Based on this information, estimate the true population mean, at 95 percent confidence level.

Sl.No	1	2	3	4	5	6	7	8	9	10
Height in cms	165	170	173	158	163	180	174	176	155	166

UNIT-V

9. a) Show that exponential distribution is characterized by probability of hazard rate not depending upon the age of the item.

   b) An electronic circuit consists of 8 valves, 25 resistors and 15 capacitors, all connected in series. The failure rates of the components per 500 hours per unit are 0.20 for valves, 0.05 for resistors and 0.10 for capacitors. Assuming the components in each category to be identical, find MTBF of the system and its reliability for 200 hours.

10. a) What are the two major types of arrangements is reliability? For each case, derive the system reliability.

    b) Calculate the unreliability of the system.
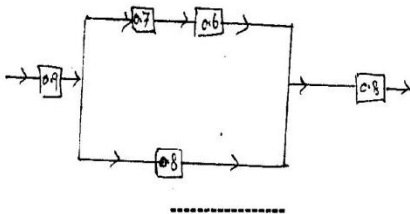
B.E. DEGREE EXAMINATION, 2011

(CIVIL/STRUCTURAL/MECHANICAL AND MANUFACTURING ENGINEERING)

(FOURTH SEMESTER)

CLEC/CSEC/MEEC/MFEC-401. PROBABILITY AND STATISTICS

(Old Regulations)

(For the students joined during 2006-07 and before)

May]   [Time : 3 Hours

Maximum: 60 Marks

Answer any one full Question from each unit

Use of statistical table is permitted

UNIT-I

1. a) Explain the term 'dispersion'. Compare the relative merits of mean deviation and standard deviation as measures of dispersion.

   b) Suppose 40 percent of the candidates who appeared for an interview were engineering graduates and 60 per cent arts and science post-graduates. 20 per cent of engineering graduates and 10 percent of arts and science graduates were selected. What is the probability that a candidate selected at random from the engineering graduates, given that he was selected?

2. a) The following are the runs scored by two batsmen A and B in ten innings.

A:	101	27	0	36	82	48	7	13	64	14
B:	97	12	40	96	13	8	85	8	56	15

Who is more consistent batsman?

b) A box contains 6 white balls and 6 black balls. Two draws of 2 balls at a time made such that the balls are not replaced before the second trial. Find the probability that two balls drawn at the first trial are white and that of the second trial are black balls.

UNIT-II

3. a) If the random variable X takes the value 1, 2, 3 and 4 such that $2P(x=1)=3P(x=2)=P(x=3)=5P(x=4)$. Find the probability distribution.

   b) Find the m.g.f. of a random variable 'X' whose probability function is $P(x)=\dfrac{1}{2^x}$ x=1, 2, 3... Hence find its variance.

4. a) Find the characteristic function of the geometric distribution given by $P(X=x)=q^x p$, x=0, 1, 2.....α), p+q=1. Hence find the mean and variance.

   b) The two lines of regression are $8x-10y+66=0$; $40x-18y-214=0$. The variance of X is 9. Find (i) the mean values of X and Y (ii) correlation coefficient between X and Y.

UNIT-III

5. a) A machine manufacturing screws is known to produce 5% defective. In a random sample of 15 screws, what is the probability that there are (i) exactly three defectives (ii) not more than three defectives?

   b) If X is normally distributed with mean 12 and S.D.4. Find out the probability of the following. i) x≥0; (ii) x≤20; (iii) 0≤x≤12.

6. a) A fruit seller, from his past experience, knows that 3 percent of apples in each basket will be defective. What is the probability that exactly 4 apples will be defective in a given basket? What is the probability of 2 defective occurring?

   b) A random variable 'X' has a uniform distribution over (–3, 3) compute.
   (i) $P(x<2)$ and $P(|X|<2)$
   (ii) Find k for which $P(x>k)=1/3$

UNIT-IV

7. a) A sample of 26 bulbs gives a mean life of 990 hours with a S.D of 20 hours. The manufacturer claims that the mean life of bulbs is 1000 hours. Is the sample not upto the standard?

   b) The number of automobile accidents per week in a certain city are as follows: 12, 8, 20, 2, 14, 10, 15, 6, 9, 4. Are these frequencies in agreement with the belief that accident conditions were the same during this 10 week period?

8. a) A group of boys and girls were given an intelligence test. the mean, score, standard deviation and numbers in each group are as follows:

	Mean	S.D	n
Boys	124	12	18
Girls	121	10	14

   Is the mean score of boys significantly different from that of girls?

   b) Suppose we want to make an estimate of the average height of executive trainees of a company, for this, we have made a random selection of 10 trainees and their heights measured are given in the following table.

