- Attempt all questions.
- Numbers to the right indicate full marks for each question.
- Make suitable assumptions wherever necessary.

- Q. 1** Answer the following multiple choice questions. **(12)**
- (1) The relationship between energy and frequency isproportionality.
(a) inverse (b) direct (c) equally (d) no
 - (2) Synoptic view is the of Remote Sensing.
(a) disadvantage (b) application (c) advantage (d) all
 - (3) Those areas of the spectrum which are not severely influenced by atmospheric absorption and are useful to remote sensors are called as.....
(a) Visible (b) Thermal IR (c) Atmospheric windows (d) None
 - (4) Immature leaves contain.....Chlorophyll and fewer air voids than older leaves.
(a) more (b) equal (c) less (d) no
 - (5) If the signal is first emitted and then recorded it is.....remote sensing.
(a) passive (b) special (c) active (d) both a and b
 - (6) indicates type of objects and their physical, biological, and cultural relationships.
(a) pixel (b) pattern (c) photo (d) pie
 - (7) Which parameter is measured by using Microwave radiometers?
(a) brightness temperature (b) wavelength (c) frequency (d) none
 - (8) The number and narrowness of bands in the spectrum in which the instrument can take measurements is related to resolution.
(a) spatial (b) spectral (c) radiometric (d) temporal
 - (9) Wetland mapping is a part of
(a) Frame work data (b) Resolution (c) Thematic data (d) all
 - (10) Spatial interpolation is used for converting point data into surface data.
(a) True (b) False

- (11) Node is the sub part of
 (a) line (b) polygon (c) point (d) all
- (12) Which is not the function in GIS?
 (a) Local (b) Global (c) Neighbourhood (d) Raster

Q.2 Attempt **any eight** of the following. **(16)**

- (1) Enlist advantages and application fields of Remote Sensing.
- (2) Why we need image classification?
- (3) What are Applications for Passive Microwave sensing?
- (4) Define Foot print and Divergence in context with Lidar.
- (5) Which parameters should be taken into account while evaluation of flood hazard?
- (6) List the Remote sensors used to study Wetland and water quality monitoring.
- (7) List out the benefits of GIS.
- (8) Explain three stages of Data input to GIS.
- (9) Enlist pre-processing steps of data input in a computer compatible form in GIS.
- (10) Show the application of GIS in Telecommunication network services.

Q. 3 Define Spectral Reflectance Curve. Explain role of Spectral Signature for Vegetation and Soil Moisture identification. **(08)**

OR

Q.3 What do understand by Resolution? Discuss Spatial and Radiometric resolution in context with remote sensing. **(08)**

Q. 4 What are the elements of Image Interpretation? Explain each one. **(08)**

OR

Q. 4 Identify issues for coastal zone management. How Remote sensing can address these issues? **(08)**

Q. 5 Enlist open source and commercial software for GIS. Explain georeferencing and attribute data handling process in QGIS. **(08)**

OR

Q. 5 Explain Geospatial data for Point, Line, Polygon, Node and Chain with suitable examples. **(08)**

Q. 6 Explain Capabilities of Raster and Vector GIS with its advantages and disadvantages. **(08)**

OR

Q. 6 Explain raster data compression techniques: **(08)**
 (i) quad tree (ii) run-length encoded (iii) block coded (iv) chain coded

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THE CHARUTAR VIDYA MANDAL UNIVERSITY

M.Sc Environmental Science and Technology – SEMESTER 2

SUMMER (REGULAR) 2022 EXAMINATION

Course Title: *Meteorological and Environmental Instrumente*

Course Code: 101350202

Total Printed Pages : 02

Date: 06/05/2022

Time : 02.00 pm to 04.00 pm

Maximum Marks:60

Instructions:

- Attempt all questions.
- Numbers to the right indicate full marks for each question.
- Make suitable assumptions wherever necessary.

Q.1. Answer the following multiple choice questions.

(12)

1. In the minimum thermometer following liquid is used.
a) Mercury b) alcohol c) ethanol d) sodium
2. A device used to measure humidity is known as
a) Psychrometer b) Hygrometer c) Both d) None
3. Which of the following is the function of the atomiser in the emission system of Atomic Absorption Spectroscopy?
a) To split the beam into two b) To break the steady light into pulsating light
c) To break large mass of liquid into small drops d) To reduce the sample into atomic state
4. Following source is used for the IR Spectroscopy.
a) Tungsten filament b) Deuterium c) Mercury arc d) All of the above
5. In chromatography, the stationary phase can besupported on a solid
a) Solid or liquid b) Liquid or gas c) solid only d) liquid only
6. TCD detector is used to detectcompounds.
a) organic b) inorganic c) aldehyde d) ketons
- 7 The secondary electrons radiated back in scanning microscope is collected by?
a) specimen b) anode c) vacuum chamber d) cathode
8. The Stevenson screen contains all of these EXCEPT:
a) Wet bulb thermometer b) Maximum thermometer c) Ordinary thermometer d) Anemometer
9. Which paper chromatography mobile phase move horizontally?
a) Ascending paper chromatography b) Descending paper chromatography c) Radial paper chromatography d) All
10. Which part of the compound microscope helps in gathering and focusing light rays on the specimen to be viewed?
a) Eyepiece lens b) Objective lens c) Condenser lens d) Magnifying lens
11. Preparation of environmental maps is known as
a) Gridding b) Blocking c) Mapping d) Zoning
12. Commonness of data is achieved using _____.
a) Column graph b) Bar graph c) Histogram d) Ogive

