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FOR MANIPUR CLASS 12 PREPARATION

Manipur Board Class 12 Syllabus 2027 Engineering Drawing

EXAM	YEAR	TYPE	SUBJECT
Manipur Class 12	2027	Syllabus	Engineering Drawing

ENGINEERING DRAWING

CLASS-XII

THEORY

One Paper **3 Hours** **7O Marks**

Unit			Marks
I.	Isometric projections of solids		25
II.	Machine Drawing		
	A.	Drawing of Machine parts	15
	B.	Sectional view of assembly of machine parts :	30
		1. Bearings	
		2. Rod joints	
		3. Tie-rod and pipe joints	
		4. Couplings	
		5. Pulleys	
		Total Marks	**70**

Unit 1 : Isometric projection of solids **50 Pds.**

Construction of isometric scale showing main divisions of 10mm and smaller divisions of 1mm, also showing the leading angles. Helping view/s such as triangles, pentagon, hexagon etc. can be drawn using scale 1:1 or isometric scale. *Hidden lines are not required in isometric projection*.

Isometric projections (drawn to isometric scale) of solids, such as cube, regular prism and pyramids (triangular, square, pentagonal and hexagonal), cone, cylinder, sphere, hemi-sphere, frustum of right regular pyramids (triangular, square, pentagonal, hexagonal) and cone, when they are cut by a plane parallel to the base. The axis of the solid should be either perpendicular to H.P. or perpendicular to the VP or parallel to HP and VP both. (Indicate the direction of viewing)

Combination of two solids (except "frustum" of Pyramids and Cone) Keeping the base side paralel or perpendicular to H.P./V.P. and placed centrally together, but in no case the common axis of both the solids should be given parallel to H.P.

Note : Question on single solid will be asked in vertical position only.

Unit II : Machine Drawing

A. Drawing of machine parts **36 Pds.**

(i) Drawing to full size scale with instruments. **9 marks**

(Internal choice will be given between *any two* of the following).

Standard porifiles of screw threads (square, knuckle, B.S.W. Metric (external and internal) and nomenclature of threads : Bolts (square, Hexagonal, Tee and Hook); Nuts : (square and hexagonal), Plain washer, combination of nut and bolt with or without washer for assembling two parts together, single riveted lap joint with standard dimensions.

(ii) Free-hand sketches **6 marks**

(Internal choice will be given between any two of the following) conventional representation of external and internal threads; studs (plain, plain with square-neck and collar); screws (round-head, cheese-head, 90 flat countersunk-head, hexagonal socket-head and grub-screw; Types of rivets :- snap head, pan head-without tapered neck, flat head and 60 countersunk flat head; Types of sunk-keys (rectangular taper, woodruff and double-head feather key with gib head on both ends).

B. Assembled views of the following Machine parts : 82 Pds.

(Internal choice will be given in the examination between *any two* of the following assembly drawings, given in the "orthographic views" of the components drawn separately).

Note :

1. **In all the following assembly drawings only half sectional front view will be asked and the other half without section.**
2. **Side/End view or Top View/Plan will be drawn without section, wherever applicable.**
3. **In no view hiddlen edges/lines are required.**

1. **Bearings**
   - (i) Open-Bearing
   - (ii) Bushed-bearing
   - (iii) Footstep-Bearing (only sectional front-view will be asked)
   - (iv) Simple Plummer-Block (only sectional front view will be asked with only round brases).

2. **Rod-Joints**
   - (i) Cotter-joints for circular-rods (socket and spigot joint)
   - (ii) Cotter-joints for round-rods (sleeve and cotter joint)
   - (iii) Cotter-joints for square rods (Gib and cotter-joint)
   - (iv) Knuckle-joints (only sectional front view will be asked)

3. **Tie-rod and Pipe-joint**
   - (i) Turnbuckle
   - (ii) Flange pipe joint

4. **Couplings**
   (i) Unprotected Flange Coupling (having socket and spigot arragement)
   (ii) Protected Flange Coupling

5. **Pulleys**
   (i) Solid cast Iron Pulley (upto 200mm diameter) having solid web
   (ii) Single groove V-ball pulley (upto 200 mm diameter)

ENGINEERING DRAWING

CLASS-XII

PRACTICAL

One Paper (Practical) ***3 Hours*** ***3O Marks, 72 Pds.***

To perform the following jobs from the given views of the prescribed Machine Block (two).

