MALLA REDDY ENGINEERING COLLEGE (AUTONOMOUS)
(Affiliated to JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD)
Gundlapochampally (H), Maisammaguda (V), Medchal (M), Medchal-Malkajgiri (Dist), Hyderabad

I B.TECH II SEMESTER REGULAR END EXAMINATIONS, APRIL - 2019

Subject: **English**

Branch: **Common to CE, ME and MINING**

Time: 3 hours

Max. Marks: 70

Answer all questions

5X14M=70 Marks

Answer ALL questions of the following

1. a) "Growth and contribution: those are the bed rocks of happiness".-Comment.   10M
    b) Write appropriate prepositions for the following   2M
       i. I have not seen her -------------- Monday
       ii. he repented ----his mistakes.
       iii. ---------the picture, there are four people.
       iv. The old people are sitting ----the chairs.
    c) Use Suitable articles for the following   2M
       i. Are you coming to ---------party next Saturday?
       ii. I bought------- new TV set yesterday.
       iii. I think ----------man over there is very ill. He can't stand on his feet.
       iv. I watched --------video you had sent me.

OR

2. **a) Write short notes on the following**   10M
       i. Importance of skimming in reading
       ii. How does scanning help the reader understand the text better
    b) Write meanings for the following roots and frame a word using the root.   4M
           i. cracy
           ii.im
           iii. eer
           iv. pre

3. (a) Write a paragraph on 'Mobile abuse.' (Word limit: 100 words)   5M

    (b) Distinguish between extensive and intensive reading.   5M

    (c) For each of the sentences, write another one using a **homophone** of the word in bold.   4M

       (i) He **ate** a sandwich.

       (ii) **Blue** is my favourite colour.
       (iii) The house is for **sale**.
       (iv) I can **hear** the baby cry.

OR

4. "Knowledge has many forms and it is available at many places". Do you agree with the statement given by Abdul Kalam? Support your answer.

5. a). In Half a Rupee Worth by R.K. Narayan we have the theme of persistence, greed, corruption, materialism and desperation. Explain. 10M

   b). Correct the following sentences 4M
   - i. The men are national beings.
   - ii. I have a good news for you.
   - iii. he uses a HB pencil during exams.
   - iv. Eyes are to see.

OR

6. (a) What values does the father teach his son in the poem *If* by Rudyard Kipling? 10M

   (b) Write the meaning and make a sentence for each of the idioms given below. 4M

   - (i) Apple of one's eye.
   - (ii) Crocodile tears.
   - (iii) A lame duck.
   - (iv) A bed of roses.

7. a) Draft a letter addressing the Municipal Commissioner complaining about the increasing number of street dogs in your locality. 8M

   b) Choose the correct one word substitute for A person appointed by parties to settle the disputes between them ' 1M
   - A. Solicitor B. Arbitrator C. governess D. Tee to taller

   Choose the correct one word substitute for One who is easily deceived ' 1M
   - A. Gullible   B. Militant   C. Sinecure   D. Fastidious

   Choose the correct one word substitute for the phrase' One who questions everything 1M
   - A. Insolvent   B. Cynic   C. Enigmatic   D. Cynosure

   c) **Choose question tags** 3M
   - i. They are sick -----
   - ii. Children like cakes to eat ----------
   - iii. They are poor-------------

OR

8. What lessons can we draw from the life of Jesse Owens? How valuable are they for you?

9. (a) What is the central idea of the poem *Human Family*? 4M
   (b) Write a short note on Reading for specific purposes. (In 100 words) 5M
   (c) Summarize the following passage: - 5M