Q.2. Attempt any eight of the following. (16)

1. Define: Span and Drift
2. Working of Maximum Thermometer
3. Ray diagram of SEM
4. Working of Mercuric barometer
5. Differentiate between source and ambient environment monitoring
6. Introductory note on biostatistics
7. Types of rotors used for centrifuge
8. Photomultiplier tube detector
9. Preparation of TLC Plate
10. Use of objective lenses and diaphragm

Q. 3 Explain the recording and non recording techniques for the measurement of rainfall with details. (08)

OR

Q.3. Describe the different measurement techniques for solar radiation and discuss mapping, grinding, blocking and zonation methods in environmental monitoring.

Q.4. Describe the principle and vibrational movement and source of IR Spectroscopy. (08)

OR

Q.4. Explain the working, principle and application of ICPAES.

Q.5 Write a principle of HPLC. Give details on sample injection system, solvent injection system and column of HPLC in details with diagram. (08)

OR

Q.5 Explain the types of Microscopy. Describe the various parts for the bright field and dark field microscopy with ray diagram.

Q.6. Find out S.D. of Simple Series (16, 13, 17, 22), and Continuous Series (10, 11, 12, 13, 14, 15, 16; Frequency: 2, 7, 11, 15, 10, 4, 1) (08)

OR

Q.6. Following are results of height and weight of 1000 students. Mean height (y) = 170 cm, Mean weight (x) = 80 kg, $r = 0.6$, $\sigma_y = 6.5$ cm, $\sigma_x = 5$ kg, Anil's weight = 55 kg, Sunil's height = 165 cm. Estimate the height of Anil from his weight and weight of Sunil from his height.

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Enrolment No....

**THE CHARUTAR VIDYAMANDAL UNIVERSITY,
Vallabh VidyaNagar**

M.Sc: Environmental Science and Technology II Semester
Course: Occupational and Environmental Toxicology Course no:101350203
Date: 7th May,2022 Max.Marks:60 Time: 2.00 to 4.00 pm

N.B: i. Draw neat and labelled diagrams wherever necessary to score full marks.
ii. Numbers within the parentheses indicate marks.

Q1. Answer the following multiple choice questions (12X1)

1. First stable compound Citric acid molecules are liberated in the following reaction.
a. Cyclic reaction b. Non-cyclic reaction c. Krebs cycle d. Glycolysis
2. Osteocyte is the part of the following organ.
a. Liver b. Brain c. Heart d. None
3. $C_{55}H_{72}O_5N_4Mg$ is the formula of the following pigments
a. Chlorophyll a b. Xanthophylls c. Chlorophyll b d. Carotenoids
4. How many pairs of Cranial nerves are there in Human?
a. 10 b. 11 c. 12 d. None
5. Which one of the following is the Endocrine gland
a. Pancreas b. Sweat gland c. Mammary gland d. Thyroid
6. Dura matter of the human brain is formed by
a. Terminals b. Axon c. Dendrites d. All
7. People who cannot see the objects from short distance called .
a. Myopia b. Hyperopia c. Astigmatism d. Presbyopia
8. Bicuspid valve lies in the following part of heart.
a. Right article and ventricle b. Left article and ventricle c. Aortic d. Pulmonary
9. The Pneumonia takes place in
a. Bronchioles b. Alveoli c. Trachea d. None
10. c. Rods and Cones of human EYE are present in .
a. Ciliary body b. Retina c. Iris d. Cornea
11. Detoxifying organ of the body is :
a. Liver b. Kidney c. Skin d. All

12. 'Blood is filtered in the following

a. Kidney b. Nephron c. Glomerulus d. Liver

Q2. Answer any EIGHT of the following

(8X2)

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|--|-----------------------------|
| 1. Structure of Chloroplast | 6. Nerve Cells. |
| 2. Rods and Cones | 7. Acute toxicity |
| 3. Labelled diagram of human
Kidney | 8. LC 50 |
| 4. Blood Brain Barrier | 9. Labelled diagram of Skin |
| 5. Labelled diagram of Human Eye | 10. Cadmium toxicity |

