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0800CET205122101



Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Third Semester B.Tech Degree Regular and Supplementary Examination December 2022 (2019 Scheme)

Course Code: CET205

Course Name: SURVEYING & GEOMATICS

Max. Marks: 100

Duration: 3 Hours

PART A

Answer all questions. Each question carries 3 marks

Marks

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| 1 | Explain how you would proceed in the field for cross sectioning. | (3) |
| 2 | Distinguish between direct ranging and indirect ranging. | (3) |
| 3 | List the factors which determine the intervisibility of triangulation stations. | (3) |
| 4 | Explain the construction and characteristics of mass haul diagram. | (3) |
| 5 | Define (i) Most probable value (ii) Residual error. | (3) |
| 6 | Write a note on omitted measurements in traverse surveying. | (3) |
| 7 | Discuss the principle of EDM. | (3) |
| 8 | Explain (i) Transition curve (ii) Reverse curve. | (3) |
| 9 | Explain spectral reflectance of soil. | (3) |
| 10 | Describe rapid static method of GPS surveying. | (3) |

PART B

Answer any one full question from each module. Each question carries 14 marks

Module 1

- 11a) The following consecutive readings were taken with a dumpy level. The level was shifted after 4th, 6th and 8th readings. Reduced level at the first point was 100.00. Prepare a level field work table. Calculate the reduced levels of the points by height of instrument method and apply the usual arithmetic check. 6.21, 4.92, 6.12, 8.42, 9.81, 6.63, 7.91, 8.26, 9.71, 10.21. (7)
- b) Explain various survey stations and survey lines in chain surveying. (7)
- 12a) Define contour. Which are the different methods of contouring? (8)
- b) In an old map, a line CD was drawn to a magnetic bearing of $7^{\circ}38'$, the magnetic declination at the time being 2° East. To what magnetic bearing should the line be set now if the present magnetic declination is $7^{\circ}20'$ East. (6)

Module 2

- 13a) From an eccentric station S, 15 metres to the west of the main station B, the following angles were measured. $\angle BSC = 81^\circ 20' 25''$, $\angle CSA = 68^\circ 27' 32''$. The stations S and C are to the opposite sides of the line AB. Calculate the correct angle ABC if the lengths AB and BC are 280 m and 320 m respectively. (8)
- b) Describe the methods of computation of volume by: (6)
- (i) Prismoidal formula (ii) Trapezoidal formula
- 14a) What is transit theodolite? What are face left and face right observations? (6)
- b) Explain the procedure to measure the height of an object using vertical angle. (8)

Module 3

- 15a) What is meant by balancing of closed traverse? Explain any two methods used? (7)
- b) The following are the condition equations of different weights. Construct the normal equations for x , y and z (7)
- $$x + 3y + 2z - 5 = 0, \text{ weight: } 3$$
- $$2x + 2y + 3z - 4 = 0, \text{ weight: } 4$$
- $$4x + 3y + 2z - 3 = 0, \text{ weight: } 2$$
- 16a) Distinguish between closed traverse and open traverse. Write a note on the checks in closed traverse. (8)
- b) Explain the principle of least squares. (6)

Module 4

- 17a) Define EDM. Which are the different types of EDM instruments? (6)
- b) Sketch and explain Rankine's method of deflection angle for setting out simple curves. (8)
- 18a) With a neat sketch, explain the elements of a simple curve? (8)
- b) What are the advantages and applications of total station survey. (6)

Module 5

- 19a) With neat sketches, differentiate between along track and across track multispectral scanning. (8)
- b) Explain data representation in GIS. (6)
- 20a) What is map projection? Explain various methods of map projection. (8)
- b) Explain differential global positioning system. (6)