AUDIO VISUAL EDUCATION

SCRIPT BOOK
30 Minutes.

Module III : PROJECTED VISUAL AIDS.

Unit .... 7 : Opaque Projector

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1. OPAQUE PROJECTOR

2. Under projected aids, you have covered a number of aids and equipment. We are sure you have covered all the objectives we wanted you to attain. We hope that you will be able to utilise these abilities in your practice teaching classes, and later in real teaching situations.

3. In the first unit under this module, we gave you an overview of different kinds of projected aids, and under unit 2, the principles of projection. We gave you in successive units, lessons on filmstrip projector, slide projector, 16 mm film projector and overhead projector.

4. Now we will take the opaque projection and opaque projector. Open WORKBOOK, and read the OBJECTIVES of this unit. STOP THE TAPE SLIDE SYSTEM AND THEN RESTART AFTER 2 MINUTES.

5. Except the 16 mm projector, all other projectors - i.e., the film strip, slide and overhead projector gives you projections of still pictures. The opaque projector is also used to project still projections. Yet there is a difference.

6. What is this difference? You might have used this projector for enlarging drawings for making posters or charts. What material did you project? You may say pictures or drawings. Yes, it is correct.

7. Did you notice any difference between the material projected through the other projectors and the opaque projector? Open your WORKBOOK and answer question 1. If you have noticed the difference, you will answer correctly.
TAKE ONE MINUTE FOR ANSWERING.

8. The answer is, for projection using 16 mm movie film; filmstrip, slide and overhead projectors, you use transparent materials, and for opaque projection, you use opaque materials. Printed page of your book is an example.

9. Opaque materials are those, through which light cannot pass. Hence the system for opaque projection is different. You know the three basic systems of projection and the one applicable to the opaque projection.

10. Refer the workbook and answer question.
Take a minute.

11. The answer to question 2 is reflected projection system.

12. For direct and indirect projection systems, we use transparent materials, and light passes through the projectual. Here light can not pass through the projectual.

13. The light is reflected by the projectual and through a mirror on the top of the machine and the image is directed through the objective lens on to a screen. Hence your projectual must be opaque and capable of reflecting light.

14. We can project such items as printed matter including pictures, drawings, written matter or matter drawn on drawing paper, phamplets, textile designs, biological or physical or technical specimens and even objects. Maximum size that can be projected is 250 x 250 mm.

15. BASIC DESIGN OF OPAQUE PROJECTOR. As the opaque projector depends on the reflected light projection principles, the projector is designed to maximise the output of reflected light.

16. The projection area is located at the base. Materials inserted into the projector are positioned on an adjustable board called the PLATEN. The platen can be raised or lowered.

17. The lamp and reflector are located at the front of the projector and inclined towards the projection area at an angle of 30^{o} .

18. Interior of the projector is polished metal, thus providing a mirror like effect. The light rays from the lamp and mirror surface are reflected upward by the material to the top of the projector.

19. A mirror, at an angle of 45^{o} directs the light horizontally at that point through the objective lens onto the screen.

20. Open your WORKBOOK, and answer questions 3 and 4. Take 3 minutes.

21. Answer to the question 3 is on the screen.

22. Answer to question 4: if you have marked the arrows of the rays of light as in this slide, you are correct.

23. The PLATEN is raised or lowered by the platen lever, and can be locked in position. The front legs can be raised, lowered or tilted, by the elevator knob to get the desired image on the screen, and locked into position.

24. The machine is moved away or toward the screen to get a larger or smaller. image.

25. A cooling fan located in front of the projection lamp or under the platen cools the system.

26. The lamp is usually 1000 W. There is no condensing lens system to gather and concentrate light; instead the interior metal surfaces are highly polished and direct as much light as possible onto the projection area.

27. Even then much light is lost in the projector and therefore, the classroom must be completely darkened for effective use of the opaque projector.

28. The picutre is focussed onto the screen by adjusting the focussing screw.

29. In some machines, an optical pointer directs a bright arrow of light anywhere on the screen surface.

30. A roll feed attachment is convenient for using a long copy in scroll form.

31. All visual materials are positioned in the projector with the bottom toward the screen.

32. Refer to WORKBOOK and answer questions 5, 6 and 7. Take 3 minutes.

33. Question 5. Answer is (a)

34. The room is completely darkened for opaque projection because, the projection is by reflected light system, and much light is lost.

