

MAHARASHTRA AGRICULTURAL UNIVERSITIES EXAMINATION BOARD, PUNE  
SEMESTER END EXAMINATION

B.Tech. (Agril. Engg.)

Semester	: II (New)	Term	: II	Academic Year	: 2018-19
Course No.	: SWCE 121	Title	: Surveying and Leveling		
Credits	: 3 (1+2)	Time	: 09.00 to 11.00	Total Marks	: 40
Day & Date	: Friday, 10.05.2019				

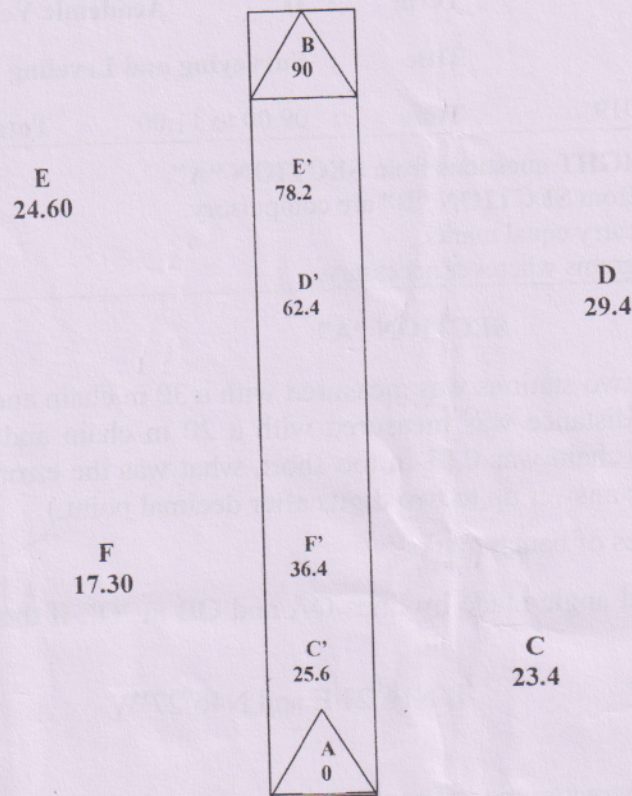
- Note :
1. Solve ANY EIGHT questions from SECTION "A".
  2. All questions from SECTION "B" are compulsory.
  3. All questions carry equal marks.
  4. Draw neat diagrams wherever necessary.

SECTION "A"

- Q.1 a) The distance between two stations was measured with a 30 m chain and found to be 2402.5 m. The same distance was measured with a 20 m chain and found to be 2406.9 m. If the 20 m chain was 0.01 m too short, what was the error in the 30 m chain? (Round up your answer up to two digits after decimal point.)  
b) What are different types of bench marks?
- Q.2 a) Determine the included angle made by lines OA and OB at 'O', if their respective bearings are:  
i)  $33^{\circ}16'$  and  $148^{\circ}14'$                       ii)  $N16^{\circ}21'E$  and  $N46^{\circ}27'W$   
iii)  $18^{\circ}33'$  and  $330^{\circ}22'$   
b) Give three important characteristics of contours.
- Q.3 a) The following consecutive readings were taken on a continuously sloping land at 30 m interval with a dumpy level and 4 m leveling staff. 1.835, 2.940, 3.540, 1.655, 2.740, 3.755, 1.805, and 2.145. The first reading was taken on the benchmark of R.L. 805.005 m. Take out a page of level book and enter all the readings in appropriate columns. Calculate the reduced levels of all stations.  
b) Give two important uses of contour.
- Q.4 a) A chain line ABC crosses a river, B and C being on the near and distant banks, respectively. The bearing AB is  $320^{\circ}$ . The bearing of C taken from D, a point 60 m at right angle to AB from B, is  $280^{\circ}$ . Distance AB is 20 m. Find the width of river.  
b) Explain in brief how the curve is set using theodolite.
- Q.5 a) In setting up the plane table at a station A, it was found that the point 'a' representing the station A on the plan is displaced by 15 cm at right angle to the ray AB. If the scale of plan is 1:1500 and distance AB is 33 m, find the consequent displacement of 'b' from its true position.  
b) How contours are located between two stations?
- Q.6 a) What are advantages of plane table survey over chain survey? List the accessories required in plane table survey.  
b) What are the objects of surveying?

(P.T.O.)

Q.7 a) Determine the area of the field ACDBEF from the chain survey given below. All dimensions are in m.



b) What are different types of leveling?

Q.8 A road embankment 6 m wide at formation level with side slope 1.5:1 and an average height of bank 3 m is constructed with an average gradient of 1 in 50 from 350 m contour to 400 m contour. Find the quantity of earth work in cubic meter for the embankment.

Q.9 a) Explain in brief the works to be done by surveyor.  
b) How indirect ranging is done? Show with suitable figure.

Q.10 a) Following fore bearings and back bearings were observed in a compass traverse. It is suspected that there is some local attraction. Correct the bearings for local attraction.

Line	Fore bearing	Back bearing
AB	289°30'	108°45'
BC	44°30'	226°30'
CD	124°30'	303°15'
DA	181°0'	1°0'

b) Enlist different types of levels.

SECTION "B"

Q.11 Fill in the blanks with correct answer.

- 1) In geodetic surveying \_\_\_\_\_ of earth is taken into consideration.  
(a) diameter (b) curvature  
(c) undulations (d) equator
- 2) If distance measured by Gunter's chain is 8 chain and 25 links, the total length of line is \_\_\_\_\_.  
(a) 272.25 feet (b) 544.5 feet  
(c) 825 feet (d) None of these
- 3) Well conditioned triangle should not have any of its angles more than \_\_\_\_\_.  
(a)  $90^{\circ}$  (b)  $100^{\circ}$   
(c)  $120^{\circ}$  (d)  $150^{\circ}$
- 4) \_\_\_\_\_ is the fixed reference point of known elevation.  
(a) Change point (b) Bench mark  
(c) Intermediate sight (d) Back sight

Q.12 Do as directed.

- 1) What is Focusing of level?
- 2) What is GPS?
- 3) Convert  $236^{\circ}37'$  into quadrantal bearing.
- 4) Why plane table survey is not done in rainy season?

◆ ◆ ◆ ◆ ◆ ◆ ◆ ◆ ◆ ◆