Answer any ONE FULL question from each unit.
ALL questions carry EQUAL marks.

UNIT - I

1 (a) List the impact of deforestation on the environment.   (8)

   (b) Explain the stages in desertification.   (7)

(OR)

2. (a) What is over utilisation of water resources ? Mention the remedial measures.   (8)

   (b) Explain in detail the effect of modern agriculture which includes both benefical and adverse effects.   (7)

UNIT - II

3. (a) Explain the stages in ecological succession using appropriate terminology.   (8)

   (b) Explain the structure and function of grassland ecosystem.   (7)

(OR)

4. (a) Describe the function of an ecosystem using energy flow and material cycling. (8)

   (b) Explain aquatic ecosystem in detail.   (7)

UNIT - III

5. (a) Explain the methods of conservation of biodiversity.   (8)

   (b) Substantiate the statement 'India is a mega diversity nation.'   (7)

(OR)

6. (a) Write a note on endangered and endemic species of India.   (8)

(b) Define *in-situ* and *ex-situ* conservation of biodiversity and explain. (7)

UNIT - IV

7. (a) Write a detailed note on photochemical reactions taking place in the atomsphere. (8)

(b) Write a flow sheet and explain the steps involved in solid waste management. (7)

(OR)

8. Explain the features of the following :

(a) Air Act. (b) Forest Conservation Act. (8 + 7)

UNIT - V

9. (a) What is population explosion ? Give the reasons behind it. (8)

(b) Discuss the factors influencing human health under current environmental conditions (7)

(OR)

10. Describe the following :

(a) Environment and human health relation. (8)

(b) HIV and AIDS. (7)

B.E. DEGREE EXAMINATION, 2018

(CIVIL ENGINEERING)

(THIRD SEMESTER)

PCLEC–301. STATISTICS AND NUMERICAL METHODS

April /May]   [Time : 3 Hours

Maximum : 75 Marks

Answer any ONE FULL question from each unit   (5×15=75)

UNIT – I

1. a) A bolt is manufactured by 3 machines A, B and C. A turns out   (7)
        twice as many items as B and machines B and C produce equal
        number of items. 2% of bolts produced by A and B are defective
        and 4% of bolts produced by C are defective. All bolts are put into 1
        stock pile and 1 is chosen from this pile. What is the probability
        that it is defective?

   b) There are 3 true coins and 1 false coin with 'head' on both sides. A   (8)
        coin is chosen at random and tossed 4 times. If 'head' occurs all
        the 4 times. What is the probability that the false coin has been
        chosen and used?

2. A random variable X has the following probability distribution.   (15)

X	-2	-1	0	1	2	3
P(x)	0.1	K	0.2	2K	0.3	3K

   (i) Find K

   (ii) Evaluate $P(x<2)$ and $P(-2< x <2)$

   (iii) Find the cumulative distribution function of X

   (iv) Evaluate the mean of X.

UNIT – II

3. a) If X is a random variable following binomial distribution with mean   (7)
        2.4 and variance 1.44. Find $P(X \geq 5)$.

   b) In an intelligence test administered to 1000 children. The average   (8)
        score is 42 and standard deviation 24. Assume the normal
        distribution

        (i) Find the number of children exceeding the score 60 and

        (ii) Find the number of children with score lying between 20
             and 40.

4. Obtain the lines of regression and correlation coefficient from the   (15)
   following data:

X :	1	2	3	4	5	6	7	8	9
Y :	9	8	10	12	11	13	14	16	15

UNIT – III

5. Evaluate $I = \int_0^1 \frac{1}{1+x} dx$, correct to three decimal places, (i) Using trapezoidal rule with h = 0.5 (ii) Using Simpson's $\frac{1}{3}$ & $\frac{3}{8}$ rule with h = 0.25. (15)