35. Question 6.
The visual must be placed with bottom toward the screen, right side up.

36. Question 7.
The projector is raised or lowered by the elevator knob and locked in position to get the desired image on the screen.

37. OPERATING THE PROJECTOR. The projector has few parts and the operation is very simple.

38. But the opaque projector is usually bulky and is kept on a sturdy wheeled cart like the one you are seeing now.

39. It is moved in position, the lens facing the screen. Plug power cord.

49. Place the picture in the projector by lowering the platen, such that the bottom of the picture faces the screen (toward the front of the projector i.e. lens).

41. Raise the platen to its closed position and lock it.

42. Switch on.

43. Focus the lens and if necessary adjust the position of the projector by moving **it** for adjusting the size of the image.

44. Change pictures either by lowering the platen for each illustration. In some machines there is a belt that transports individual pictures into position. When you lower the platen for changing pictures, turn off lamp.

45. A piece of heat resistant glass can be placed across an open book to flatten it, to improve the focus.

46. Prolonged exposure may sometimes affect pictures, especially the coloured ones. So avoid showing them for long duration. Cut pictures to required size, and paste them onto a black paper thus to avoid unwanted information on the screen, and the projected picture will be good looking, with sufficient background for visibility.

47. Objects can be shown through opaque projector, but do not show objects which may be damaged by heat. Objects made of metal may become hot to handle - take care:

48. You can use the projector as an enlarger, to enlarge images and draw them on sheets.

49. After the last picture has been shown, turn off lamp, level projector, and draw back the projection lens.

50. Unplug power cord, wind and

51. place dust cover over the projector. Wheel projector to a corner.

52. Let us review the salient features of the opaque projector.

53. You can use the opaque projector for enlarging drawings and pictures.

54. You can use a scroll, (opaque material only should be used for scroll), paste your visuals on it, and use the same in the class when your projector has this facility.

55. Objects which are opaque can be shown, to the extent it can be made use of to explain any of your point that could be cleared. Prolonged exposure may sometimes affect the objects.

56. When introducing new units, and you have a few photographs or pictures, you can use them well, without waiting for making slides or filmstrip.

57. As in many other visual aids the opaque projector and the visual can stimulate interest, clarify information, help you learn faster and retain information longer.

58. Open your WORKBOOK and answer questions 8,9 and 10. Take 4 minutes.

59. Answer to question 8:

Metal objects.

When metal objects are shown through the opaque projector, they get heated soon. Handling the object will then become difficult. Be careful in handling the metal objects.

60. Answer to question 9:

The opaque projector is used to project opaque materials like: flat pictures, books, small metal objects.

61. Answer to question 10. is on the screen.

62. Be prepared to identify the various parts of the projector. Understand from the picture available in the work book showing various parts. Study the performance check list well. Fix time with the visual aids workshop Training Officer and handle the equipment. You will complete practical exercise No.39 after answering.

63. We will proceed to the topic "Television" in the next unit.

64 END

AUDIO VISUAL EDUCATION

Module III — Projected Aids

Unit 7 — Opaque Projector

Instructional Objectives:

1. Differentiate the type of material that could be used over opaque and other projectors, as transparent and opaque.
2. Identify the type of projection system applicable to opaque projectors.
3. Identify the parts of an opaque projector.
4. Differentiate the requirement of lighting conditions in the room where opaque projectors and overhead projectors are used.
5. State how the visuals to be projected are placed on the platen of the opaque projector (direction).
6. State the precaution to be observed while projecting metal objects in an opaque projector.
7. Name three types of opaque materials that can be used on an opaque projector.
8. Name the control on the opaque projector which helps to position the image to be projected.
9. Draw how direction of the light rays from the picture (placed) on the opaque projector is reflected by mirrors on the screen.
10. Write the operational sequence for projecting visuals using an opaque projector.
11. Organise, set up and project pictures and opaque objects using an opaque projector.

