

FACULTY OF ENGINEERING

B.E. I- Semester (CBCS) (Backlog) Examination, December 2019

Subject: Engineering Mechanics – I

Time: 3 hours

Max. Marks: 70

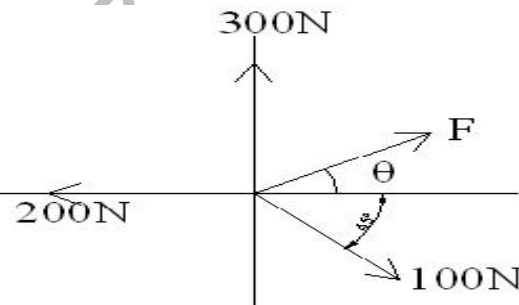
Note: Answer all questions from Part-A & answer any five questions from Part-B

PART – A (20 Marks)

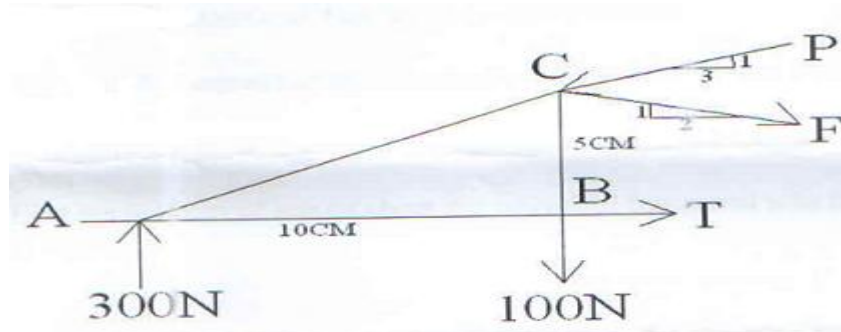
1. What are the characteristics of a force?
2. State law of parallelogram of forces.
3. Define co-efficient of friction and angle of friction.
4. What is a perfect truss?
5. Mention the different methods available for analysis of trusses
6. Write the equations of equilibrium for (a) Co-planar force system (b) Spatial system.
7. Differentiate centroid with centre of gravity.
8. Differentiate between first moment of area and moment of inertia for a plane area.
9. Find the radius of gyration of a circular section of radius 100mm.
10. Explain Lami's theorem.

PART – B (50 Marks)

11. The force system shown in figure has a resultant of 300N acting up to the right with slope of 3H: 4V. Compute the values of F and θ required to give this resultant. (10)

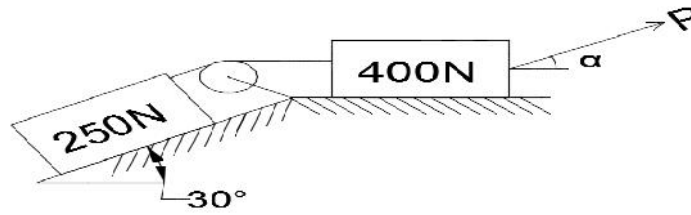


12. Determine the forces P, F and T required, to keep the triangular frame ABC, shown in figure in equilibrium. (10)

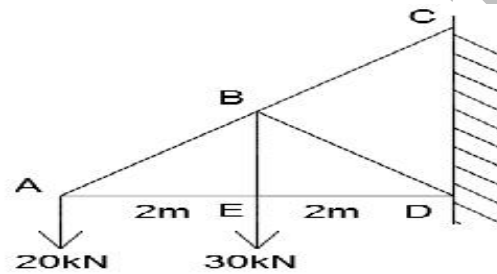


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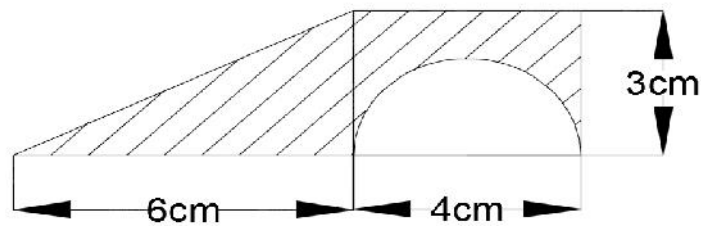
13. Find the least value of 'P' that will just start the system of blocks shown in figure moving to the right. The coefficient of friction under each block is 0.40. (10)



