**Scheme of Valuation/Answer Key**

(Scheme of evaluation (marks in brackets) and answers of problems/key)

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**

THIRD SEMESTER B.TECH DEGREE EXAMINATION, DECEMBER 2018

**Course Code: CE207**

**Course Name: SURVEYING**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Max. Marks: 100 |  |  |  |  |  |  | Duration: 3 Hours |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  | **PART A** |  |  |  |  |  |  |
|  |  |  |  | ***Answer any two full questions, each carries 15 marks.*** |  |  | Marks |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1 | a) |  | Ranging definition **(2)** |  |  |  |  |  |  |  | (6) |  |
|  |  |  | List out methods **(1)** |  |  |  |  |  |  |  |  |  |  |
|  |  |  | Explanation for any one method of ranging with figure **(3)** |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | b) | Explain- Principles and chain triangulation**(2 +2)** |  |  |  | (4) |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | c) | Main survey station, tie station **(2)** |  |  |  |  |  | (5) |  |
|  |  |  | Base line, main survey line, check line, tie line **(any three -3 marks)** |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2 | a) |  | Orientation definition **(2)** |  |  |  |  |  | (7) |  |
|  |  |  | List out methods **(1)** |  |  |  |  |  |  |  |  |  |  |
|  |  |  | Explain any one method **(4)** |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  | b) | Identify local attraction-line BC free from local attraction **(2)** |  |  | (8) |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | Line | OBSERVED |  | CORRECTION | CORRECTED | REMARKS |  |  |  |  |
|  |  |  |  | BEARING |  |  | BEARING |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | AB | 2920 150 |  | -00 30’ @ A | 2910 450 |  | STATION |  |  |  |  |
|  |  |  |  |  |  |  |  |  | A, D | AND | E |  |  |  |
|  |  |  | BA | 1110 450 |  | 0 | 1110 450 |  |  |  |  |
|  |  |  |  |  |  |  |  |  | ARE |  |  |  |  |  |
|  |  |  | BC | 2210 450 |  | 0 | 2210 450 |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  | EFFECTED |  |  |  |  |
|  |  |  | CB | 410 450 |  | 0 | 410 450 |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  | BY | LOCAL |  |  |  |
|  |  |  | CD | 900 050 |  | 0 | 900 050 |  |  |
|  |  |  |  |  |  |  |  |  | ATTRACTION |  |  |  |
|  |  |  | DC | 2700 00 |  | +00 5’ @ D | 2700 50 |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | DE | 800 350 |  | +00 5’ @ D | 800 400 |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | ED | 2610 400 |  | -10 | 2600 400 |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | EA | 370 00 |  | -10 | 360 00 |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | AE | 2160 300 |  | -00 30’ @ A | 2160 00 |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | Correction and Corrected bearing **(1 mark each, 1\*6=6)** |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |



|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 3 | a) |  | Characteristics **(4)**, uses any three**(3)** |  |  |  |  |  | (7) |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | b) |  |  |  |  |  |  |  |  |  |  |  | (8) |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | STATION |  | B.S | I.S | F.S | H.I |  | R.L | REMARKS |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | A |  | 0.602 |  |  | 228.827 |  | 228.225 | B.M |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | B |  |  | 1.234 |  |  |  | 227.593 |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | C |  |  | 1.860 |  |  |  | 226.967 |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | D |  |  | 2.574 |  |  |  | 226.253 |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | E |  | 0.235 |  | 3.450 | 225.612 |  | 225.377 | Change point |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | F |  |  | 1.285 |  |  |  | 224.327 |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | G |  |  | 2.820 |  |  |  | 222.792 |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | H |  | 0.525 |  | 3.255 | 222.882 |  | 22.357 | Change point |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | I |  |  | 1.824 |  |  |  | 221.058 |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | J |  |  | 2.722 |  |  |  | 220.16 |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | K |  |  |  | 2.985 |  |  | 219.089 |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | Table **(1)**, R.L **(10\*0.5=5)**, arithmetic check**(1)**, gradient=1 in 24.01 **(1)** |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  | **PART B** |  |  |  |  |
|  |  |  |  | ***Answer any two full questions, each carries 15 marks.*** |  |  |
|  |  |  |  |
| 4 | a) |  | Define triangulation **(2)**, classification –list out**(2)**, explanation **(3)** |  | (7) |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | b) |  | Figure **(2)** |  |  |  |  |  |  |  |  |  | (8) |
|  |  |  | Angles**:**α1= 00 40 2.450**(1)** |  |  |  |  |  |  |  |
|  |  |  | α2 = -00 30 56.960**(1)** |  |  |  |  |  |  |  |  |
|  |  |  | α3=-00 60 17.10**(1)** |  |  |  |  |  |  |  |  |
|  |  |  | Directionof PQ=1400 220 32.450**(1)** |  |  |  |  |  |  |
|  |  |  | Direction of PR= 2300 160 7.040**(1)** |  |  |  |  |  |  |
|  |  |  | Direction of PS= 2890 570 52.90**(1)** |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
| 5 | a) |  | Characteristics with figure **(4)** |  |  |  |  |  |  | (7) |
|  |  |  | Uses **(3)** |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  | b) |  | a. average ordinate rule- equation **(1),** area=398.34m2 **(1)** |  |  | (8) |
|  |  |  | b. trapezoidal rule- equation **(1)**, area =402.75m2 **(2)** |  |  |  |  |
|  |  |  | Simpson’s rule- equation **(1)**, area = 395 m2 **(2)** |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |

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| 6 | a) | Fundamentallines-list out **(2)**, explanation **(3)** | (5) |
|  |  |  |  |
|  | b) | Type of signals-list out**(1)**, explain any three with figure**(4)** | (5) |
|  |  |  |  |
|  | c) | Explanation **(4)**, figure **(1)** | (5) |
|  |  |  |  |
|  |  | **PART C** |  |
|  |  | ***Answer any two full questions, each carries20 marks.*** |  |
|  |  |  |  |
| 7 | a) | Weight of observation- definition**(2)**, explanation**(3)** | (5) |
|  |  |  |  |
|  | b) | Advantages- any five **(7)** | (7) |
|  |  |  |  |
|  | c) | Procedure –centering, **levelling and**entering input data(3), orienting the instrument, explanation on three methods(3), making observation and recording(2) | (8) |
|  |  |  |  |
| 8 | a) | Normal equation for A: 6A+4B=437º 23’7.­­20”**(2.5)** | (10) |
|  |  | Normal equation for B: 4A+7B=581º 39’ 18.90”**(2.5)** |  |
|  |  | A=28º 16’ 19.80”**(2.5)** |  |
|  |  | B=66º 56’ 17.1”**(2.5)** |  |
|  |  |  |  |
|  | b) | Explain types of EDM: list out **(2)**, explanation **(8)** | (10) |
|  |  |  |  |
| 9 | a) | Definition of most probable value **(2)** | (10) |
|  |  | Methods -4 method **(4\*2=8)** |  |
|  |  |  |  |
|  | b) | Definition **(2 for each, 5\*2=10)** | (10) |
|  |  |  |  |
|  |  | \*\*\*\* |  |
|  |  |  |  |