Sub- SOM

Branch - Automobile Engg.

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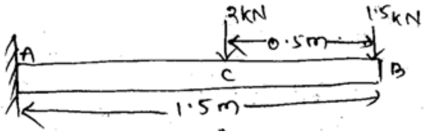

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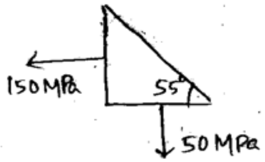

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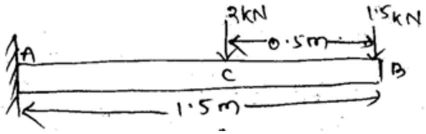

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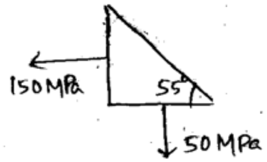

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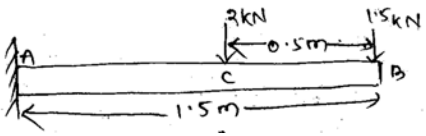

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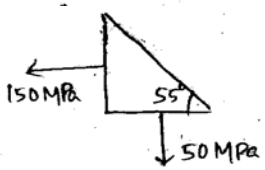

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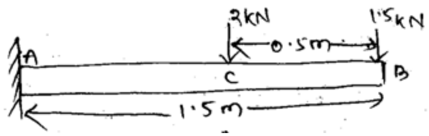

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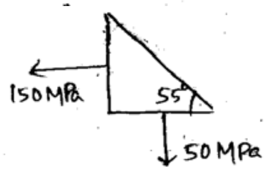

Sub- Engg. Math-III
Branch - Elect., Mech & Auto Engg.

Answer any two : [10x2]

1. Solve $\frac{d^2y}{dx^2} + 5\frac{dy}{dx} + 6y = e^{-2x} + sin2x$
2. Find the root at the equation.
   $x^3 - 5x + 1 = 0$ which lies between 2 & 3, using b section method comet up to 1 decimal place.
3. Find the interval in which roots are find out.
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Sub- Thermal Engg.-I
Branch - Mechanical Engg.

Answer all questions.

1. Define the followings [1x5]
   a) Property
   b) Thermodynamic equilibrium
   c) Process
   d) Specific gravity
   e) Cycle
2. Write down the differences between thermo dynamic work & thermo dynamic heat. [4]
3. Differentiate between sensible heat & latent heat. [4]
4. Differentiate between intensive property & extensive property. [2]
5. What do you mean by thermo dynamic system ? Explain in detail about its type. [5]

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Sub- Engineering Material
Branch - Mechanical Engg.

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Sub- AE & OPAM
Branch - Electrical Engg.

Answer all questions.
Each question carries 5 marks.

1. Explain due V-I characteristics of Pn junction diode.
2. In a common base connection, due emitter current is MA. If are emitter circuit is open, due collector, due collector current is 500 μA. Find the total collector current.
   Given that $\alpha = 0.92$
3. A common base transistor amplifier has an input resistance of 5 &! and output resistance of 100 K &! . The collector 10 ad is 2K &! if a signal of 500mr is applied between emitter and base. Find voltage amplification assume due to the nearly one.
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Sub- EME
Branch - Electrical Engg.

Answer any four questions. ***[5x4=20]***

1. Define Cp and Cv and find out relation between them.
2. Write short note on cabran boiler.
3. Write perfect gas law.
4. Compare water tube boiler and fire tube boiler.
5. Write short note on Wilcox boiler.