6. Estimate the value of the integral $\int_1^3 \left(\frac{1}{x}\right) dx$ by Simpson's and trapezoidal rule with 4 strips and 8 strips respectively. Determine the error by direct integration. (15)

UNIT – IV

7. Solve the equation $\frac{d^2y}{dx^2} = x + y$ with boundary conditions y(0) = y(1) = 0, by finite difference method. (15)

8. Solve the equation $xy'' + y = 0$, $y'(1) = 0$ and y(2) = 1 with h = 0.5 using finite difference method. (15)

UNIT – V

9. A company manufacturers two types of printed circuits A and B. The following table gives the requirements of transistors, resistors and capacitors for each type and other particulars. How many circuits of each type should the company produce from the available stock in order to earn maximum profit? (15)

	Circuit		Stock available
	A	B	
Transistor	15	10	180
Resistor	10	20	200
Capacitor	15	20	210
Profit (Rs.)	5	8	

10. Solve the Linear programming problem by Simplex method: (15)

Maximize $Z = 2x_1 + 2x_2 + 4x_3$

Subject to the constraints,

$2x_1 + 3x_2 + x_3 \leq 300$

$x_1 + 2x_2 + 3x_3 \leq 300$

$x_1 + 3x_2 + x_3 \leq 240$

$x_1, x_2, x_3 \geq 0$.

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B.E. DEGREE EXAMINATION, 2018

(CIVIL ENEGINEERING)

(THIRD SEMESTER)

CLEC-302/CSEC-302/PCSEC-102. MECHANICS OF SOLIDS-I

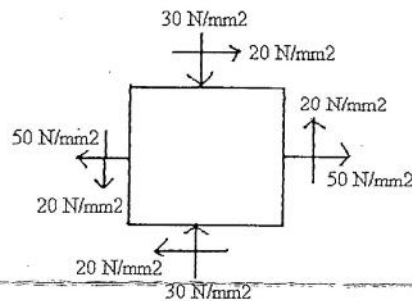April/May]   [Time : 3 Hours

Maximum : 75 Marks

Answer any ONE FULL question from each unit

UNIT-I

1. Determine the direction of principal plane, normal stresses and tangential stress of the strained material as shown in figure.


2. A steel tube 50mm external diameter 5mm thick encloses centrally a copper bar of 30 mm diameter. The bar and tube are rigidly connected together at the end at a temperature of 30oC. The composite bar is subjected to an axial compressive load of 60kN and the temperature is raised to 150oC. Determine the stresses in the steel tube and copper rod $\alpha s = 12 \times 10-6/oC$, $\alpha cu = 18 \times 10-6/oC$, $Es = 200$ GPa, $Ecu = 100$ GPa.
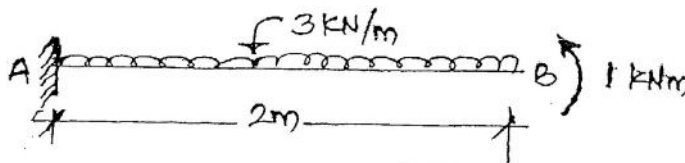
UNIT-II

3. Determine the moment of Inertia about the diagonal of a square section having diagonal 400 mm.

4. A hollow circular section of external diameter 100 mm has a uniform thickness of 10 mm, calculate its moment of inertia with respect to

i) Diameter

ii) Tangent to the bottom of circle

iii) The axis parallel to and 20 mm below the tangent.

UNIT-III

5. Draw SFD and BMD for the simply supported beam shown in Figure. Show all important values.
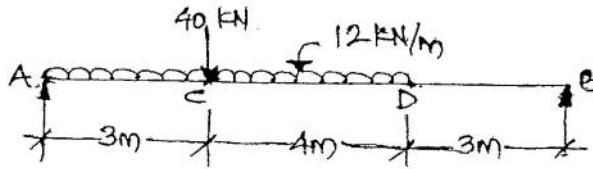
6. Draw SFD and BMD for the cantilever beam loaded as shown in Figure.