1. Block-one, by the external examiner.
2. Block-two, by the internal examiner.

Value-Points

Part 'A'

1.	Copy the given views	1x2=2
2.	Drawing the missing view with hidden line	1½x2=3
3.	Sketching the Isometric view without hidden edges	2½x2=5
4.	To make the machine block of te above in three dimensions. (not to scale but approximately proportionately) drawn with any medium i.e. thermocol, soap-cake, plasticine, clay, wax etc.	5x2=10

Part 'B'

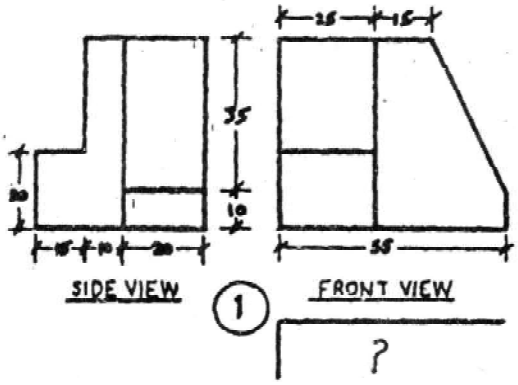
Viva-voce-questions based on the practicals Performed in Part 'A'	5

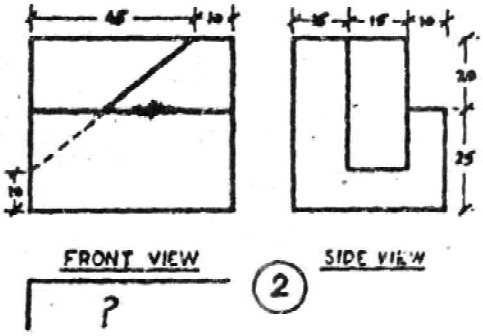
Sessional Work :

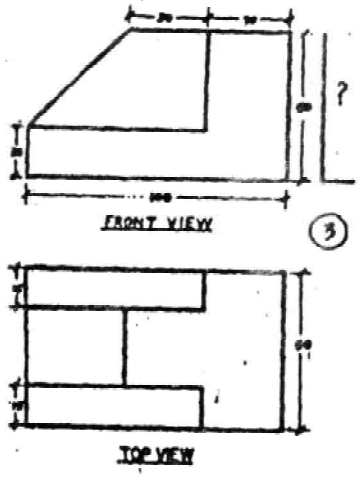
Solution of the fifteen Prescribed Machine Blocks.	5
TOTAL	**30 Marks**

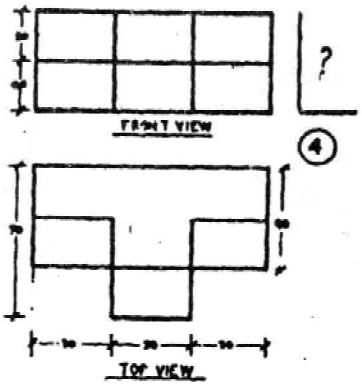
Prescribed Textbook :

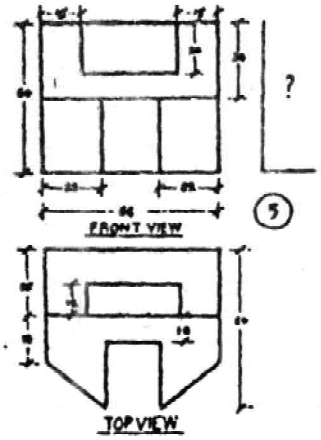
1. Basic Engineering Drawing Part II
   By : V.P. Kumar and Jasbir Singh
   Published by : Kumarsons Publishers, New Delhi.

