

DR.B.R.AMBEDKAR POLYTECHNIC COLLEGE - YANAM

BASIC ENGINEERING

BOARD PRACTICAL EXAMINATION - APRIL 2024

Scheme: R 2023

APPLIED MATHEMATICS - II

Marks: 100

Time : 3 Hrs

Date: 04-05-2024

Name:

Register Number:

Date:

Do the following activities

- i) Draw the graphs of the parabolas  $(y - k)^2 = 4a(x - h)$  and  $(x - h)^2 = 4a(y - k)$  for the given values of a, h and k.
- ii) Determine the vertex, focus, axis, directrix, latus-rectum of each parabola and mark them on the graphs.

[Data Set:  $a = 2$ ,  $h = 5$ ,  $k = 2$ ]

SCHEME OF EVALUATION

| Part | Description                   | Marks |
|------|-------------------------------|-------|
| A    | Written Test (Theory Portion) | 30    |
| B    | Aim                           | 10    |
| C    | Procedure                     | 20    |
| D    | Output                        | 30    |
| E    | Viva-vpoce                    | 10    |
|      | Total                         | 100   |

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BASIC ENGINEERING

BOARD PRACTICAL EXAMINATION - APRIL 2024

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APPLIED MATHEMATICS - 1I

Marks: 100

Time : 3 Hrs

Date: 04-05-2024

Name:

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Do the following activities for the given image of a parabolic shaped satellite dish antenna.

- i) Draw a parabola which fits the given image of the dish antenna.
- ii) Write the equation of the parabola.
- iii) Find the vertex, focus, directrix and latus-rectum and mark them on the graph.

SCHEME OF EVALUATION

| Part | Description                   | Marks |
|------|-------------------------------|-------|
| A    | Written Test (Theory Portion) | 30    |
| B    | Aim                           | 10    |
| C    | Procedure                     | 20    |
| D    | Output                        | 30    |
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## BASIC ENGINEERING

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APPLIED MATHEMATICS - 1I

Marks: 100

Time : 3 Hrs

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The alternating current passing through a circuit is  $i(t) = I_m \sin \omega t$ , where  $I_m$  is the maximum value of current and  $\omega$  is the angular velocity. Let  $R$  be the resistance and  $V_m$  be the maximum voltage.

- Graph the sinusoidal waveform of  $i(t)$  for the given values of  $I_m$  and  $\omega$ .
- Calculate the maximum voltage  $V_m$  using the formula  $V_m = I_m R$  for the given value of  $R$ .
- Graph the sinusoidal waveform of voltage using the formula  $v(t) = V_m \sin(\omega t + \frac{\pi}{2})$
- Calculate the instantaneous value of the current at  $t$  sec.

[Data Set:  $I_m = 110$ ,  $\omega = 90$ ,  $R = 5$ ]

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Do the following activities.

- i) The representation of apparent power as phasor sum of active power and reactive power is given by  $S = 550 + 952.63i$ .
- ii) Draw the phasor diagram of the system.
- iii) Find the numerical value of the apparent power.
- iv) Also calculate the phase angle and power factor of the system.

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| D    | Output                        | 30    |
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Do the following activities.

i) Graph the functions  $c$  (constant),  $x^n$ ,  $n \in \mathbb{R}$ ,  $\sin x$ , Find their indefinite integrals.

ii) Evaluate the definite integral  $\int_a^b f(x) dx$  and relate it to the area under the curve  $y = f(x)$  between  $x$ -axis,  $x = a$  and  $x = b$ .

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