Course Code: **10M11CE212**　　　　　　　　　　　　　MAX. MARKS: 15
COURSE NAME: Heavy/Civil Construction Equipment, Methods and Management
COURSE CREDITS: 04　　　　　　　　　　　　　　　　MAX. TIME: 1 HR.

NOTE: All questions are compulsory. Each question carries 3 marks.
Carrying of mobile phone during examinations will be treated as case of unfair means.

Q.1. In what conditions, a back-hoe considered to be more efficient / suitable than a power-shovel? Draw a simple line diagram of a back-hoe and state the factors affecting its output.

Q.2. Compare pneumatic-tyred rollers with sheep-foot rollers in terms of their working and applicability to earthwork projects.

Q.3. Why pre-project planning is needed for large civil engineering construction projects? Write its important elements.

Q.4. Using end-area method, estimate the net earthwork quantities (filling / cutting) for sections A-A' to F-F' for the stations shown in Fig. 1. The fill/cut junction is shown by long-dashed line.
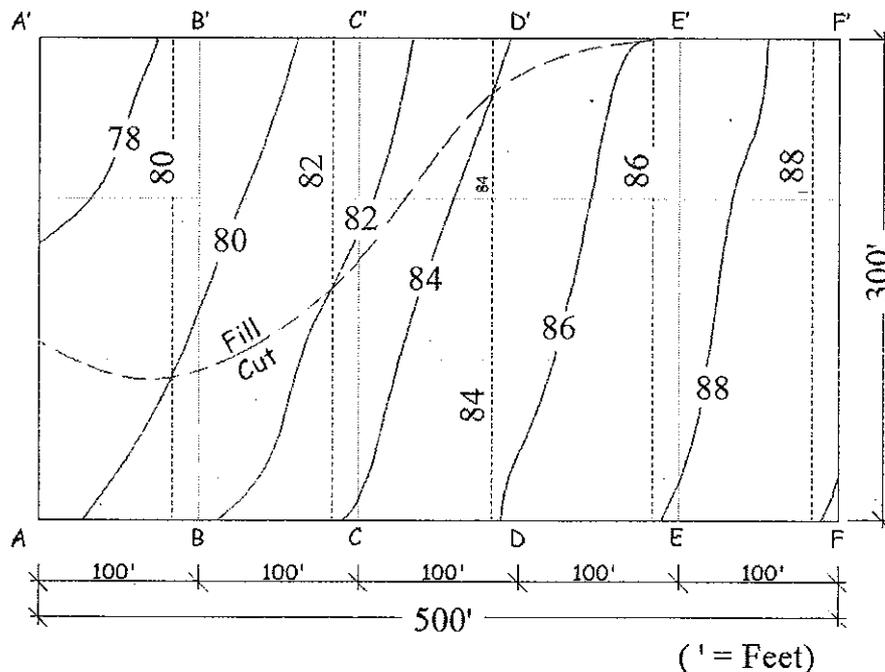

Fig. 1.

Q.5. The initial cost of a scraper is $186,000, tire cost is $14,000, salvage value is $22,000 and its useful life is 5 years. Compute its depreciation for the *second* year using *sum-of-years'-digits method*. Also, estimate the hourly repair cost of a scraper for its second year of operation. Assume average operating condition and 2000 hours of operation per year. Take lifetime repair cost factor to be 0.9.

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