Gandhi wrote in The Story of My Experiments with Truth:'In the case of *ahimsa*, non-violence, *brahmacharya*, celibacy, *aparigraha*, non-possession and other cardinal virtues, I am fully conscious of a continuous striving for their cultivation. But he also subtly wove spirituality into politics, in his struggle for *swaraj*, in breaking free of the British Empire. He used fasting, penance, *ahimsa*, and *satyagraha* as weapons to fight the Raj. He wrote: 'Truth, *satya*, implies love, and firmness, *agraha*, engenders and therefore serves as a synonym for force. I thus began to call the Indian movement *Satyagraha*, the force which is born of truth and love and non-violence. At a young age, he fasted on *Ekadashi* to please his parents who were devout Hindus. Later he fasted to get his point across in the political arena. 'Gandhi took his understanding of suffering and applied it to his political work, fighting for Indians' rights in South Africa and freedom from British rule in India. This is not to say that Gandhi's allegiance to the notion of suffering stemmed solely from its practical use to him. On the contrary, he held it close to his heart primarily as a matter of religious belief. But he also exploited suffering for its full political benefit.'

OR

10. "It is the eyes of the others and not our own eyes which will ruin us." Do you agree with the given statement? Support your answer.

Code No.: **80201** | **MR18** |

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I B.TECH II SEMESTER REGULAR END EXAMINATIONS, APRIL - 2019

Subject: **Basic Electrical and Electronics Engineering**

Branch: **Common to EEE, ECE, CSE and IT**

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

Answer **ALL** questions of the following   **5X14 Marks =70 Marks**

1. a) Calculate the equivalent delta connected resistance values for the following star connected
    resistance   (7M)
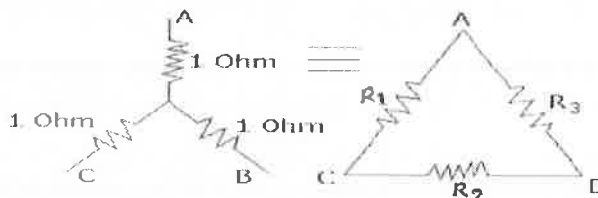
    b) Explain types of sources.   (7M)
                                   OR
2. a) What is ohms Law and write its limitations.   (6M)
    b) Explain mesh and nodal analysis with an example.   (8M)

3. a) Explain analysis of single phase RL series circuit.   (9M)
    b) A series circuit consumes 2000W at 0.5 leading power factor when connected to 230V,
       50Hz AC supply. Calculate i) Current ii) KVA iii) KVAR   (5M)
                                   OR
4. a) The resistance of a coil is 140Ω and its inductance 0.85H. Determine the current, the p.f. and
       the circuit impedance when the coil is connected to 120V, 60Hz supply.   [6M]
     b) Define i)impedance ii)admittance iii)reactance iv)susceptance   [8M]

5. a) Derive an e.m.f. equation of a single phase transformer.   (9M)
    b) A single phase 2200/250V, 50 Hz transformer has maximum flux of 0.0216wb. Calculate
       primary and secondary turns.   (5M)
                                   OR
6. Evaluate and explain the Brake test on a DC shunt motor with neat diagram?   (14M)

7. a) Explain operation of Zener diode with V-I characteristics.   (5M)
    b) Explain Half- wave rectifier with neat diagram   (9M)
                                   OR
8. a) A Half wave rectifier having a resistive load of 1000Ω rectifies an alternating voltage of 325
       peak value & diode has a forward resistance of 100Ω. Calculate
    i) Peak value of current   ii) Average value of current iii) DC Power output   (8M)
    b) Demonstrate about C Filter with a neat sketch   (6M)

9. a) Explain Briefly about CC connection. Draw input and output characteristics and explain how
       they are obtained   (10M)
    b) Comparison between CE and CB configuration   (4M)
                                   OR
10. Explain construction, principle of operation and V-I characteristics of Enhancement MOSFET.   [14M]

$$\begin{array}{r} 239 \\ 177 \\ 60 \\ 60 \\ 21 \\ \hline 536 \end{array}$$

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I B.TECH II SEMESTER REGULAR END EXAMINATIONS, MAY - 2019

Subject: **Engineering Graphics**

Branch: **Common to CSE & IT**
ME and MINING (Readmitted Students)

