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B.Tech DEGREE EXAMINATION, NOVEMBER 2023

Seventh Semester

18CEO403J - COMPUTER APPLICATION IN WATER RESOURCES AND ENVIRONMENTAL ENGINEERING

(For the candidates admitted during the academic year (2020-2021 & 2021-20222))

Note:

i. **Part - A** should be answered in OMR sheet within first 40 minutes and OMR sheet should be handed over to hall invigilator at the end of 40th minute.

ii. **Part - B** and **Part - C** should be answered in answer booklet.

Time: 3 Hours **Max. Marks: 100**

PART - A (20 × 1 = 20 Marks)

Answer **all** Questions

		Marks	BL	CO
1.	_____ is an example for commercial source GIS software package. (A) Bentley (B) GRASS (C) SAGA (D) Quantum GIS	1	1	1
2.	_____data describe both the locations and characteristics of spatial features. (A) Geo-spatial (B) Temporal (C) Geo non-spatial (D) Difficult to say	1	2	1
3.	_____ is used by the U.S. department of defense as a global reference system for supporting positioning and navigation. (A) NAD27 (B) WGS84 (C) NAD83 (D) WGS80	1	1	1
4.	_____projection preserves areas in correct relative size. (A) Equidistant (B) Azimuthal (C) Equivalent (D) Lambert	1	1	1
5.	A latitude value of 45°52'30" would be equal to (A) 46.673° (B) 46.367° (C) 45.867° (D) 45.875°	1	3	2
6.	The largest stream order is found in ____ river. (A) Indus (B) Nile (C) Ganges (D) Amazon	1	2	2
7.	For circular basin the elongation ratio will be greater than ____ . (A) 0.5 (B) 0.9 (C) 0.7 (D) 0.2	1	1	2
8.	If the area of the basin is 3000 sq.km. and length of the main stream is 100 km. The form factor is ____. (A) 0.5 (B) 0.3 (C) 30 (D) 0.033	1	3	2
9.	If the area of the watershed is 1000 sq.km., it is identified as _____ (A) Medium watershed (B) Large watershed (C) Small watershed (D) Difficult to say	1	1	2
10.	_____ is a popular multiple-flow direction method. (A) D10 (B) D5 (C) D8 (D) D(infinity)	1	1	3

11.	HEC-RAS stands for (A) Hydrologic Engineering Center's River Analysis System (B) Hydro Engineering Center's River Analysis System (C) Hydro Energy Center River flow Analysis System (D) Hydrology Energy Center Riverine Analysis System	1	1	3
12.	_____flow refers to the condition where the fluid properties at any single point in the system change over time. (A) Uniform (B) Steady-state (C) Unsteady-state (D) Non-Uniform	1	1	3
13.	The flow in a river during the period of heavy rainfall is _____ . (A) Unsteady, non-uniform and three-dimensional (B) Steady, non-uniform and three-dimensional (C) Steady, uniform and two-dimensional (D) Unsteady, uniform and three-dimensional	1	1	4
14.	Which of the following is NOT correctly matched? (A) Radial system – Interlaced system (B) Ring system – circular system (C) Grid iron system – Reticulation system (D) Dead end system – Tree system	1	1	4
15.	As per IS 10500:2012, for drinking water in the absence of alternate source of water, the permissible limits for chloride and sulphate, in mg/L, are_____ respectively. (A) 250 and 200 (B) 1000 and 400 (C) 200 and 250 (D) 500 and 1000	1	1	4
16.	Which function is preferable to find the magnitude of a complex number? (A) Abs(.) (B) Sqrt(.) (C) Cart2pol(.) (D) Software does not support complex arguments	1	1	4
17.	To display comments of M-file, we use (A) Show % (B) Comment on (C) Echo on (D) Cannot be displayed	1	1	5
18.	Digital systems _____ in Simulink. (A) Can be implemented (B) Cannot be implemented (C) Only ADC's (D) Only DAC's	1	1	5
19.	Which among the following indicates the correct expansion of WiFS? (A) Wide Field Sensor (B) Wireless Fidelity Sensor (C) Wide Fidelity Sensor (D) Wireless Field Sensor	1	1	5
20.	After trying to plot a pie-chart, the student finds that the function he used is rose ( ). What is the nature of data used by the student if an output graph is generated? (A) Angles in radians (B) Linear bivariate (C) Logarithmic (D) This is not possible in SCI-labs.	1	1	5

PART - B (5 × 4 = 20 Marks)

Answer **any 5** Questions

		Marks	BL	CO
21.	Differentiate on vector data and raster data.	4	1	1
22.	Discuss on the applications of GIS with examples..	4	3	1
23.	What do you understand about the projected coordinate system?	4	1	2
24.	Define watershed analysis. Explain its significance.	4	1	3
25.	What are the functions of data browser in EPANET?	4	2	4
26.	What are the conditions for Hardy Cross method? Explain.	4	1	4

		Marks	BL	CO
27.	What is the use of GIS in water quality management?	4	1	5

PART - C (5 × 12 = 60 Marks)

Answer **all** Questions

		Marks	BL	CO
28.	(a) Write short notes on (a) Geo-spatial data (b) Data acquisition (c) Data analysis	12	1	1
	(OR)			
	(b) Describe briefly on Geographic coordinate system and Projected coordinated system.			
29.	(a) (i) A drainage basin is found to have the following data: Area of the basin = 3000 km^2; Length of the main stream = 150 km, the perimeter of the basin = 367 km. Determine circularity ratio, elongation ratio and the compactness coefficient for the basin. (ii) Define the following:(a) Watershed (b) Stream order (c) Relief	12	3	2
	(OR)			
	(b) Explain in detail on the various steps involved in the automated method for delineating watersheds			
30.	(a) Describe the following river analysis components of HEC-RAS (a) steady flow water surface profile computations and (b) one and two-dimensional unsteady flow simulation.	12	2	3
	(OR)			
	(b) Explain the various functions of Menu bar, toolbar and status bar in EPANET with neat sketch.			
31.	(a) Explain in detail about the water quality modelling capabilities used in EPANET.	12	1	4
	(OR)			
	(b) Explain in detail about the use of array and also brief how an array was created in MATLAB.			
32.	(a) Discuss in detail about MATLAB variables and brief about the same.	12	1	5
	(OR)			
	(b) Explain briefly about application of GIS in environmental engineering field with suitable example.			

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