AUDIO VISUAL EDUCATION

WORK BOOK

Module III — Projected Aids

Unit 7 — Opaque Projector

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1. Write against the items under column I, the alphabet of the appropriate projection material given under column II, that you will use.

COLUMN I	COLUMN II
____ 1. Slide projector	a. Transparent materials
____ 2. Opaque projector	b. Opaque materials
____ 3. Filmstrip projector	
____ 4. 16 mm film projector	
____ 5. Overhead projector	

2. Which one of the following projection system is applicable to the Opaque projector.

____ a. direct projection system

____ b. indirect projection system

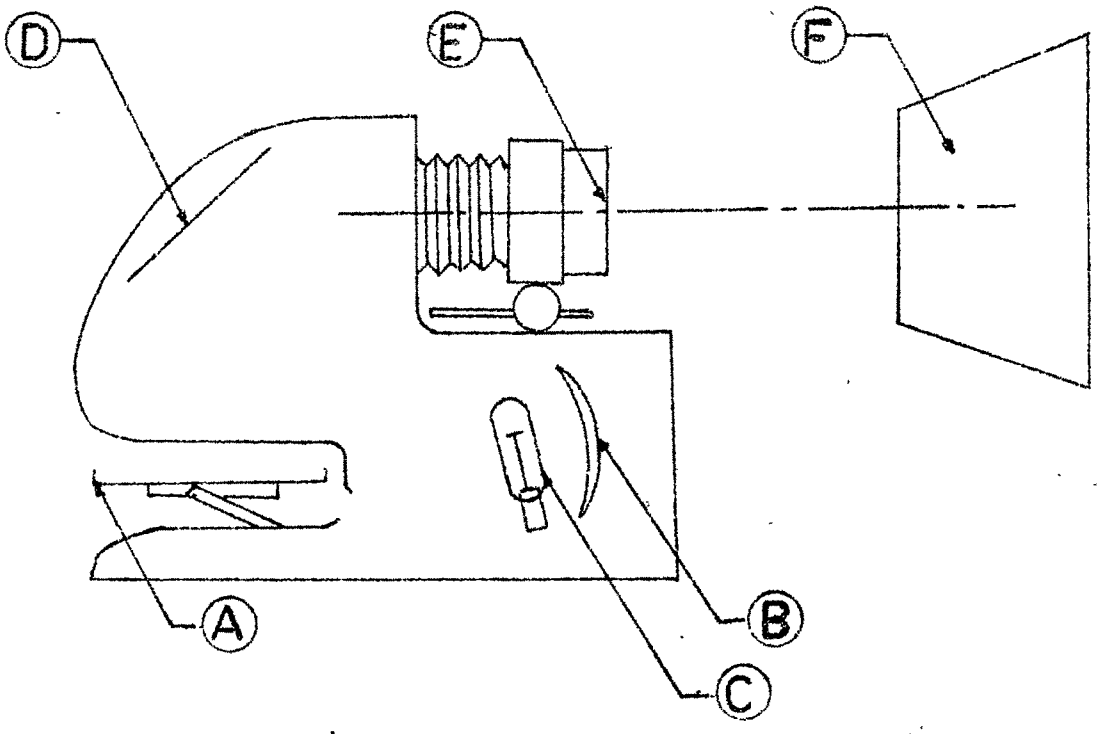
____ c. reflected projection system

____ d. all of the above.

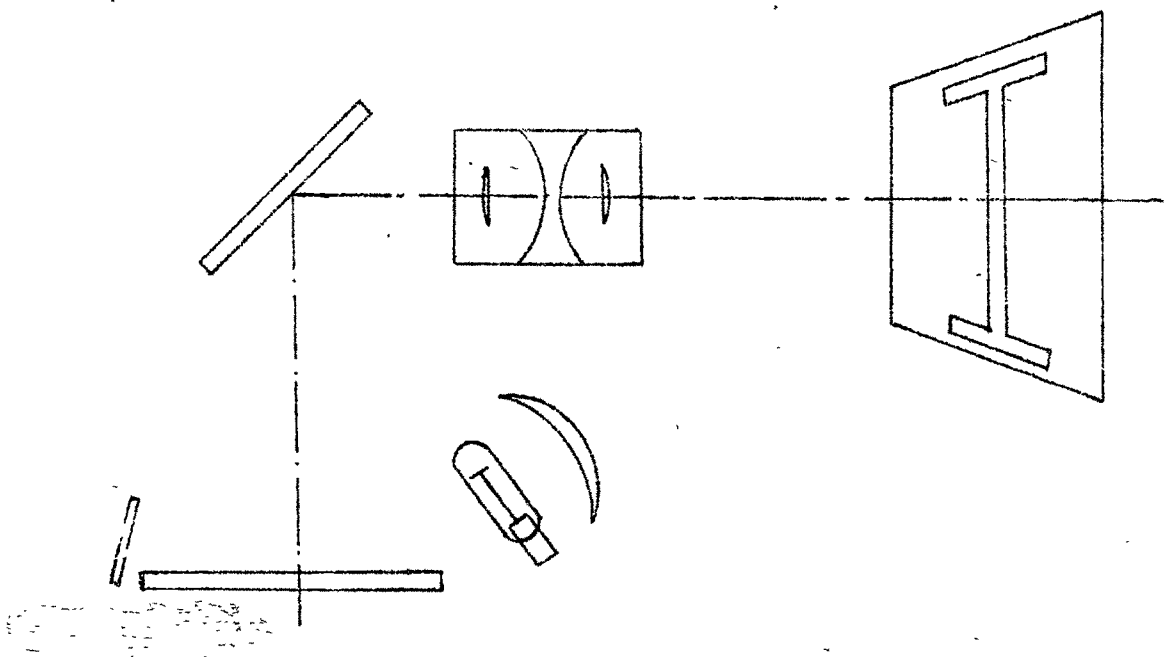
3. Marked in the diagram are the following symbols A,B,C,D,E, & F. Now against the items given below, mark the appropriate symbols to denote the names.

____ Platen ____ Reflector ____ lamp

____ Mirror ____ Objective lens ____ screen



4. Mark in the picture given, the arrows of the rays of light from the projection lamp to the screen.



5. Why do we darken the room completely when we use opaque projector ? Because:

____ a. we use the reflected light system, and much light is lost.

____ b. we use powerful lamps in the projector, and to avoid too much light in the room.

____ c. we use opaque objects in the projector, which does not require too much light, hence we darken the room.

____ d. we use indirect projection system, which does not require light in the classroom for real visibility.

6. We place the visual on the platen of the opaque projector:

____ a. with bottom of visual facing the class, right side up.

____ b. with bottom of visual facing screen, right side up.

____ c. with bottom of visual facing class, right side down.

____ d. with bottom of visual facing screen, right side down.

7. How will you get the desired centering of the image on the screen ?

8. Why should you be careful, when you use the metal objects for opaque projection ?

9. The opaque projector is used to project:

____ 1. slides ____ 2. flat pictures

____ 3. transparencies ____ 4. transparent objects

____ 5. books ____ 6. small metal objects

10. Following is a check list of the operations to be done for operating the opaque projector. List them in the order in which they are to be done, by writing 1,2,3 etc., in the space provided.

____ Set the projector
____ Turn on lamp/motor
____ Plug in power cord
____ Focus
____ Place the picture on the platen.
____ Raise the platen
____ Elevate the projector to center the image
____ Remove power cord
____ Turn off motor and lamp
____ Roll cords, cover projector and return to its place

MODULE - III. Projected Aids Time: 2 hrs.

Unit - 7. Opaque Projector

Practical Exercise No.39 : Operation of Opaque Projector

A. PROBLEM Using Opaque Projector show

a) a page of a book.
b) a photograph
c) a metal object

a) Setting up
b) Operating
c) Putting away

} Plan as per performance Check List. Total time allowed two minutes.

B. EQUIPMENT & MATERIALS

1. Opaque Projector.
2. Book.
3. Photograph
4. Key chain or any coin.

C. POINTS FOR GRADING

1. Setting up
2. Operation
3. Clarity of (a) Book, (b) Photograph (c) metal object.
4. Putting away

(Up to three trials are allowed for practice).