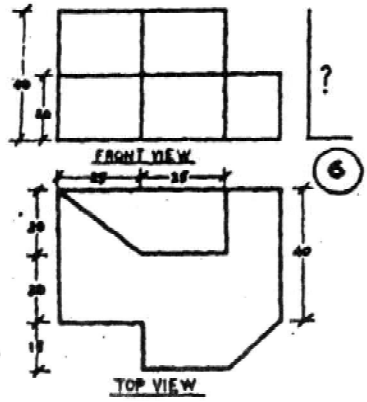

SIDE VIEW
FRONT VIEW
1
?

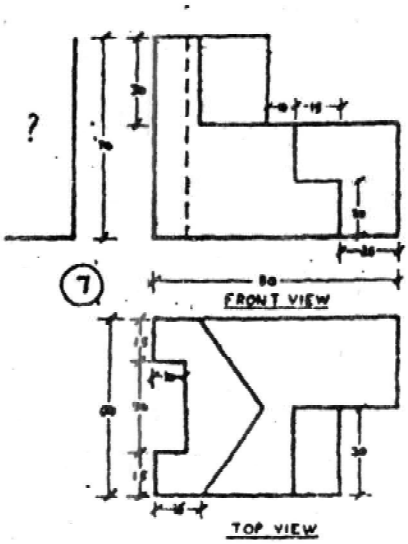

FRONT VIEW
SIDE VIEW
2
?