Time: 3 hours   Max. Marks: 70

Answer **ALL** questions of the following   **5X14 Marks =70 Marks**

1. Construct an ellipse when the distance of the focus from the directrix is equal to 80 mm and eccentricity is 3/5.

OR

2. Draw the projections of points in the following positions:
   (i) Point A is 25 mm above HP and 25mm in front VP
   (ii) Point B is 40 mm behind VP and 15 mm below HP
   (iii)Point C is on the HP and 30mm behind VP.
   (iv) Point D is 40mm in front VP and 15 mm below HP

3. Draw the projections of a circle of 50mm diameter having its plane vertical and inclined at 30^0 to the VP.
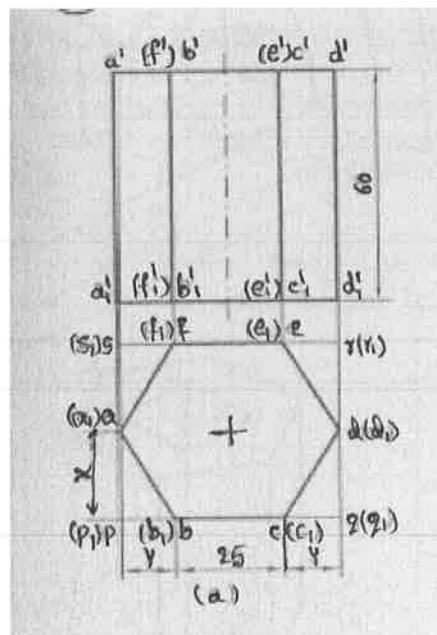
OR

4. Line AB is 75 mm long and it is 30^0 and 40^0 inclined to HP and VP respectively. End A is 12mm above HP and 10 mm in front of VP. Draw projections.

5. Draw the projections of a hexagonal pyramid, base 30 mm side and axis 60 mm long, has an edge of its base on the ground, its axis is inclined at 30^0 to the HP and parallel to VP.

OR

6. A cone of base diameter rests on its apex on HP such that its axis is parallel to VP and makes an angle of 45^0 with HP. Draw projections of cone.
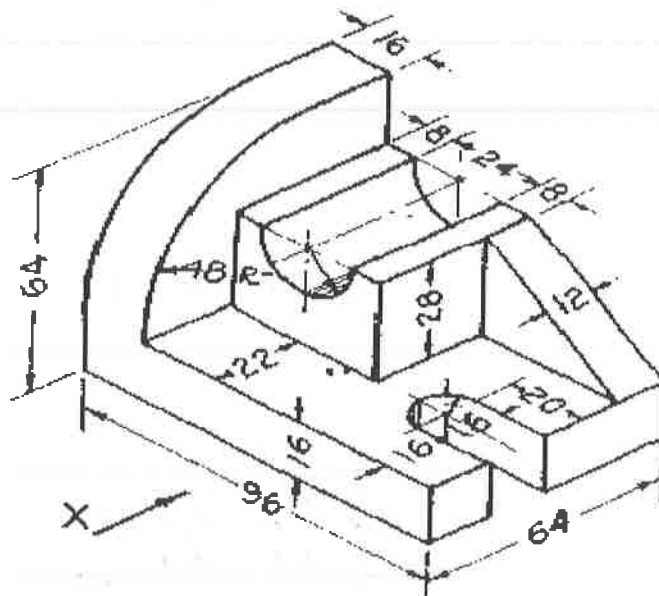
7. Convert the following orthographic views into isometric view

(OR)

8. Draw the development of a cylinder of diameter 50 mm and axis length 60 mm that rests on HP and has axis perpendicular to VP.