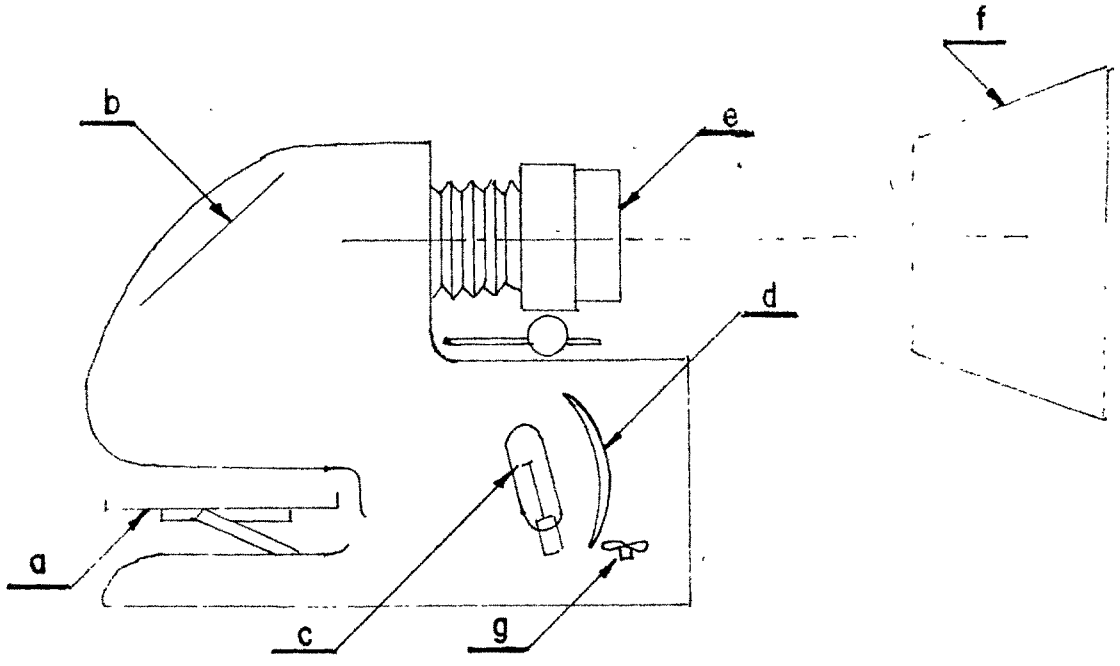
D. Deadline for completion: June 1st

M III/5/Pr.Ex. 39

OPAQUE PROJECTOR

a Platen c Lamp e Objetive lens g Fan

b Mirror d Reflector f Screen



AUDIO VISUAL EDUCATION

MODULE - III.	Projected Aids	Time: 2 minutes
Unit - 7.	Opaque Projector	

Practical Exercise No. 39 : Performance Check List for Operating Opaque Projector.

A. SETTING UP

1) Place projector & screen, darken room
2) Connect power & switch lamp
3) Insert a flat picture
4) Elevate & Level
5) Adjust focus

B. OPERATION

1) Show a photograph
2) Show a book page
3) Show a small metal object

C. PUTTING AWAY

1) Remove materials
2) Remove power cords & store
3) Retract lens
4) Place cover.

AUDIO VISUAL EDUCATION

Module III PROJECTED AIDS
Unit 7 Opaque Projector (39)

The check list given under are not in a sequence, put numbers 1,2,3 etc. against each step in the correct sequence for A, B, and C separatelh.

PRACTICAL EXERCISE 39.

A. SETTING UP

__ a. Place the projector and screen and darken the room.
__ b. Adjust focus.
__ c. Connect the power and switch on the lamp.
__ d. Insert a flat picture.
__ e. Elevate and level the projector.

B. OPERATION

__ a. Show a photograph
__ b. Show book pages
__ c. Show small metal objects

C. PUTTING AWAY

__ a. Remove the materials
__ b. Place the cover
__ c. Retract the lens
__ d. Remove the power cords and store.

AUDIO VISUAL EDUCATION

MODULE III — PROJECTED AIDS — Key to Pr. Ex.
Unit 7 — Opaque Projector — (39)

The check list under are not in a sequence. Put numbers 1, 2, 3, ... against each step in the correct sequence for A, B and C separately.