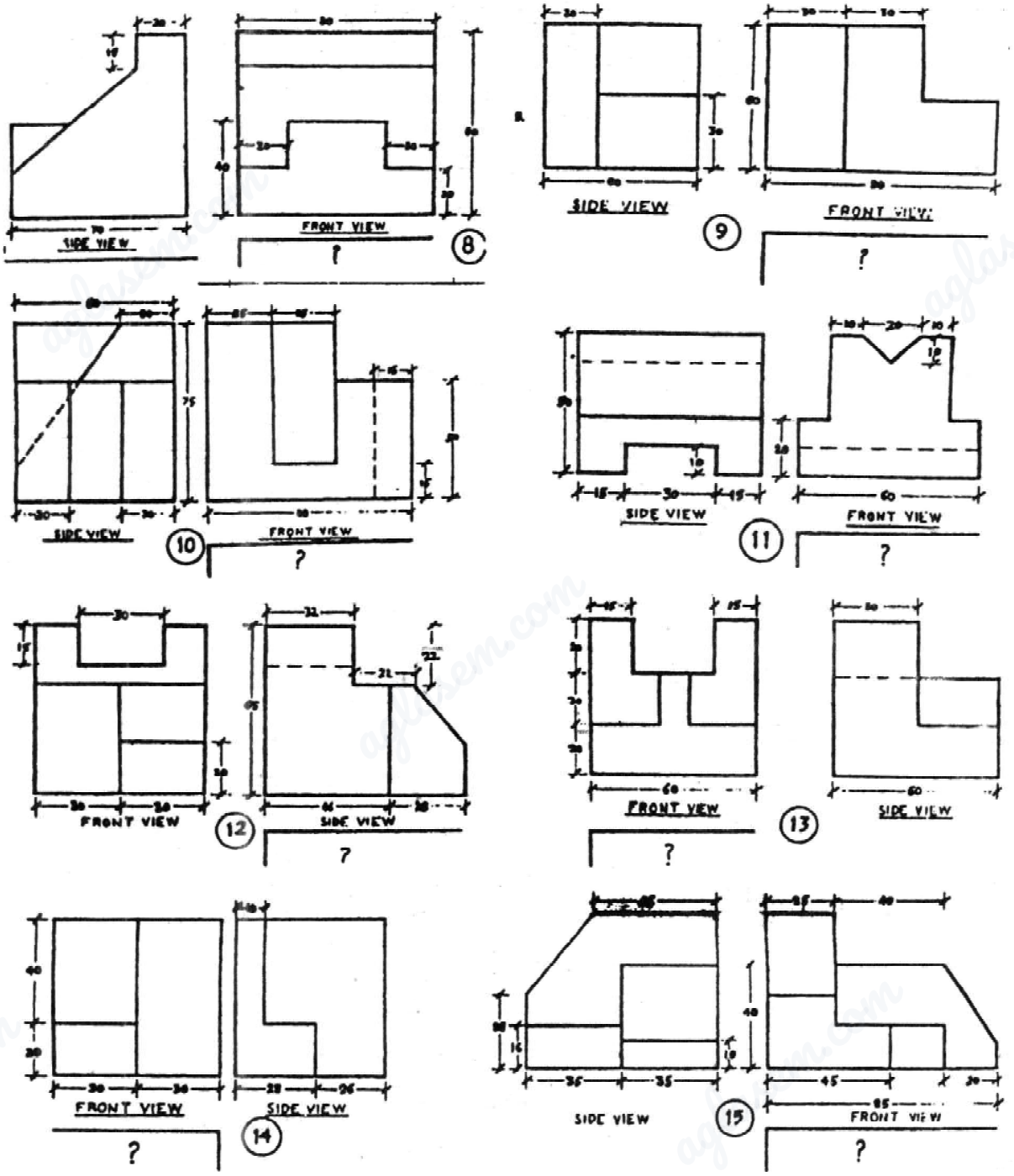

FRONT VIEW
3
TOP VIEW


FRONT VIEW
4
TOP VIEW


FRONT VIEW
5
TOP VIEW


FRONT VIEW
6
TOP VIEW


?
7
FRONT VIEW
TOP VIEW


SIDE VIEW
FRONT VIEW
8
?
SIDE VIEW
FRONT VIEW
9
?
SIDE VIEW
FRONT VIEW
10
?
SIDE VIEW
FRONT VIEW
11
?
FRONT VIEW
SIDE VIEW
12
?
FRONT VIEW
SIDE VIEW
13
?
FRONT VIEW
SIDE VIEW
14
?
SIDE VIEW
FRONT VIEW
15
?

FOR THE ACADEMIC SESSION 2024-25

DESIGN OF QUESTION PAPER

Subject : **ENGINEERING DRAWING**
Paper : Theory
Class : XII
Full Mark : 70
Time : 3 Hours

I.	**WEIGHTAGE TO OBJECTIVES :**				
	Objectives			**Marks**	**Percentage**
	Knowledge (K)			14	20
	Understanding (U)			35	50
	Application (A)			21	30
			Total :	**70**	**100**
II.	**WEIGHTAGE TO FORM OF QUESTIONS :**				
	Form of questions	**No. of Questions**	**Time (in minutes)**	**Marks**	**Percentage**
	Essay/Long Answer(E/LA)	1	60	28	40
	Short Answer(SA-I)	2	50	21	30
	Short Answer(SA-II)	3	65	16	23
	MCQ	5	5	5	7
	Total:	**11**	**180**	**70**	**100**
III.	**WEIGHTAGE TO CONTENTS :**				
	Unit / Content:			**Marks**	**Percentage**
	I	Isometric projection of solids		25	36
	II.	Machine Drawing			
		A	Drawing of Machine parts	15	21
		B	Sectional view of assembly / disassembly of Machine parts	30	43
			1. Bearing		
			2. Rod Joints		
			3. Tie- rod and Pipe joints		
			4. Couplings		
			5. Pulleys		
			Total :	**70**	**100**
IV.	**SCEHEME OF SECTIONS : Nil**				
V.	**SCHEME OF OPTIONS : Internal option may be given in Essay Type, SA-I & SA-II**				
VI.	**DIFFICULTY LEVEL :** Difficult : 30 % Average : 50 % Easy : 20 %				

Abbreviation : K(Knowledge), U(Understanding), C(Comprehension), Exp.(Expression), Skill(S), E(Essay Type), SA (Short Answer Type), VSA (Very Short Answer Type), MCQ(Multiple Choice Question)

