B.E. DEGREE EXAMINATION, 2016

[COMMON TO ALL BRANCHES]

(FIRST SEMESTER)

SCLEC - 103. ENGINEERING PHYSICS - I

November]   [Time : 3 Hours

Maximum : 75 Marks.

Answer any ONE FULL question from each unit.

UNIT - I

1. (a) Explain how Young's modulus can be found by using uniform bending method.   (8)

   (b) Write short note on I-shaped-girder.   (7)

(OR)

2. (a) Derive Poiseuille's expression for volume of the liquid collected, when it is flowing through a capillary tube of length 'l' m in 't' seconds.   (8)

   (b) Distinguish between streamline and Turbulent flow.   (7)

UNIT - II

3. Derive expression for growth and decay of energy density inside a hall and hence, deduce Sabine's formula for the reverberation time of the hall.   (15)

(OR)

4. (a) Describe the construction and working of magnetostriction method.   (8)

   (b) Write any five applications of ultrasonics.   (7)

UNIT - III

5. (a) Explain the construction and working of Michelson's interferometer.   (8)

   (b) Derive an expression for dispersive power of grating.   (7)

(OR)

6. (a) Explain how circularly polarized light is produced.   (8)

   (b) Distinguish between isoclinic and isochromatic fringes.   (7)

UNIT - IV

7. (a) What is packing factor? Prove that the packing factor of HCP is 0·74.   (8)

   (b) What are Miller indices? How will you determine the Miller indices?   (7)

(OR)

8. (a) Explain Bravais lattice.   (8)

   (b) Explain point defect.   (7)

UNIT - V

9. (a) Explain the construction and working of liquid drop model.   (8)

   (b) Explain general properties of nucleus.   (7)

(OR)

10. (a) Explain the construction and working of breeder nuclear reactor.   (8)

    (b) Distinguish between fission and fusion.   (7)

B.E. DEGREE EXAMINATION, 2016

(COMMON TO ALL BRANCHES)

(FIRST SEMESTER)

SCLEC-105. ENGINEERING MECHANICS

November]   [Time: 3 Hours

Maximum: 75 Marks

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

UNIT – I

1. a) State law of mechanics.   (5)
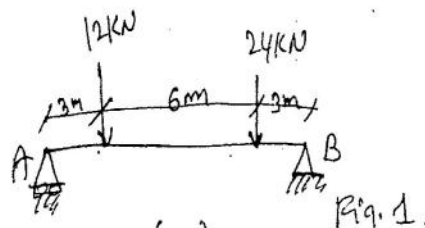
    b) Classify forces.   (5)

    c) State Lami's theorem.   (5)

2. Find the magnitude of two forces. If the resultant of two concurrent forces has a   (15)
    magnitude of 1800N. The angle between the two forces is 70°. The angle between
    the resultant and are of the forces is 45°. Find the magnitude of the two forces.

UNIT – II

3. Find the support reactions of a simply supported beam as shown in Fig.1.   (15)

Fig. 1.

4. A force of 100N is acting at a point A as shown in Fig.2. Determine the moments   (15)
   of this force about υ.

Fig. 2.
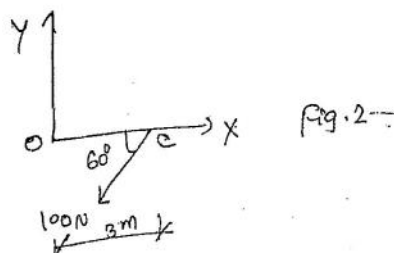
UNIT – III

5. A frustrum of a solid cane of height 300mm has a base diameter of 400mm and top (15) diameter of 200mm. It has an axial hole of diameter 70mm. Determine the position of the centre of gravity of the solid above its base.

6. Find the moment of inertia of an I–Section about XX and YY passing through the (15) centre of gravity of the sectioned area as shown in Fig.3. All the dimensions are in mm

Fig 3.
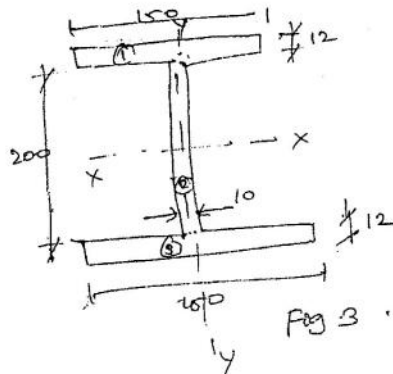
UNIT – IV

7. Find the MI of a hollow circle of outer diameter 'D' and inner diameter 'd' about (15) its diameter.

8. Find the M.I. and radius of gyration about x axis for the sectioned area as shown in. (15) Fig.4.
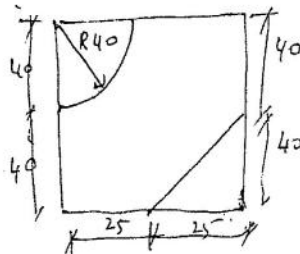
UNIT – V

9. A block weighing 50N is just moved along a horizontal plane by applying a (15) horizontal force of 16N. Find the reaction and the coefficient of friction. Also find the horizontal force required to just move the block if an additional weight of 20N is kept on the block.

10. A pulley of radius 200mm is driven by a V. belt. The angle between the sides of (15) which is 40°. If the tension on the tight side of the belt is 1500N, find the tension in the belt on the slack side. Also find the torque exerted by the belt on the pulley $\mu s=0.25$.

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B.E. DEGREE EXAMINATION, 2016

[COMMON TO ALL BRANCHES]

(ANNUAL PATTERN)

(FIRST YEAR)

CLEC - 106. BASIC ENGINEERING

November]   [Time : 3 Hours

Maximum : 75 Marks.

PART - A   (25)

(CIVIL ENGINEERING)

Answer any ONE FULL question from each unit.

UNIT - I

1. (a) List out the qualities of good bricks and explain any one property.   (8)

   (b) Write the types and uses of concrete.   (5)

(OR)

2. (a) List the types of shallow foundations and write about any one foundation in deail. (8)

   (b) State the bonds in brick work and explain the English bond.   (5)

UNIT - II

3. (a) Draw a sketch showing the cross-section details of a highway and explain any two

   components.   (7)

   (b) List out the components of a bridge and explain any two.   (5)

(OR)

4. (a) Write the components of water supply scheme taking raw water from river and explain

   them.   (6)

   (b) Define the following: (6)

   (i) Sewage.   (ii) Solid waste.   (iii) Combined sewer.

PART - B (25)

(MECHANICAL ENGINEERING)

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

UNIT - I

1. (a) Explain with neat sketch the working principle of Cochran boiler. (9)

   (b) Discuss the applications of water tube boilers. (4)

(OR)

2. (a) Discuss the working principle of impulse turbine with neat sketch. Write its advantages and disadvantages. (9)

   (b) Write the differences between reaction and impulse turbine. (4)

UNIT - II

3. (a) Explain the working principle of electric arc welding. (6)

   (b) Write the types of forging and explain any one of them with a neat sketch. (6)

(OR)

4. (a) Discuss the various types of gear trains. (8)

   (b) Explain the working principle of press forging operation. (4)

PART - C (25).

(ELECTRICAL ENGINEERING)

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

UNIT - I

1. Explain with a neat diagram, the construction and the working principle of a DC generator. (13)

(OR)

2. Explain the construction and working principle of a single phase transformer. (13)

UNIT - II

3. Explain the V-I characteristics of zener diode. Mention its application. (12)

(OR)

4. Discuss briefly, with a neat diagram, the half wave rectifier. Obtain its efficiency. (12)