Register Number: **8604**

Name of the Candidate:

B.E. DEGREE EXAMINATION, 2011

(CIVIL ENGINEEERING)

(FOURTHSEMESTER)

CLEC-403.PLANNING AND COST EVALUATION
(New regulation)
(For the students joined during 2006-2007 and before)
May)   (Time: 3 Hours

Maximum: 60 Marks

Answer Question No.1 and
any THREE of the remaining
Assume suitable data wherever necessary

1. Estimate in detail the quantities of the following items
    of work in residential building shown in the fig-1
    i) Earth work in the fig-1
    ii) RCC worth (1:2:4) in roof slab   (24)

2. Assume current schedule of rates for material and
    labour. Prepare data for the following item of work
    first class brick work in super structure with 1:5
    cement mortar.   (12)

3. Estimated the quantities of materials required for the
    following works
    i)RR Ma sorry in cement mortar 1:6 , in foundation.
    ii) Wood work for doors.   (12)

4. Write down the detailed specifications for the following items of works
   i) First class brick work
   ii) Damp proof course

5. Prepare a detailed estimate for the quantities of the roof truss shown in figure-2 .Assume any suitable data required.
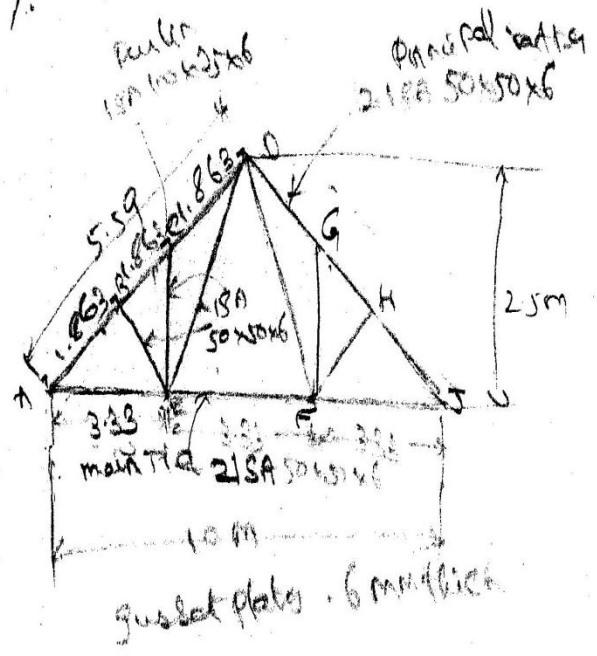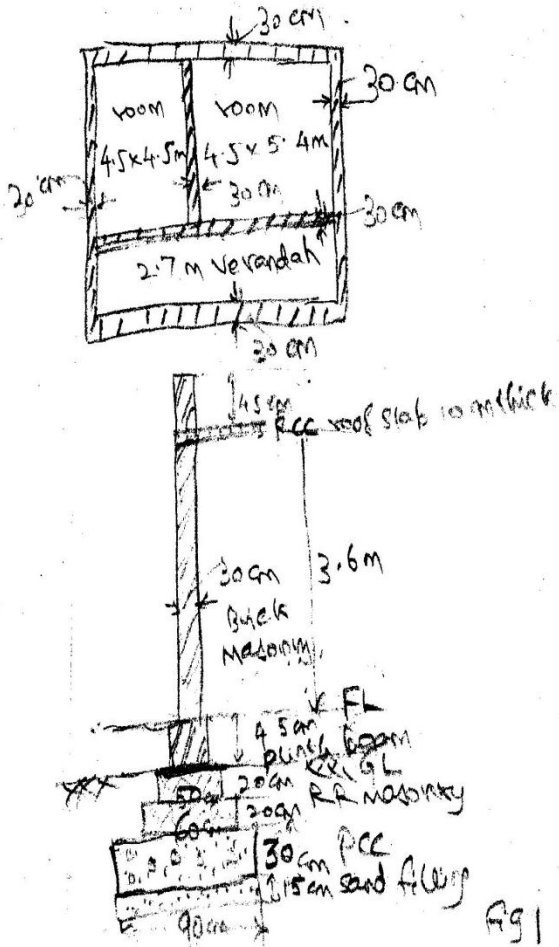

Fg 1

1.

