AR13 **Set-01**

Code: 13CS1001

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
I B.Tech. I Semester Regular Examinations, February,2015
COMPUTER PROGRAMMING
(Common to CE, ME, CSE & IT)

Time: 3 Hours **Max Marks: 70**

PART – A

Answer all questions **[10X1=10M]**

1. a) Write down the differences between continue and break statements?
   b) How would you round off a value from 1.66 to 2.0?
   c) Give examples of logical operators with suitable examples.
   d) What is a preprocessor statement?
   e) How does a double data type differ from a float data type?
   f) Write down increment and decrement operators with suitable examples.
   g) What is the difference between user-defined function and library function?
   h) Why a null character is required at the end of a character array to store strings?
   (i) What is an infinite loop? What happens if there is no statement in a *for* loop, example, for(i=1;i<=1000;++i);
   (j) If n=4 and m=3, what will be the value of ++ (n/m)?

PART- B

Answer one question from each unit **[5X12=60M]**

Unit - I

2) a) Write an algorithm and draw a flowchart to search an element from a sorted array of elements.
   b) Write down the differences between keyword and identifier. What is the difference between constant and variable? [6+6 M]

(OR)

3) a) Demonstrate conditional and assignment operators using a sample program.
   b) Convert each of the following mathematical formulas to program: (i) $3x$ (ii) $3x + y$ (iii) $\frac{(2x + 3y)}{7}$ [6+6M]

Unit – II

4) a) Write a program to find out the second largest number among three given numbers.
   b) Write a program to enter the numbers till the user wants and at the end it should display the count of positive, negative and zeros entered. [6+6M]

(OR)

5) a) Write a C program to print the following output using nested loops.

```
    1
  1 2 3
1 2 3 4 5
1 2 3 4 5 6 7
```

b) Write a program which will read an integer N and then find the product of all the non-prime integers from 1 to N. [6M+6M]

Unit-III

6) a) Write a program to sort *n* elements stored in an array A[*n*].

b) There are 9000 people in a town whose population increases by 15% each year. Write a program that displays the annual population and determines how many years it will take for the population to surpass 50,000. [6M+6M]

(OR)

7 a) Any character is entered through the keyboard; write a program to determine whether the character entered is a capital letter, a small case letter, a digit or a special symbol.

b) If a n-digit number (+ve integer) is input through the keyboard, write a program to calculate the sum of its digits. [6M+6M]

Unit-IV

8) a) Write down the properties of a structure? Define a structure by capturing the properties of a student. Write a sample program to demonstrate the structure student.

(b) Can we use a union in place of structure? Write down the problems associated with the use of union in place of structure. [6M+6M]

(OR)

9) Using pointers, write a function that receives a character string and a character as argument and deletes all occurrence of this character in the string. The function should return the corrected string with no holes. Write a complete program for this. [12M]

Unit V

10) Two files FILE1 and FILE2 contain sorted lists of integers. Write a program to produce a third file DATA which holds a single sorted, merged list of these two lists. [12M]

(OR)

11) Write a program to store a paragraph into a file. The program reads all the strings from the file and prints only those strings that end with letters “he”.

AR13 SET-01

Code: 13ME1003

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI (AUTONOMOUS)

I B. Tech I Semester Regular Examinations, February-2015

ENGINEERING MECHANICS

(Common to EEE & ECE)

Time: 3 hours **Max Marks: 70**

PART-A

Answer all questions **[10X1=10M]**

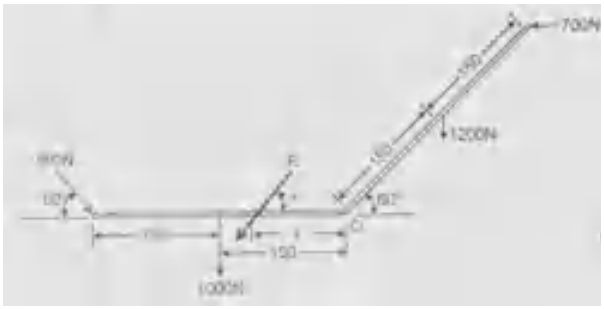
1. a) State Varignon theory?
   b) If two forces P and Q act on the same straight line but in opposite directions , their resultant is __.
   c) State Lamis theorem
   d) The reaction from the ideal smooth surface must be directed along the __ at the point of contact.
   e) Moment of area about centroidal axis is ___?
   f) What is meant by Centre of Gravity.
   g) Moment of Inertia of a uniform rod of length L and Mass M about an axis at the end and normal to the rod is ___.
   h) State "Parallel axis theorm".
   i) State 'D' Alemberts principle.
   j) In case of bodied rotating about fixed axis , the inertia force is given by ___

PART – B

Answer one question from each unit **[5X12=60M]**

Unit -1

2. The system of forces acting on a bell crank is shown in fig. Determine the magnitude , direction and the point of application of the resultant

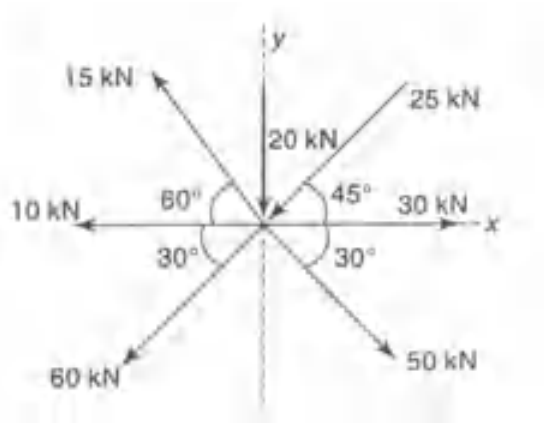


(OR)

3. Two locomotives on opposite banks of a canal pull a vessel moving parallel to the banks by means of two horizontal ropes. The tensions in these ropes are 20000 N and 24000 N while the angle between them is 60^0. Find the resultant pull on the vessel and the angle between each of the ropes and the sides of the canal.