9. Draw the Orthographic view's (front view, top view and right side view) of the following figure.

OR

10. Draw the orthographic projections of the following isometric projections:

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I B.TECH II SEMESTER REGULAR END EXAMINATIONS, MAY - 2019

Subject: **Engineering Graphics**

Branch: **Common to EEE & ECE**

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

Answer **ALL** questions of the following   **5X14 Marks =70 Marks**

1. a) Construct regular polygons of 5 and 7 sides, with the length of the side as 25 mm by   general
       method.   (8M)
    b) Inscribe a regular hexagon in a circle of 50 mm diameter by general method.   (6M)

OR

2. Define parabola. Draw a parabola when the distance of its focus from directrix is 50mm. Also draw
    a normal and tangent at a point 70mm from the directrix.

3. A regular pentagon of 25mm side has one side on the ground. Its plane is inclined at 45^0 to the HP.
   Draw the projections.

OR

4. A line AB 50 mm long is parallel to H.P. & inclined at35° to V.P. The end M is 20 mm
    above H.P. & 15 mm in front of V.P. Draw the projections.

5. A rectangular prism of base 40 mm x 30 mm and height 70 mm rests with is longer edge of the base
    on the VP. If the axis of the prism is inclined to VP at 30^0 .draw the top and front views.

OR

6. A cylinder has a base of 40 mm diameter and axis 50 mm long. The axis of the cylinder makes an
    angle of 45^0 with HP and is parallel to VP. Draw its projection.

7. Draw the isometric projection of a pentagonal pyramid of side 30mm and axis 70mm height.

OR

8. Draw the development of a hexagonal prism of side 25 mm and axis length 60mm that rests on HP
    and has a face parallel to VP.

9. Draw the elevation, top view and side view of the objects shown in figures.
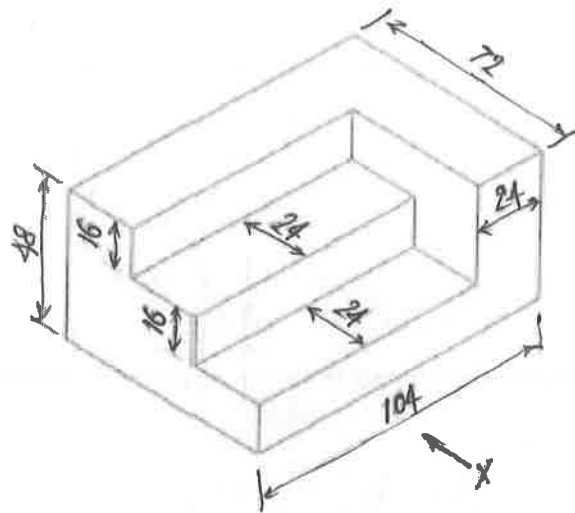
(OR)

10. Draw the orthographic projections of the following isometric projections:
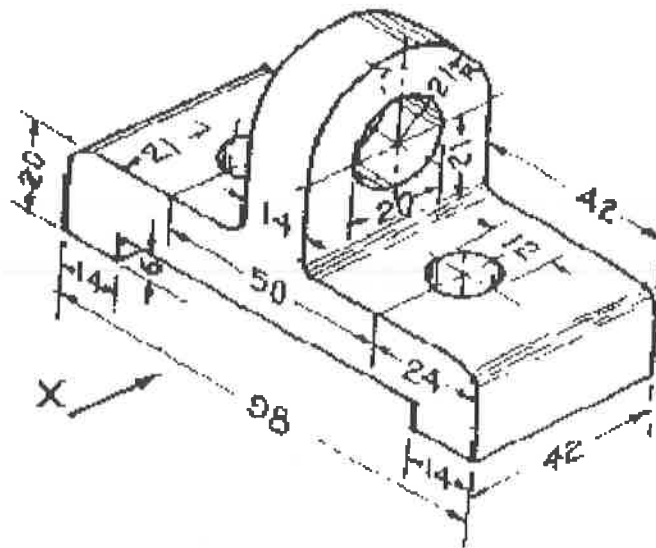
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I B.TECH II SEMESTER REGULAR END EXAMINATIONS, APRIL - 2019

Subject: **Programming for Problem Solving**

Branch: **Common to CE, ME and MINING**

Time: 3 hours   Max. Marks: 70

Answer **ALL** questions of the following   5X14 Marks =70 Marks

1. a). What is data type? Explain different data types with examples.

   b) What is identifier? What are the rules for identifier?