UNIT-IV

7. A cantilever of length 2.5m is loaded with an udl of 10 kN/m over a length 1.5m from the fixed end. Determine the slope and deflection at the free end. Determine the slope and deflection at the free end of the cantilever L = 9500cm4, E = 210 GN / m2 using Moment area method.

8. Using double integration method, determine the deflection under the loads of the beam shown in fig.
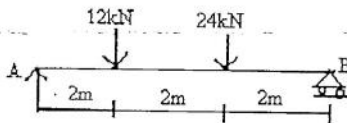
UNIT-V

9. . A circular shaft of 1000mm diameter and 2m length is subjected to a twisting moment which creates a shear stress of 20N/mm2 at 30mm from the axis of the shaft. Calculate the angle of twist and the strain energy stored in the shaft. Take G=8x104 N/mm2.

10. A close coiled helical spring has a stiffness of 5N/mm. its length when fully compressed with adjacent coils touching each other is 40 cm. the modulus of rigidity of the material of the spring is 0.8x10N/mm2. Determine the wire diameter and mean coil diameter if their ratio is 1/10. What is the corresponding maximum shear stress in the spring?

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B.E. DEGREE EXAMINATION, 2018

(CIVIL ENGINEERING)

(THIRD SEMESTER)

CLEC - 303 / CSEC-303. CONSTRUCTION ENGINEERING

(Common with Civil and Structural Engineering)

May]   [Time : 3 Hours

Maximum : 75 Marks

Answer ONE FULL question from each unit.
ALL questions carry EQUAL marks.

UNIT - I

1   Describe the dry and wet process of manufacture of cement with flow diagram.

2. List out the types of special bricks. Briefly explain any four of them.

UNIT - II

3. Dessribe the types of deep foundation with neat sketches.

4.. Compare brick masonry and stone masonry.

UNIT - III

5. Explain in detail R.C.C. works for beams, slabs and columns.

6. What are the different types of doors and windows ?

UNIT - IV

7. Define plastering. Give its types. Explain the procedure of plastering on new surface.

8. Explain in detail about the sacffoldings with neat sketch.

UNIT - V

9. Explain in detail about the demolition techniuqes for R.C.C. structures.

10. Describe the causes of distress in concrete structures.

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B.E. DEGREE EXAMINATION, 2018

(CIVIL ENGINEERING)

(THIRD SEMESTER)

OOES-303. ENGINEERING MECHANICS

(Common to ALL Branches)

(For the candidates joined during 2016-17 and after)

May]   [Time : 3 Hours

Maximum : 75 Marks

Answer any ONE FULL question from each unit.
ALL questions carry EQUAL marks..

UNIT - I

1. (a) Explain the following :   (5 + 5 + 5)

     (i) Equivalent forces.   (ii) Types of equilibrium.

     (iii) Parallelogram law of forces.

(OR)

(b) Find the magnitude and direction of the resultant "R" of the four concurrent forces acting as from figure - 1.   (15)
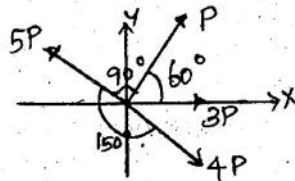
Figure - 1.

UNIT - II

2. (a) An electric light fixture weighing 150 N hangs from a point C by the two strings AC and BC as shown in figure - 2. Determine the force in the string AC and BC. (15)
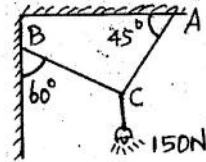

Figure - 2.

(OR)

(b) ABCD is weightless rod under the action of four forces P, Q, R, S and T as shown in figure - 3. If P = 10 N, Q = 4 N, S = 8 N and T = 12 N, calculate the resultant and mark the same in directions with respect to the end A of the rod. (15)
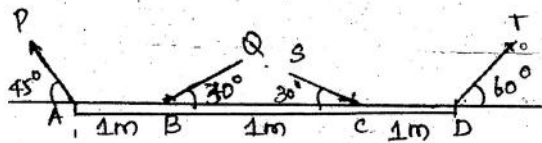

Figure - 3.