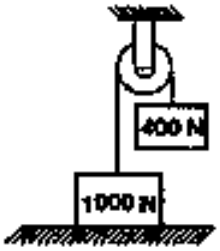
Unit -2

4. Find the magnitude and direction of the force F to be added to the system of coplanar concurrent forces shown in fig to maintain equilibrium

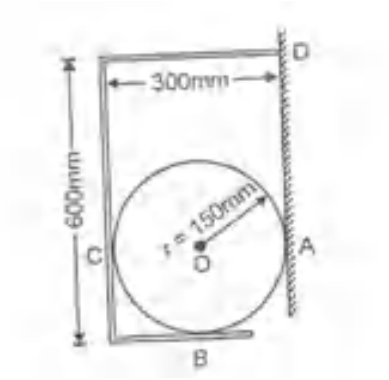


(OR)

5. (a) Find the force with which the 1000 N press against the floor shown in fig

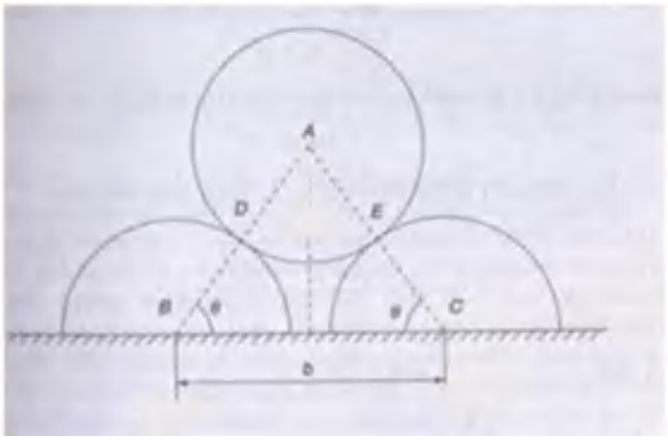


(b) A 600 N cylinder is supported by the frame BCD as shown in fig. The frame is hinged at D. Determine the reactions at A, B,C and D



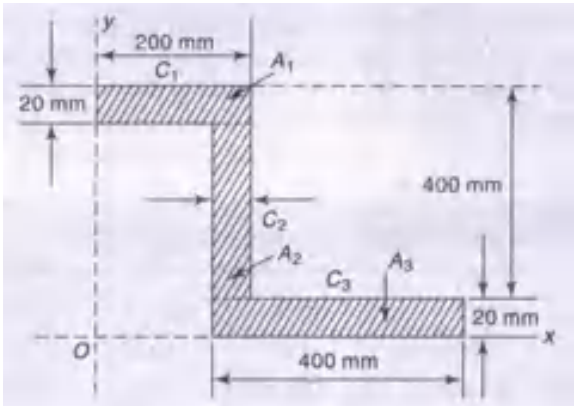
Unit – 3

6. A smooth circular cylinder of weight Q and radius r is supported by two semicircular cylinders of radius r and weight Q/2 as shown. If coeff of static friction between the flat faces of the semi circular cylinders and the horizontal plane on which they rest is 0.5 and friction between the cylinders themselves is neglected, determine the max distance between the centers B and C for which equilibrium will be possible without the middle cylinder touching the horizontal plane.



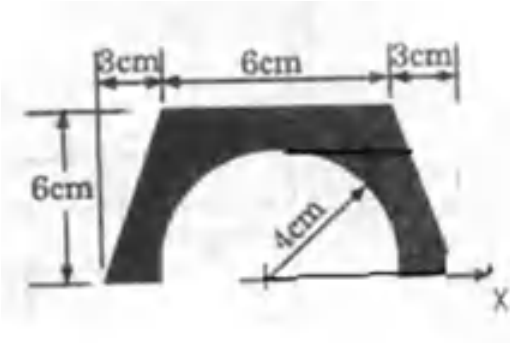
(OR)

7. Locate the centroid of the shaded area as shown in figure.



Unit -4

8. Calculate the moment of inertia of the shaded area in figure below with respect to horizontal the X axis.



(OR)

9. Derive the equation for moment of inertia of a solid cone of height h and base radius R about its axis of rotation

Unit - 5

10. A 750 N crate rests on a 500 N cart. The coeff of friction between the crate and the cart is 0.3 and between cart and the road is 0.2 . If the cart is to be pulled by a horizontal force P such that the crate does not slip , determine (i) the maximum allowable magnitude of P and (ii) the corresponding acceleration of the cart.

(OR)

11. An automobile starting from rest increases its speed from 0 to 'v' with constant acceleration a_1 , runs at this speed for a time , and finally comes to rest with constant deceleration a_2. If the total distance covered is 's' , prove that the total time required is $\frac{s}{v} + \frac{v}{2}\left[\frac{1}{a_1} + \frac{1}{a_2}\right]$

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