                                          OR

2. a) Describe the structure of a C program.   [5M]

   b) Draw the flow chart to find average of 10 numbers.   [5M]

   c) What is operating system.draw the block diagram of computer system.   [4M]

3. a). Discuss about switch statement with an example.

   b). Write a program to multiply two matrix's.

                                          OR

4. a. Write a C program to generate Fibonacci series using For loop.

   b. Describe the basic operations on arrays. Explain how they can be implemented using loops

5. a). What is String? Explain about string manipulation operations with examples.

   b). Write a C program to find reverse of string using pointers.

                                          OR

6. a. Write a program to swap two numbers using pointers.

   b. Write a C program to print address of value variable using pointer-to-pointer declaration.

7. a). Explain about different parameter passing mechanism with examples.

   b). Write a program to calculate the grade of the student in a class of 60 students using structures.

                                          OR

8. a). Differentiate between structure and union.   [5M]

   b). How to pass pointer variables as function arguments? Explain with examples.   [5M]

   c).What are nested structures? Explain.   [4M]

9. a). What operations can be performed on files? Explain.

   b). Write a simple program for selection sorting technique.

                                          OR

10. a) Briefly explain file I/O.

    b. Write a program for binary search and explain with an example.

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I B.TECH II SEMESTER REGULAR END EXAMINATIONS, APRIL - 2019

Subject: **Data Structures**

Branch: **Common to EEE, ECE, CSE and IT**

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

Answer **ALL** questions of the following   **5X14 Marks =70 Marks**

1. a. What is difference between time and space complexity?   [4M]

     b. Briefly explain analysis of recursive algorithm.   [10M]

<div align="center">OR</div>

2. a. Compare between linear and non-linear data structures.   [4M]

     b. Write an algorithm to generate Fibonacci series up 'n' numbers using recursion

3. a. Give an algorithm to perform following operations in a singly linked list.   [10M]

     i).   Insert a new node after a given node. ii). Delete last node. iii). Count the number of elements in the list.

     b. How to design in C program for circular linked lists operations an insertion and deletion.   [4M]

<div align="center">**OR**</div>

4. How to develop in C program for sparse matrix representation using arrays.   [14M]

5. a. Define Stack? What are the applications of Stack?

     b. How can you implement Queue using Single linked list?

<div align="center">OR</div>

6. Analyze the concept of circular queue

7. a. Explain threaded binary tree. Give an example.   [4M+10M]

     b. Write a C program to create a directed graph and how to implement to graph traversal.

<div align="center">OR</div>

8. Distinguish between DFS va BFS.

9. a. Define B-trees. Write the procedure to insert and delete an element in to B-trees.   [10M]

     b. Explain about AVL trees. Give an example.   [4M]

<div align="center">OR</div>

10. Consider the elements below and construct in-order, post-order and pre-order for it 40, 30, 15, 35, 50, 45, 60.

$$239$$
$$177$$
$$60$$
$$2460$$
$$\overline{536} \quad -DS$$

$$993$$
$$536$$
$$\overline{457} \quad -PPS$$

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I B.TECH II SEMESTER REGULAR END EXAMINATIONS, APRIL - 2019

Subject: **Engineering Chemistry**

Branch: **Common to EEE, ECE, CSE and IT**

Time: 3 hours   Max. Marks: 70

5X14M=70 Marks

Answer **ALL** questions of the following

1. (a) Define hardness of water how many types of hardnesses are there? How can be remove temporary hardness?

    (b) Explain the softening of hard water by cold lime soda process with neat diagram and give its advantages?

OR

2. Explain the cold and hot lime-soda process for water softening with neat diagram.

3. (a) Write the molecular orbital energy level diagram of N2. Calculate respective bond order and write the magnetic properties?