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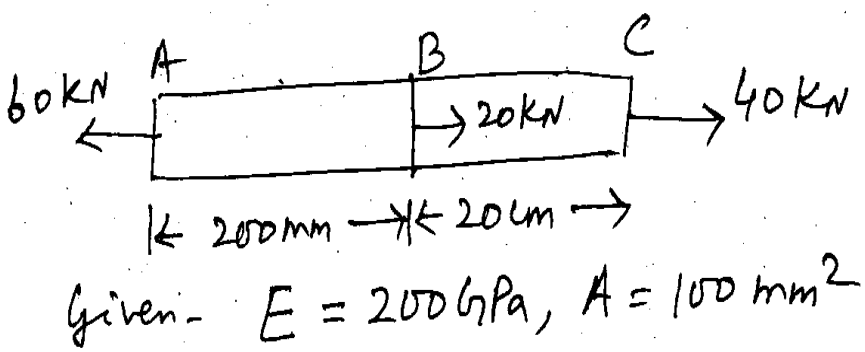
1.a) Define principle of superstition. [2]

b) Derive the relation between E and K [5]

c) Determine the change in length of bar as shown below.



d) A cylindrical shell 2m long 1m internal diameter is made up of 20 mm thick plates. Find the hoop and longitudinal stress with shell material if it is subjected to an internal pressure of 5 MPa.

e) A bar is subjected to a tensile stress of 100 MPa. Determine normal and shear stress across a place making an angle of 60^0 with a direction normal to the direction of tensile stress.

Sub- Strength of Material
Branch - Mechanical Engg.

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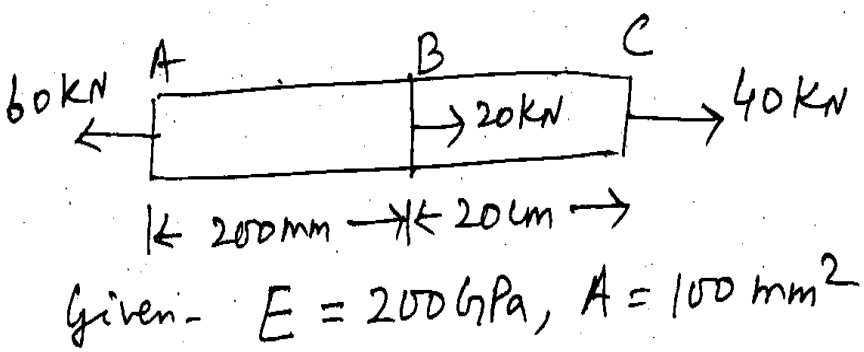

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Sub- Construction Technology
Branch - Civil Engg.

1.	Define the following -	[2X5]
i)	Hazardous building.	
ii)	Framed structure	
iii)	Dead load	
iv)	Combined footing	
v)	Pile foundation	
2.	Write a short note on shallow foundation with neat sketch.	[1x5]
3.	Differentiate between shallow foundation and pile foundation.	[1x5]

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Sub- Survey-I
Branch - Civil Engg.

1. Write the types of surveying. [5]
2. Write short note on indirect surveying operation. [5]
3. Write down the different obstacle on chaining. [5]
4. A steel tape was exactly 30m long at 20^0C when supported throughout its length under a pull of 15 kg a line was measured with a pull of 10 kg applied to the tape of a mean temperature of 13^0C and found to be 810 m long. The cross sectional area of the tape is 0.03 cm^2, total weight of the tape is 0.65 Kg, for steel = 11 x 10^{-6} s per ^{0}C and E=2.1x10^6 Kg/cm^2. Find the true length of line. [5]

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Sub- EME

Branch - Electrical Engg.

Group-A [2x5]

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b) What is ACSR conductor ? [2]
c) What is skin effect ? [2]
d) Name the materials which are used in below applications. [2]
i) Sliding contacts of starter.
ii) Resistor for precision instruments.
iii) Elements of Electric Oven.
iv) Commutator segments.
e) What is super conductivity of a material ? [2]

Answer any Two (Group-B)

2. Name any four low resistive materials with their properties ? [5]
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1. Explain the compressive strength of cement test ?
2. What are the properties of cement ?
3. Classify the stones briefly ?

Answer all the questions : **[2x5]**

a) What are the types of terracotta ?
b) What are the types of tiles ?
c) What do you mean by dressing of stones ? Write two purpose of it ?
d) What is porcelain ? write its types ?