Fig. 2

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4

UNIT - IV

7. (a) Describe the conditions of contract in outlines. (6)

   (b) Explain the responsibilities of contractor. (6)

(OR)

8. (a) Discuss about three forms of contracts. (6)

   (b) Explain package deal contract and discuss about the circumstances under which it will be suitable. (6)

UNIT - V

9. (a) Explain different forms of value. (6)

   (b) Discuss about a freehold property. (6)

(OR)

10. A leasehold property has been purchased for ₹. 41,00,000/-. The unexpired period of the lease is 40 years. The net income from the property is s ₹.30,000/- per annum. Assume that the rate of percent for redemption of the capital is 3. Find out the rate percent for the capital. (12)

UNIT - I

1. (a) Describe the different types of estimates. (6)

(b) Explain the methods used to find the approximate cost of the building. (6)

(OR)

2. Workout the approximate rate per running metre length of a wall, for the given data :

(a) Width of foundation trench = 100 cm.

(b) Depth below ground level = 150 cm.

(c) Height of plinth above

ground level = 50 cm.

(d) Depth of foundation concrete = 50 cm.

(e) Height of 60 cm wall = 20 cm.

(f) Height of 50 cm wall = 20 cm.

(g) Height of 40 cm wall

upto ground level = 60 cm.

If the running length at plinth level is 200m for a particular structure, what will be its approximate cost upto plinth level ? (12)

UNIT - III

3 (a) What is meant by standard costing ? (6)

(b) Workout the rate analysis for 10 cm brick partition wall in cement mortar (1 : 4) on ground floor. (6)

(OR)

4. (a) Discuss about schedule of rates. (6)

(b) Workout rate analysis for white washing in three coats. (6)

UNIT - III

5. (a) Define specification and mention their objectives. (6)

(b) Enumerate and explain the three categories of tenders. (6)

(OR)

6. (a) Write down the specification for cement Macadam road on existing water bound road surface. (6)

(b) Explain the sequential procedure of opening of tenders. (6)

Turn Over

Name of the Candidate:

B.E. DEGREE EXAMINATION, 2011

(CIVIL/ CIVIL AND SRUCTURAL ENGINEERING)

(FOURTH SEMESTER)

CLEC-405/ PCLEC-303STRUCTURAL ENGINEERING-I
(Old regulation)

(For the students joined during 2006-2007 and before)
May)   (Time: 3 Hours
Maximum: 60 Marks

Answer any ONE FULL question from each unit
Using IS456-2000, IS 800 -1984 and Steel tables are permitted
All questions carry equal marks

UNIT-I

1.   a) Distinguish between the terms factor of safety and partial safety factor.   (4)

      b) Enumerate the five limit states commonly used in limit state design and state briefly how they are provided for in design.   (8)

2.   Design a rectangular reinforced concrete beam of section 300×800mm to carry a factorial moment of 600 KNm. Assume F_{ek}= 20N/mm^2. fy=415N/mm^2 Cover 25mm and   sizes of stirrups 10mm.
                                                        (12)

UNIT-II

3. A column 400 × 400mm has an unsupported length of 7m and effective length of 4.5m. Can it be designed as a short column under axial compression, if the load is placed centrally on it? (12)

4. Design a footing for a 500×350mm column using 20mm bars as dowels to transmit characteristic loads of 600kN as dead load and 400kN a live load to a foundation with safe bearing capacity of 120kN/m^2.With safe bearing capacity of 120kN/m^2 .Assume grade 20 concrete and Fe 415 steel. (12)

UNIT-III

5. Sketch the layout of a slab stair –case cantilevering from a wall, and detail the typical reinforcement used-Sketch the effective span and the loading to be used to calculate the B.M and S.F in a step.

6. A stair case of 1.2m width for an office building, consists of each step built in to the wall with a bearing of 110mm along the flight with the tread=250mm and rise=200mm. Design the stair case and sketch the layout of reinforcements, assuming f_{ck}= 15N/mm^2 and f_y=415N/mm^2.

UNIT-IV

7. A tension member is subjected to a pull of 250kN. Design suitable section if (a) it consists of a single angle connected by one leg (b) it consists of double angle on either side of gusset plate and tacked along the length.

8. Design the maximum sction of riveted plate girder for a bridge, for a live load of 80kN/m, longer than the span and dead load of 40kN/m. The girder is simply supported over a span of 16m. Also show the curtailment of the flanges.

UNIT-V

9. A double riveted double cover butt joint in plates 16mm thick is made with 20mm rivets at 80mm pitch. Calculate the pull per pitch length at which the joint will fail. Take f_t= 480N/mm^2 ; f_b= 760N/mm^2 and f_s= 380N/mm^2.