    (b) Explain crystal field splitting of octahedral complex by taking $[Co\ (CN)_6]^{-3}$ as a complex.

OR

4. (a) Explain about crystal field splitting of d-orbitals in octahedral crystal fields.

    (b) Write down the MO Configuration of O_2.

5. (a) Write Nernst equation; explain the terms in it and mention its applications.

    (b) Write a note on Hot dipping (Galvanization).

OR

6. List and explain the various factors influencing the rate of corrosion.

7. (a) Write a short note on Spin-Spin coupling.   6M

    (b) Discuss the Optical isomerism of tartaric acid and lactic acid?   8M

OR

8. a. Describe the classification of isomers.

    b. What is meant by chirality? Write examples.

9. (a) Write synthesis and mechanism of Paracetamol.

    (b) Write the pharmaceutical applications of paracetamol.

OR

10. What are the factors that influence the relative stability of free radicals, carbocations and carbanions?

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I B.TECH II SEMESTER REGULAR END EXAMINATIONS, APRIL - 2019

Subject: **Engineering Mechanics**

(Substitute subject for readmitted students)

Branch: **Common to CE, ME and MINING**

Time: 3 hours   Max. Marks: 70

Answer **ALL** questions of the following   5X14 Marks =70 Marks

1. a. State and prove Varignon's principle.   [4]

   b. Three cylinders are piled up in a ditch. The surfaces of the ditch are smooth. Find reaction between cylinders A and the vertical wall. The weights of cylinders A, B, C are 60 N, 180N, and 100N respectively and radii 100 mm, 150 mm and 120 mm respectively.   [10]

$r_A = 100mm$
$r_B = 150mm$
$r_C = 120mm$
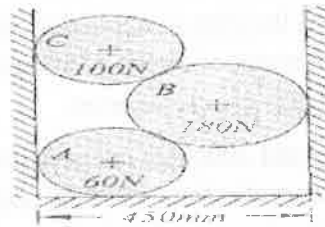
Fig.2.

OR

2. a. State the principle of transmissibility.   [2]

   b. What is meant by equilibrant?   [2]

   c. Three bars, pinned together B and C and supported by hinges at A and D as shown in figure below form a four - link mechanism. Determine the value of P that will prevent motion.   [10]
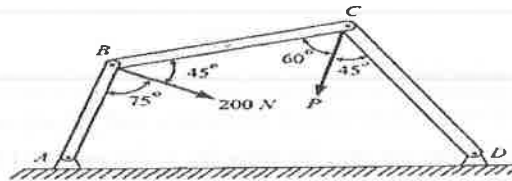
3. a. State the laws of static and dynamic friction.   [4]

   b. A ladder of length 6 m and weight 300 N is placed against a vertical wall such that the inclination with the wall is 30^0. A man weighing 720 N climbs the ladder. At what position will the ladder slip? The coefficient of friction for both the contact surface is 0.2. If the bottom of the ladder is held by a horizontal string tied to the wall, what would be the tension in the string when the man is at top of the ladder?   [10]

OR

4. a. State theorem of Pappus.   [4]

   b. Determine the centroid of the complex area sown in Fig.3.   [10]
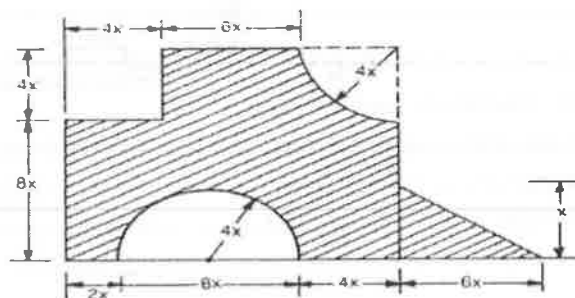
5. a. Prove that moment of inertia of a triangular section about the base of the section is bh³/12.
    b. Determine the moments of inertia with respect to the centroidal axes of the wide-flange beam section shown in Fig.4. [7M+7M]
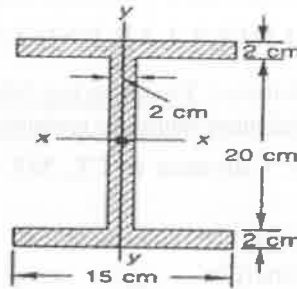