Sub- Civil Engg. Material
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Sub- FMHM
Branch - Civil Engg.

1. Answer all the questions :

a) What is a specific gravity ? [2]

b) What do you mean by laminar & turbulent flow ? [2]

c) A single U-tube monometer containing mercury connected to the pipe in which a field of specific gravity 0.8 & having vaccum pressure in it and the other and is open to the atmosphere. If the difference is height fluid on the left limb is 15 cm and in right climb is 40 cm find the pressure in it. [5]

d) Water is flowing through a pipe having diameter 300 mm & 200 mm at the bottom and upper end respectively. The intensity of pressure at the bottom of the pipe is 24.525 N/m^2 & the pressure at the upper end is 9.8/N/cm^2. Determine the difference in datum head if the rate of flow through the pipe is 40 lit/s. [6]

e) A horizontal venturimeter with in at diameter 20 cm of the throat diameter 10 cm is used to measure the flow of oil of specific gravity 0.8. The discharge of oil through venturimeter is 60 L/S. Find the reading of the oil mercury in differential manometer take (cd=0.98) [5]

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Sub- MOM
Branch - Civil Engg.

ANSWER ANY FOUR QUESTIONS.

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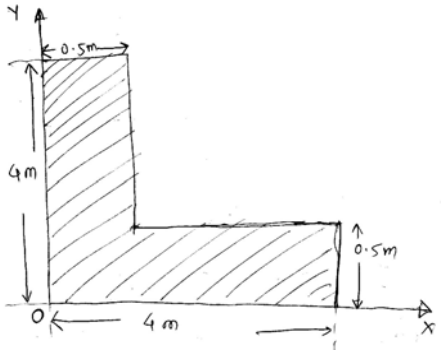
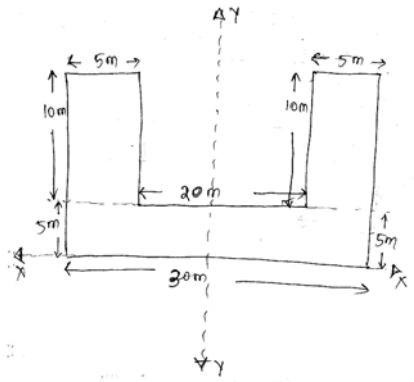


2. Find out the centroid of the given composite figue. {5}



3. Draw the stress ~ strain curve of mild steel with proper explanation of all the points and portions of the curve. {5}
4. What is Hook'es law write down all the assumpations along with explanations.{5}
5. Write short notes on any two. {2.5x2}
   a) Elasticity
   b) Resilence
   c) Toughness
   d) Fatigue

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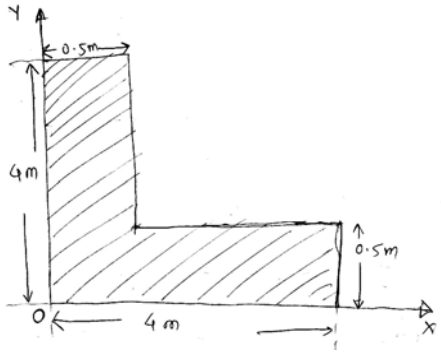
ANSWER ANY FOUR QUESTIONS.

1. Calculate the MI of the angle section shown in the figure wrt a centroidal axix parallel to x axis. {5}



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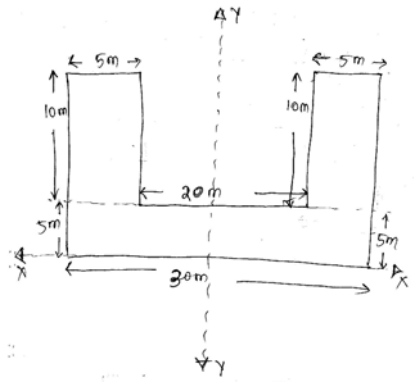

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