14. Find the forces in all the members of the truss shown in figure by method of joints. Take distance CD = 2m (10)



15. (a) Four concurrent forces are acting on a particle and keeping it in equilibrium. Find the fourth force if the three forces are given by
 $F_1 = 3i - 4j + 2k$,
 $F_2 = 6i + 7j - 8k$, and
 $F_3 = -6i + 3j + 4k$ where i, j, k are unit vectors through the origin (5M)
- (b) If the components of a force in X, Y, and Z directions are 20kN, -30kN and 33kN. Find the magnitude and directional cosine of a force. (5M)
16. (a) Find the centroid of quarter circular area of radius 10cm from which a semi circular area of diameter 10cm is removed (5M)
- (b) Derive centroid of a triangular section of base 'b' and height 'h' from first principles. (5M)
17. Find the moment of inertia about the centroidal horizontal axis for the shaded area shown in figure. (10)



FACULTY OF ENGINEERING & TECHNOLOGY

B.E. /B.Tech. (B. C.) II-Semester (Backlog) Examination, December 2019

Subject: English

Time: 3 Hours

Max. Marks: 75

Note: Answer all questions from Part 'A' & any five questions from Part 'B'.

PART – A (25 Marks)

A. Rewrite any Ten of the following sentences after making necessary corrections. (10x1=10 marks)

- 1 No one have attended the party.
- 2 One of our college directors have taken the decision.
- 3 Dupinder has booked the tickets last night.
- 4 The crocodiles are reptiles.
- 5 The bowl of nuts are on the table.
- 6 He is one of our classmate.
- 7 Ayesha is having a hearing problem.
- 8 Ten thousand rupees are a lot of money.
- 9 Pankajam don't sell fresh vegetables.
- 10 The earth is rotating on its axis.

B. Convert the following sentences into passive voice. (5x1=5 Marks)

- 1 Maggie likes ice-cream.
- 2 Post the letter.
- 3 Madhuri is donating blood.
- 4 Raghuvaran has designed the project.
- 5 He drafted a report.

C. Read the following sentences and fill in the gaps by using the correct form of the words from the options given below. (5 x 1 = 5 Marks)

(Economical, renowned, fictitious, crucial, confessed)

- 1 The criminal _____ his guilt.
- 2 Sheela is a _____ actress.
- 3 This is a _____ story.
- 4 One should be _____ in spending money.
- 5 Destiny plays a _____ role in one's life.

D. Mark the stress on the following words: (5x1=5 marks)

1. Explanation
2. Classroom
3. Reject
4. Biology
5. Photograph.

PART –B (50 Marks)

Answer any five questions, choosing one (A or B) from each question. (5x10=50 marks)

- I. **A.** Read the following extract from the biography of A. P. J. Abdul Kalam and answer the questions that follow.

Contd....2

Jallaluddin greatly influenced me in my childhood. Another person who influenced me was my first cousin Samsuddin. He was the sole distributor for newspapers in Rameswaram, a place in Tamil Nadu. The newspapers would arrive at Rameswaram station by the morning train from Pamban. Samsuddin's newspaper agency was a one-man organisation catering to the reading demands of the 1000-strong literate population of Rameswaram town. *Dinamani* was the most sought after newspaper. Since reading the printed matter was beyond my capability, I had to satisfy myself with glancing at the pictures in the newspaper before Samsuddin delivered them to his customers.

The Second World War broke out in 1939, when I was eight years old. Jallaluddin would tell me stories about the war which I would later attempt to trace in the headlines in *Dinamani*. India was forced to join the Allied Forces and something like a state of emergency was declared. The first casualty came in the form of the suspension of the train halt at Rameswaram station. The newspapers now had to be bundled and thrown out from the moving train on the Rameswaram Road between Rameswaram and Dhanushkodi. That forced Samsuddin to look for a helping hand to catch the bundles and, as if naturally, I filled the slot.

Every child is born, with some inherited characteristics, into a specific socio-economic and emotional environment, and trained in certain ways by figures of authority. I inherited honesty and self-discipline from my father; from my mother, I inherited faith in goodness and deep kindness and so did my three brothers and sister. But it was the time I spent with Jallaluddin and Samsuddin that perhaps contributed most to the uniqueness of my childhood and made all the difference in my later life.