Fig.4

OR

6. a. State parallel axis theorem as applied to area Moment of Inertia.   [4]
    b. Determine the moment of inertia of a semicircle about its centroidal axis parallel to the diameter, using parallel axis theorem.   [10]

7. Two weights 800N and 200N are connected by a thread and they move along a rough horizontal plane under the action of a force of 400N applied to the 800N weight as shown in fig. .The coefficient of friction between the sliding surface of the weight and the plane is 0.3.Using D-Alembert's principle determine the acceleration of the weight and tension in the thread.   [14]

OR

8. a. State D'Alembert's principle.   [4]
    b. A motor car takes 10 seconds to cover 30 meters and 12 seconds to cover 42 meters. Find the uniform acceleration of the car and its velocity at the end of 15 seconds.   [10]

9. a. Explain the principle of conservation of energy.   [4]
    b. Determine the constant force P that will give the system of bodies shown in Fig. a velocity of 3m/sec after moving 4.5 m from rest. Coefficient of friction between the blocks and the plane is 0.3. Pulleys are smooth.   [10]
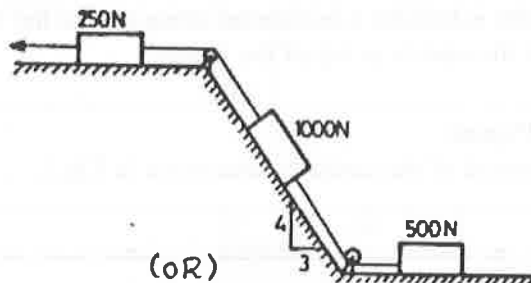
(oR)

10. a. Explain the terms 'amplitude' and 'frequency'   [4]
    b. A particle is moving with simple harmonic motion and performs eight complete oscillations per minute. If the particle is 50 mm from the centre of the oscillation, determine the amplitude, the velocity of the particle and maximum acceleration. Given that the velocity of the particle at a distance of 70 mm from centre of oscillation is 0.6 times the maximum velocity.   [10]

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I B.TECH II SEMESTER REGULAR END EXAMINATIONS, APRIL - 2019

Subject: **Engineering Mathematics - II**

Branch: **Common to CE, EEE, ME, ECE, CSE, IT and MINING**

Time: 3 hours   Max. Marks: 70

Answer **ALL** questions of the following   **5X14M=70 Marks**

1. (a). In a chemical reaction a given substance is being converted into another at a rate proportional to the amount of substance unconverted. If $\left(\frac{1}{5}\right)^{th}$ of the original amount has been transformed in 4 minutes, how much time will be required to transform one half.

    (b). Solve $yp^2 - 2px + y = 0$

OR

2. a) Solve $y - x\frac{dy}{dx} = x + y\frac{dy}{dx}$ (Evaluating)

    b) Solve $ye^{xy}dx + (xe^{xy} + 2y)dy = 0$

3. (a) Use exponential shift to solve the linear differential equation $y'' + 2y' + 5y = (x + 1)e^{-2x}$

    (b) Solve the initial value problem $y''' - 4y'' - 5y = sin2x$ subject to $y(0) = 0$ and $y'(0) = -2$

OR

4. a) Solve $(D^2 - 3D)y = xSin2x$

    b) Solve $(D^3 - 4D^2 - D + 4)y = e^{3x}Cos2x$

5. (a) Show that $\frac{\partial(u,v)}{\partial(x,y)} \times \frac{\partial(x,y)}{\partial(u,v)} = 1$ given that $u = e^x cosy, v = e^x siny$

    (b) Find the relative extrema of the function $2(x^2 - y^2) - x^4 + y^4$

OR

6. a) Find a point on the plane 3x+2y+z-12=0, which is nearest to the origin

    b) The sum of three numbers is constant Prove that their product is maximum

7. (a). Evaluate $\int\limits_{0}^{log2} \int\limits_{0}^{x} \int\limits_{0}^{x+log y} e^{x+y+z} dzdydx$

    b). Change the order of integration and evaluate $\int_0^\infty \int_x^\infty \frac{e^{-y}}{y} dydx$.