Q3. Explain the Light reaction of Photosynthesis in details and add a note on environmental factors effecting on the process OR (8)

Q3. Describe the Dose - Response relations and explain ADME

Q4. Describe human lungs (only lower respiratory tract) and its lobule with neat labelled diagrams and enumerate the various diseases caused by fumes, metals, gases, smoke and vapours on human lungs in occupational and industry areas. (8)

OR

Q4. Explain structure of human heart, BP, ECG and discuss various diseases of heart in response of cardiotoxic chemicals

Q5. Explain the structure and functions of human liver. Enumerate various occupational hepatic diseases caused by toxic chemicals. (8)

OR

Q5. Discuss the structure of human brain and enumerate neurotoxic characters developed due to hexane, CS₂, heavy metals, etc.

Q6. What is Teratogenicity? Explain how it causes, effects and diseases in human. (8)

OR

Q6. Write various empirical formulas of Phenoxy herbicide and explain mode of action of substituted Phenoxy compounds.

THE CHARUTAR VIDYA MANDAL UNIVERSITY
M.SC. ENVIRONMENTAL SCIENCE & TECHNOLOGY (EST) – SEMESTER II
SUMMER (REGULAR) 2022 EXAMINATION

Course Title: Industrial Hygiene and Occupational Health

Course Code: 101350206

Total Printed Pages : 02 (Two)

Date: 9/5/2022

Time: 2.00 pm to 4.00 pm

Maximum Marks: 60

Instructions:

- Attempt all questions.
- Numbers to the right indicate full marks for each question.
- Make suitable assumptions wherever necessary.

Q.1 Answer the following **multiple choice questions**. **(12)**

- (1) PPE is _____ specific.
(a) Risk (b) Exposure (c) Vulnerability (d) Hazard
- (2) _____ is a miscellaneous type of particulates.
(a) Dust (b) Fume (c) Smoke (d) Odor
- (3) Ergonomics means _____.
(a) Work + Reasons (b) Work + Ration (c) Work + Redox (d) Work + Rules
- (4) Pneumoconiosis is caused by _____ in workers.
(a) Coal dust (b) Silica dust (c) Asbestos (d) All
- (5) Static muscular work is also known as _____ work in IHOH.
(a) Preventive (b) Stationary (c) Steady (d) Postural
- (6) NIMH is _____.
(a) National Institute of Mental Hygiene (b) National Institute of Men Health
(c) National Index of Mental Health (d) National Institute of Mental Health
- (7) Dynamic muscular work is also known as _____ work in IHOH.
(a) Restless (b) Continuous (c) Motion (d) Rhythmic
- (8) NIHI is _____.
(a) Noise Induced Hearing Index (b) Noise Induced Healing Institute
(c) Noise Index Hearing Institute (d) Noise Induced Hearing Institute
- (9) WBGT is _____.
(a) Wet Bulb Good Thermometer (b) Wet Best Globe Thermometer
(c) Water Bulb Globe Thermometer (d) Wet Bulb Globe Thermometer
- (10) Principle _____ of ergonomics deals with clearance.
(a) 4 (b) 5 (c) 6 (d) 7
- (11) Rule _____ of Gujarat Factories Rules (1963) deals with first aid appliance aid box.
(a) 68-O (b) 68-P (c) 68-Q (d) 70
- (12) Following is not an instrument of air sampling monitoring.
(a) GC-MS (b) HVAS (c) AAS (d) Anemometer

Q.2 Attempt **any eight** of the following. **(16)**

- (1) Define: Industrial Hygiene (IH), Occupational Health (OH)
- (2) Differentiate: Accident, Hazard, Risk
- (3) Draw flowcharts: Types of air contaminants, Particulates
- (4) Expand the terms: IOHA, OEL
- (5) Purpose, Recognition, Evaluation and Control of IH

- (6) Role of industrial hygienist
- (7) Safety and preventive health measures in industry
- (8) Tabulate: Control pathway, Methods of control
- (9) Types of dust
- (10) Walk-through survey in CETP

- Q. 3 Write detailed note on physical and chemical hazards with suitable examples. (08)
- OR**
- Q.3 Discuss work physiology in industrial workers citing examples. (08)
- Q. 4 Discuss five categories of health hazards. Comment on health hazards in building construction industries. (08)
- OR**
- Q. 4 Write a detailed note: TLV, TWA, STEL, CL (08)
- Q. 5 Briefly explain hierarchy of controls of any one industrial process. (08)
- OR**
- Q. 5 Describe occupation health services with suitable examples. (08)
- Q. 6 Discuss the three schedules of Factories Act, 1948 in detail. (08)
- OR**
- Q. 6 Discuss off-site emergency plan. (08)