UNIT - III

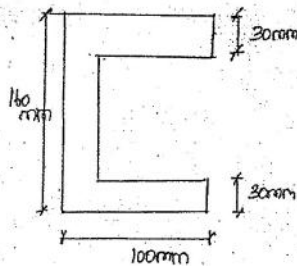3. (a) Locate the centroid of the section in figure - 4. (15)

Figure - 4.

(OR)

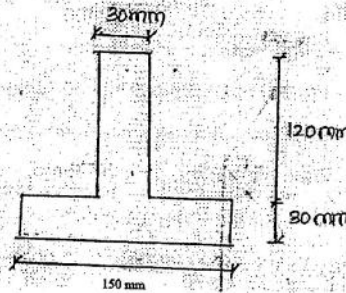(b) Determine the moment of inertia of the inverted "T" section shown in figure - 5. (15)

Figure - 5

UNIT - IV

4. (a) A body of mass is initially at rest on a 10° inclined plane. Then, it slides down. Calculate the distance moved by the body, on the inclined plane and the velocity reaches to 6 m/s. The co-efficient of friction between the body and the plane is 0·1. (15)

(OR)

(b) Two weights 80 N and 20 N are connected by a thread and move along a rough horizontal plane under the action of force 40 N, applied to the first weight of 80 N as shown in figure - 6. The co-efficient of friction between the sliding the surface of the weights and the plane is 0·3. Determine the acceleration of the weights and the tension in the thread using D'Alembert Principle. (15)
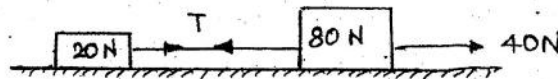

Figure - 6.

UNIT - V

5. (a) Determine the smallest force P required to move the block B if

    (i) The block A restraint by cable CD as shown in figure -7.

    (ii) Cable CD is moved.

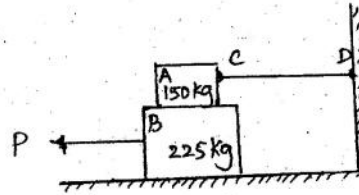Take co-efficient of friction as $\mu_s = 0.30$ and $\mu_k = 0.25$ between all the surface of contact. (15)

Figure - 7.

(OR)

(b) A wheel of weight 1000 N and diameter 600 mm is required to move on a horizontal surface. If the co-efficient of rolling resistance is 15 mm, calculate the force required to roll the wheel without slipping. (15)

B.E. DEGREE EXAMINATION, 2018

(CIVIL ENEGINEERING)

(THIRD SEMESTER)

CLEC-304/PCLEC-104. ENGINEERING GEOLOGY

April/May]

[Time : 3 Hours

Maximum : 75 Marks

Answer any ONE FULL question from each unit

All questions carry equal marks

UNIT-I

1. Write the various physical properties of following minerals (a) Quartz (b) Feldspar (c) Amphibole.

2. Discuss in detail about various physical properties of minerals.

UNIT-II

3. Briefly discuss about the mode formation and various classification of sedimentary rocks.

4. Discuss in brief about structure and textures of igneous rocks and mode of formation of metamorphic rock.

UNIT-III

5. Explain the various types of faults and joints with neat sketch.

6. Draw the various types of folds and explain about them.

UNIT-IV

7. Discuss in detail about various types causes and prevention of landslides.

8. Define earth quake and explain their causes and effects and also write about the seismic zone in India.

UNIT-V

9. Define tunnels and explain their types with geological performance.

10. Write short notes on (i) Porosity (ii) Permeability (iii) Aquifer (iv) Aquifuge (v) Aquitard.