OR

8. a) Change the order of integration and evaluate $\int_0^1 \int_{x^2}^{2-x} x\,y\,dx\,dy$

    b) Evaluate $\iint (r^3 dr\,d\theta)$ over the area included between the circle r = 2sinθ and r = 4sinθ.

9. (a) Verify the Green's theorem for $\oint xy\,dx + (x^2 + y^2)dy$ over the boundary of the triangle having vertices at (0,1), (1,1) and (1,0) oriented counter clockwise

    (b) Evaluate by Gauss divergence theorem $\oiint \vec{F} . \hat{n}\,dS$ over the surface of the cube described by $0 \le x \le 4, 0 \le y \le 4, 0 \le z \le 4$ and is the field $\vec{F} = (x + yz)i + (2y + xz)j + (3z + xy)k$

OR

10. a) Find the directional derivative of the function f = x²-y²+2z² at the point P= (1,2,3) in the direction of the line PQ where Q =(5,0,4).

    b) Analyze constants a,b, c so that the vector $\bar{A}$= (x+2y+az)i + (bx-3y-z) j+(4x+cy+2z)k is irrotational .also find ϕ such that $\bar{A} = \nabla\phi$.

MALLA REDDY ENGINEERING COLLEGE (AUTONOMOUS)

(Affiliated to JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD)

GundlapochampALLy (H), Maisammaguda (V), Medchal (M), Medchal-Malkajgiri (Dist), Hyderabad

I B.TECH II SEMESTER REGULAR END EXAMINATIONS, APRIL - 2019

Subject: <u>Engineering Physics</u>

Branch: **Common to CE, ME and MINING**

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

Answer **ALL** questions of the following   **5X14 Marks =70 Marks**

1. (a) What are the characteristics of simple Harmonic motion?   4M
   (b) Determine the total energy of a simple harmonic oscillator.   10M

OR

2. a) What are damped oscillations?   5M
   b) Derive the differential equation for damped oscillator.   9M

3. (a) Define resolving power of a grating   2M
   (b) Deduce an equation for resolving power of the grating   8M
   (c) Write any three differences between dispersive power and resolving power   4M

OR

4. a) Explain in detail about Huygen's principle.   8M
   b) Discuss the important conditions for interference of light.   6M

5. a) What are dielectric materials? Explain their properties.   6M
   b) Derive an expression for ionic polarization.   8M

OR

6. a) What do you mean by internal field? Derive an expression Clausius- Mosotti relation for cubic solids
   b) Define ferro electricity, give examples and write their applications.   8M +6M

7. (a) Discuss optical fiber as a dielectric wave guide   4M

   (b) Discuss different losses associated with optical fibers   8M

   (c) Write few applications of optical fibers   2M

OR

8. (a) What are the characteristics of LASER   4M

   (b) Deduce the relation between Einstein's coefficients   10M

9. (a) Classify the materials based on magnetic susceptibility and relative permeability.   10M+4M

   (b) Compare magnetic properties of dia, para, ferro, ferri and antiferro magnetic materials?1

OR

10. (a) Explain Hysteresis effect shown by ferromagnetic materials. Based on this theory discuss how the materials are classified as soft and hard magnetic materials   10M

   (b) A coil of wire length (L) 0.65 m long and having number of turns (N) 800 carries a current
   (i) of 15 A. Find magnitude of magnetic field strength (H). Compute the flux density, B, if
   the coil is in vacuum.   4M

178
233
149
460