A. SETTING UP

1 a. Place the projector and screen, darken the room.
5 b. Adjust focus.
2 c. Connect the power & switch on the lamp.
3 d. Insert a flat picture.
4 e. Elevate and level the projector.

B. OPERATION

1 a. Show a photograph
2 b. Show book pages
3 c. Show small metal objects.

C. PUTTING AWAY

1 a. Remove the materials.
4 b. Place the cover
3 c. Retract the lens.
2 d. Remove the power cords and store.

AUDIO VISUAL EDUCATION

CRITERION TEST

Module III — Projected Aids

Unit 7 — Opaque Projector

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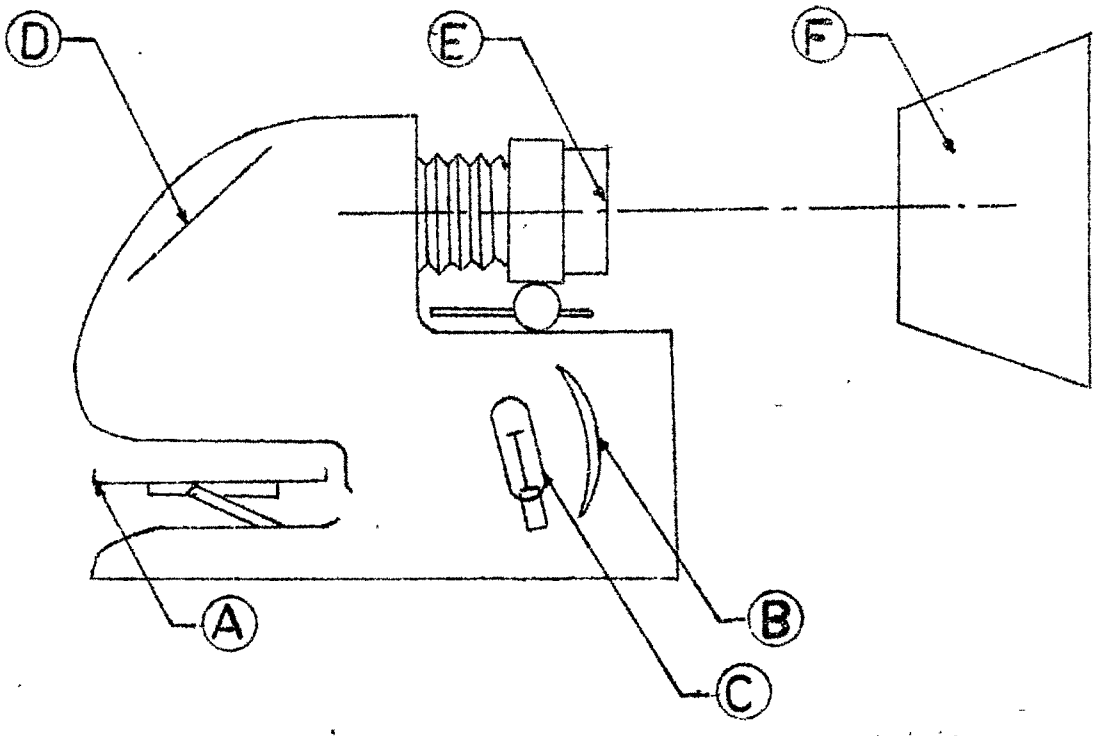