FROM THE ACADEMIC SESSION 2025-26

DESIGN OF QUESTION PAPER

Subject : ENGINEERING DRAWING
Paper : Theory
Class : XII
Full Mark : 70
Time : 3 Hours

I	**WEIGHTAGE TO OBJECTIVES:**				
	Objectives			**Marks**	**Percentage**
	Knowledge (K)			11	15
	Understanding (U)			38	55
	Application (A)			21	30
	Skill (S)			-	-
	Total:			70	100
II	**WEIGHTAGE TO FORM OF QUESTIONS:**				
	Form of Questions	**No. of Question**	**Time (in minutes)**	**Marks**	**Percentage**
	Essay/Long Answer (E/LA)	1	60	28	40
	Short Answer (SA-I)	2	50	21	30
	Short Answer (SA-II)	2	50	11	16
	MCQ	10	20	10	14
	Total:	**15**	**180**	**70**	**100**
III	**WEIGHTAGE TO CONTENT:**				
	UNIT/CONTENTS:			**Marks**	**Percentage**
	I	Isometric projection of solids		25	36
	II	Machine Drawing			
		A	Drawing of Machine parts	15	21
		B	Sectional view of assembly / disassembly of Machine parts	30	43
			Bearing		
			Rod Joints		
			Tie- rod and Pipe joints		
			Couplings		
			Pulleys		
	TOTAL			**70**	**100**
IV	SCHEME OF SECTIONS: Nil				
V	SCHEME OF OPTIONS: Internal option will be given in Essay Type Question & SA-I				
VI	DIFFICULTY LEVEL: Difficult : 40% of the total marks Average : 45% of the total marks Easy : 15% of the total marks				

Abbreviation: K(Knowledge), U(Understanding), A(Application), Skill(S), E/LA(Essay /Long Answer Type), SA(Short Answer Type), VSA(Very Short Answer Type), MCQ(Multiple Choice Question)

NOTE- (i) Two questions out of 10 (ten) questions of MCQ will be assertion & reason type question.
(ii) Only one question of SA-I will be Case Study Based question.

ENGINEERING DRAWING

(THEORY)

CLASS - XII

BLUE PRINT

Time : 3 Hours **Full Marks : 7O**

UNIT-I ISOMETRIC PROJECTION OF SOLIDS 25

Sl. No.	Contents	Weightage
i.	Construction of Isometric Scale	4
ii.	Isometric projection of solid	7
iii.	Isometric Projection of combination of two solids	14

UNIT-II (A) DRAWING OF MACHINE PARTS 15

Sl. No.	Contents	Weightage
i.	Drawing of machine parts to a scale 1:1 (using instruments)	9
ii.	Drawing of Machine parts by free hand sketching	6

UNIT-II (B) ASSEMBLY/DISASSEMBLY 30

Sl. No.	Contents	Weightage/Marks
i.	Sectional view assembly of machine parts.	30

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ENGINEERING DRAWING

(PRACTICAL INSTRUCTION)

CLASS - XII

One Paper **3 Hours** **Full Marks : 3O**
Pass Marks : 12

INSTRUCTION TO EXAMINERS

Collect the drawing sheets/models/sessional activities from the students before starting practical works for assessment.

DISTRIBUTION OF MARKS FOR EACH OF THE VIEWS MAY BE AS FOLLOWS :

1.	(i)	Copy the given views	1x2=2
	(ii)	Drawing the missing view with hidden line	1½x2=3
	(iii)	Sketch the isometric view without hidden edge.	
		(a) Isometric sketch	2x2=4
		(b) Dimension	½x2=1
	(iv)	Make the machine block of the above in 3 dimension (not to scale but approximately proportionally drawn with any medium i.e. thermocal, socket, plasticine, clay, waxes etc.)	
		(a) Model	4x2=8
		(b) Neat & Tidy	1x2=2
2.	* Viva Voce – (at least 5 questions based on the above activities.		5
3.	* Sessional work		5

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