10. Design a T section to carry an axial tension of 300KN. Take f_y=250N/mm^2.Aslso design the riveted joint at the end.

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UNIT-III

5. What is an influence diagram? What is its use in practice? (12)

6. What is meant by Terzahi's one dimensional consolidation theory? Explain. (12)

UNIT-IV

7. What is Mohr's strength theory for soils? Sketch typical strength envelopes for a clean sand. (12)

8. A sample of dry cohesionless soil was tested in a triaxial machine. If the angle of shearing resistance was 36 degree and the confining pressure, 100 kN/m² determine the deviator stress at which the sample failed. (12)

UNIT-V

9. Write short note on the Swedish Slip Circle Method. (12)

10. Determine the factor of safety with respect to shear strength of a slope 10 m high and having an inclination of 40 degree of a soil with c = 30 kN/m² $\varphi=10°$ and $\gamma = 19$ kN/m³ (12)

Register Number: **8702**

Name of the Candidate:

B.E. DEGREE EXAMINATION, 2011

(CIVIL ENGINEERING)

(FOURTH SEMESTER)

CLEC-504/PCLEC-204/CSEC-505/PCSEC-304. SOIL MECHANICS

(Old Regulations)

(For the students joined during 2006-07 and before)

May]   [Time : 3 Hours

Maximum : 60 Marks

Answer any one full Question from each unit

UNIT-I

1. Differentiate between consolidation and compaction. Give examples.

2. Write short notes on (a) Grain Size Distribution and (b) Atterberg's limits and consistency.

UNIT-II

3. What are the different methods for determination of the co-efficient of soil permeability in a laboratory? Discuss their limitations.

4. If the effective grain size of the soil is 0.3 mm. estimate the co-efficient of permeability. Take Hazen's C = 10.

B.E. DEGREE EXAMINATION, 2011

(CIVIL ENGINEERING)

(FOURTH SEMESTER)

CLEC-406/PCLEC-304.STRUCTURAL DESIGN AND DRAWING-I
(Old Regulation)
(For the students joined during 2006-2007 and before)

May)

(Time: 3 Hours

Maximum: 60 Marks

Answer any ONE question
Use of IS: 456-2000 and steel tables permitted
Assume suitable data wherever necessary

UNIT-I

1. Design a open well type stair-case for a multistoreyed building having stair case hall 3m×4m. The height between floo rs is 3.5m. Live load to be taken for design is $3500N/m^2$.
   Draw to suitable scale:
   1) Cross section along with the stair reinforcement details inpart1.
   2) Cross section along the stain in Part 2.

2

2. Design a pile and pile cap for a column 500mm × 500mm carrying a load of 1800kN supported on three piles. The piles are 300mm×300mm and are arranged at a centre to centre of 1m.
   Draw to suitable scale.
   1) Top plan of the pile and pile cap with reinforcement details.
   2) Vertical cross-section of the piles and pile cap with reinforcement details.

B.E. DEGREE EXAMINATION, 2011

(CIVIL ENGINEERING)

(FOURTH SEMESTER)

CLEC -402. SURVEYING-I

(Old Regulations)

(For the students joined during 2006-07 and before)

May]   [Time : 3 Hours

Maximum : 60 Marks

Answer any one full Question from each unit

UNIT-I

1. Explain geodetic surveying. Write a note on classification of survey based on instruments used.

2. A 20m chain was found to be 10 cm too long after chaining a distance of 1500m. It was found to be 18cm too long at the end of days work after chaining a total distance of 2900m. Find the true distance if the chain was correct before the commencement of the work.

UNIT-II

3. Explain the prismatic compass with a neat sketch and write note on errors in compass surveying.

4. The following bearings were observed while traversing with a compass.

Line	F.B	B.B
AB	18° 10'	259° 10'
BC	120° 20'	310° 50'
CD	170° 50'	350° 50'
DE	230° 10'	49° 30'
EA	310° 20'	130° 15'

Compute the interior angles and correct them for observed errors. Assuming the observed bearing of the line CD to be correct adjust the bearing of the remaining sides.

UNIT-III

5. Write briefly the radiation method of plane tabling.

6. The following perpendicular offsets were taken at 10m intervals from a survey line to an irregular boundary line: 3.25, 5.60, 4.20, 6.65, 8.75, 6.20, 3.25, 4.20, and 5.65. Calculate the area enclosed between the survey line, the irregular boundary line, and the first and last offsets, by application of (a) trapezoidal rule (b) Simpson's rule.

UNIT-IV

7. State and explain omitted measurements in theodolite surveying.

5. Explain any one method of measuring horizontal and vertical angle using theodolite.

UNIT-V

9. Explain temporary adjustments of level.

10. The following consecutive readings were taken with a level at an interval of 30 m. The R L of fist point is 99.585m, 2.650, 0.745, 0.625, 0.360, 2.625, 2.260, 1.335, 0.970, 1.465, 0.725, 1.890 and 2.535. The instrument was shifted after the fourth and ninth reading. Rule out a page of level book and enter the above readings. Calculate the R .L. of all points. Also apply arithmetic checks.