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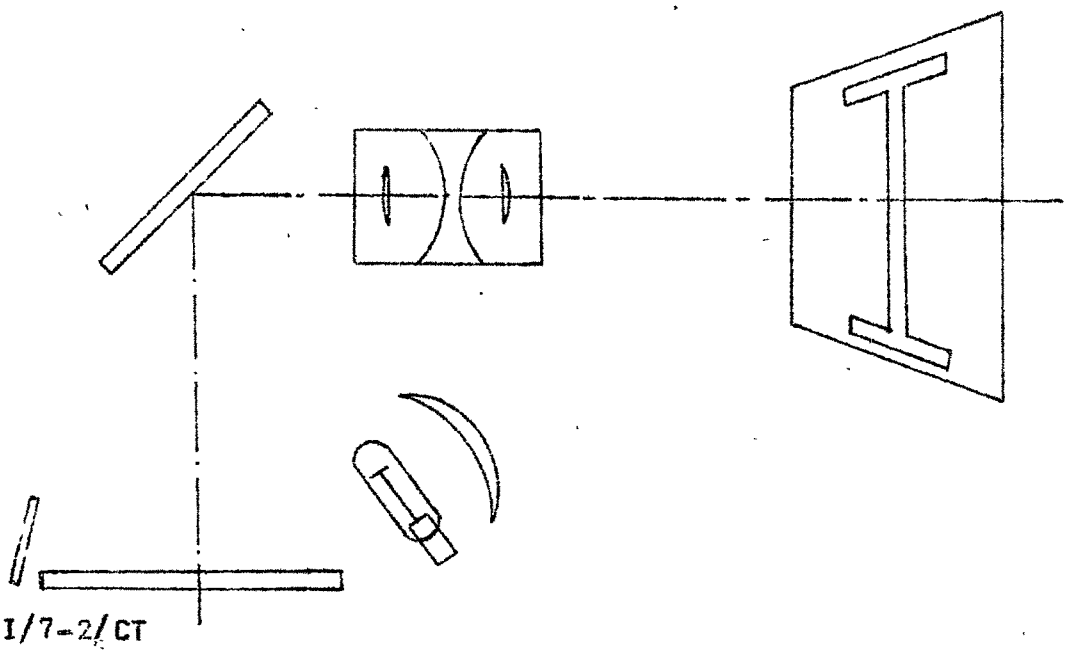

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7. How will you get the desired centering of the image on the screen ?

8. Why should you be careful, when you use the metal objects for opaque projection ?

9. The opaque projector is used to project:

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____ 5. books ____ 6. small metal objects

10. Following is a check list of the operations to be done for operating the opaque projector. List them in the order in which they are to be done, by writing 1,2,3 etc., in the space provided.

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AUDIO VISUAL EDUCATION

KEY TO
CRITERION TEST

Module III — Projected Aids

Unit 7 — Opaque Projector

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a 4. 16 mm film projector	
a 5. Overhead projector	

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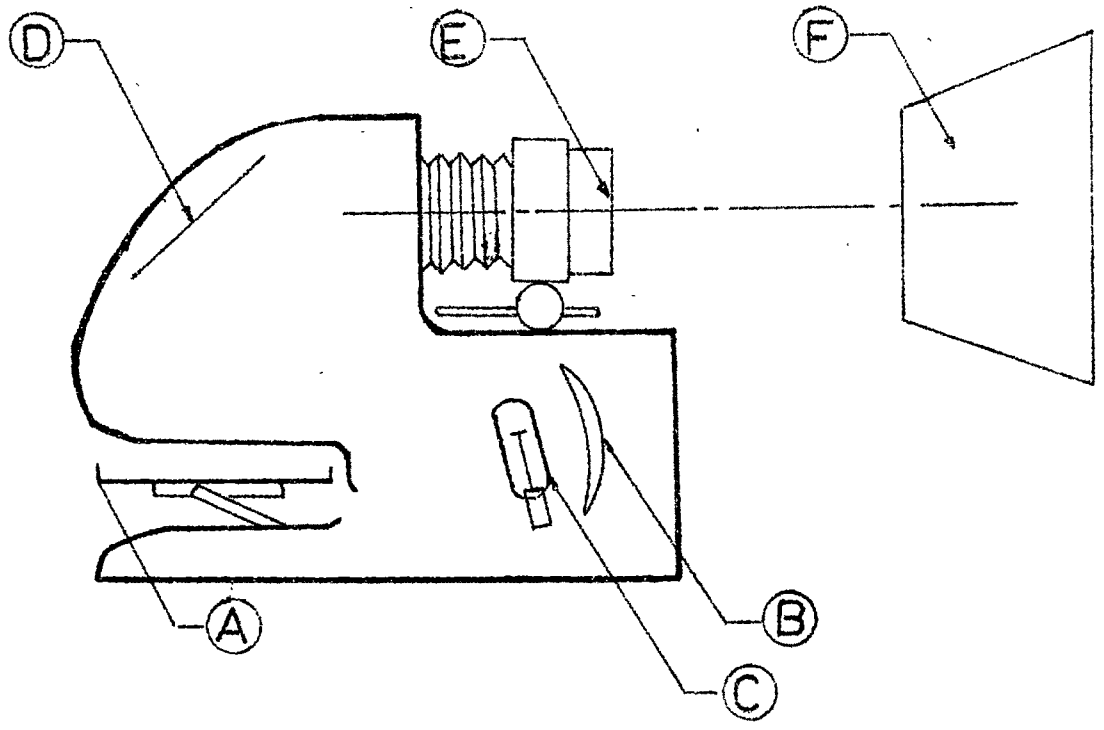
____d. all of the above.