1. Who told stories about war to the author?
 - a. Samsuddin
 - b. Father
 - c. Jallaluddin
 - d. Mother
2. Kalam inherited honesty and self discipline from
 - a. Samsuddin
 - b. Father
 - c. Jallaluddin
 - d. Mother
3. Most of the uniqueness of Kalam's childhood was because of
 - a. Jallaluddin and Samsuddin
 - b. His Father
 - c. His Mother
 - d. His honesty

4. What is the mother tongue of Kalam?
 a. Tamil c. Hindi
 b. Marathi d. Urdu
5. The newspapers are thrown out from the moving train onto____
 a. Rameswaram road c. Dhanushkodi
 b. Pamban d. Rameswaram station

OR

- B.** What do you know about Sadie in the story 'A Slip of the Tongue?'
- II. A.** As a lab-in-charge of Prime Computers, write a report to the proprietor on the accident that resulted in the burning of five computers.

OR

- B.** Imagine you have visited the Nampally exhibition in Hyderabad. Draft a report.

- III. A.** Use the following phrases/sentences to make a meaningful paragraph.

- 1 Drink lot of water.
- 2 Do exercise regularly.
- 3 Most of the jobs are done in sitting posture.
- 4 Need not join in Gym.
- 5 Maintaining physical fitness and career is a challenging task.
- 6 Eat sensibly.
- 7 Take more fruits and vegetables and avoid fast food.
- 8 Meditation is required.
- 9 Be positive.
- 10 Prefer nutritious diet.

OR

- B.** What good manners should we follow when we are with friends? What precautions should one take while speaking in a company?

- IV. A.** Apply for the post of a programmer, in SAP Consulting Company as an engineering graduate.

OR

- B.** Write a letter to Ramakrishna Central Book Store complaining about the receipt of the damaged set of books you ordered for.

- V. A.** Write an essay on "Science is more boon than bane" about 300 words.

OR

- B.** Write about your favourite teacher who inspired you in 300 words.

FACULTY OF ENGINEERING**B.E. I-Year (Backlog) Examination, December 2019****Subject : Engineering Physics****Time : 3 Hours****Max. Marks: 75***Note: Answer all questions from Part - A and answer any five questions from Part-B.***PART - A (25 Marks)**

- | | | |
|----|--|---|
| 1 | Distinguish between Fresnel and Fraunhofer Diffraction? | 3 |
| 2 | State Malus law? | 2 |
| 3 | Give physical significance of wave function? | 2 |
| 4 | Define Black body? | 2 |
| 5 | State the Brag's law of diffraction? | 3 |
| 6 | Define 'Atomic Radius' and 'Coordination number'? | 3 |
| 7 | Give applications of Ferroelectrics? | 3 |
| 8 | Distinguish between Ferromagnetic and Ferrimagnetic materials? | 3 |
| 9 | Distinguish between 'bulk and thin films'? | 2 |
| 10 | Give the applications of Nanotubes? | 2 |

PART-B (50 Marks)

- | | | |
|--------|--|---|
| 11 a. | Discuss the formation of Interference fringes due to reflected light from thin films? | 5 |
| b. | Discuss the construction and working of He-Ne laser system? | 5 |
| 12 a. | Deduce Plank's Blackbody radiation distribution law? | 5 |
| b. | Explain propagation of electromagnetic wave through an optical fibre and estimate 'Numerical Aperture' of optical fibre? | 5 |
| 13 a. | Obtain an expression for equilibrium concentration of Schottky defects in Ionic crystals? | 5 |
| b. | Discuss the energy band formation in solids by kronig - penney model? | 5 |
| 14 a. | Discuss the Weiss theory of Ferro magnetism? | 5 |
| b. | Discuss various types of dielectric polarization process? | 5 |
| 15 a. | Discuss the thermal vapour deposition technique for thin film formation? | 5 |
| b. | What is Quantum Confinement? Discuss the Sol-gel technique for preparation of Nano materials? | 5 |
| 16. a. | Discuss the magnetic hysteresis curve? How soft and hard magnetic fields can be classified? | 6 |
| b. | Discuss the classification of Insulators, Conductors and Semiconductors based on 'Band theory of Solids'? | 4 |
| 17. a. | Define optical activity? Discuss the working of Laurent's Half shade polarimeter? | 7 |
| b. | Explain Bose – Einstein Statistics? | 3 |