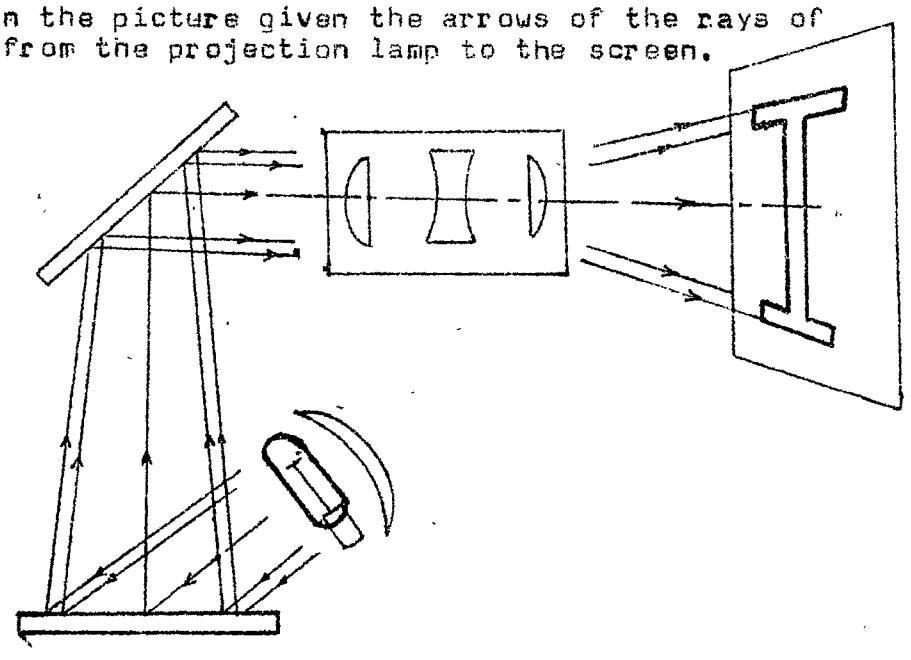
3. Marked in the diagram are the following symbols A, B, C, D, E and F. Now against the items given below, mark the appropriate symbols to denote the names.

__A__ platen __B__ Reflector __C__ lamp

__D__ Mirror __E__ Objective lens __F__ Screen.



4. Mark in the picture given the arrows of the rays of light from the projection lamp to the screen.



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The elevator knob is raised or lowered and locked in position.

8. Why should you be careful, when you see the metal objects for opaque projection ?

The metal object gets heated soon, hence you should be careful.

9. The opaque projector is used to project:

____ 1. slides * 2. flat pictures.

____ 3. transparencies ____ 4. transparent objects.

* 5. books * 6. small metal objects.

M III/7-3/KCT.

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__1__ Set the projector

__3__ Turn on lamp/motor

__2__ Plug in power cord.

__6__ Focus

__4__ Place the picture on the platen

__5__ Raise the platen.

__7__ Elevate the projector to center the image

__9__ Remove power cord.

__8__ Turn off motor and lamp

__10__ Roll cords, cover projector and return to its position.

M III/7-4/KCT