



MAHARASHTRA STATE BOARD OF TECHNICAL EDUCATION (Autonomous)

(ISO/IEC -270001 - 2005 certified)

Subject code: 22405

WINTER -2019 EXAMINATION Model Answer

Total Pages - 09

Important Instructions to examiners:

1) The answers should be examined by keywords and not as word-to-word as given in the model answer scheme.

2) The model answer and the answer written by candidate may vary but the examiner may try to assess the understanding level of the candidate.

3) The language error such as grammatical, spelling errors should not be given more importance. (Not applicable for subject English and communication skill).

4) While assessing figures, examiner may give credit for principal components indicated in the figure. The figure drawn by candidate and model answer may vary. The examiner may give credit for any equivalent figure drawn.

5) Credits may be given step wise for numerical problems. In the some cases, the assumed constant values may vary and there may be some difference in the candidate's answer and model answer.

6) In case of some questions credit may be given by judgment on part of examiner of relevant answer based on candidates understanding.

7) For programming language papers, credit may be given to any other program based on equivalent concept.

Q.	Question and Model Answers	Marks			
No.	• 🔨 🍸				
1.	Attempt any <u>THREE</u> of the following:	3 x 4 = 12			
(a)	Draw graphical symbols as per IS 962 – 1989.				
	(i) Brickwork	4M			
	(ii) Partition Block				
	(iii) Wood				
	(iv) Single shutter door				
	Ans:				
	Graphical Symbols as per IS 962 – 1989, for- (i) Brickwork				
	(ii) Partition Block				
	(iii) Wood				
	(iv) Single shutter door				



(2) Poor details Ans: Suitable scale for- (1) Location plan - 1:1000 (2) Poor details - 1:20 or 1:10 IM* each *(Note- if the student has written scale for door details or poor details, as given above, give credit of 01 mark.) 2M Ans: *(Note- if the student has written scale for door details or poor details, as given above, give credit of 01 mark.) 1M Ans: * Prospect - It is defined as the art of positioning of openings like doors and windows to have a desirable view like gardens, lake, sea, river, mountains, greenery, etc. and blocking un desirable views, such as slums, garbage dump, gutters, railway tracks, etc. IM Ventilation - It is defined as the circulation of natural air from outside to inside of house and vice a versa. OR Ventilation is the process of fresh off entering a building via a window, door or other opening IM (c) State the purpose of writing the construction holes in the working drawing. 4M Ans: Purposes of Construction notes - 1) These are useful for better understanding of drawing. 4M (for any four) 7 to give idea about any special work. 4M (f) Contre of vision. 4M (d) Define the terms: (i) Centre of vision 4M (i) Picture plane 4Ms: (i) 2M (ii) Picture plane 4Ms <t< th=""><th>(b)</th><th>(i) Suggest suitable scale for following: (1) Location plan</th><th>2M</th></t<>	(b)	(i) Suggest suitable scale for following: (1) Location plan	2M		
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(Note- for neat and suitable line plan with scale 05 marks, for proper sizes - 02 marks and 01 mark for labeling) Important Note: Student may draw any other line plan of Post office building. So give credit accordingly.		W WORKER SPACE	10M
SCRING ROOM 4.00 X 5.50		- WORKING SPACE	10111
(post master's double line plan with scale 05 marks, for proper sizes - 02 marks and 01 mark for labeling.		SORTING ROOM	
*(Note- for neat and suitable line plan with scale 05 marks, for proper sizes – 02 marks and 01 mark for labeling) Important Note: Student may draw any other line plan of Post office building. So give credit accordingly.		FLAP / DOOR	
(Note- for neat and suitable line plan with scale 05 marks, for proper sizes – 02 marks and 01 mark for labeling) Important Note: Student may draw any other line plan of Post office building. So give credit accordingly.			
*(Note- for neat and suitable line plan with scale 05 marks, for proper sizes – 02 marks, for door and window position -02 marks and 01 mark for labeling) Important Note: Student may draw any other line plan of Post office building. So give credit accordingly.		COUNTER 1M WIDE	
*(Note- for neat and suitable line plan with scale 05 marks, for proper sizes - 02 marks, for door and window position -02 marks and 01 mark for labeling) Important Note: Student may draw any other line plan of Post office building. So give credit accordingly.			
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*(Note- for neat and suitable line plan with scale 05 marks, for proper sizes – 02 marks, for door and window position -02 marks and 01 mark for labeling) Important Note: Student may draw any other line plan of Post office building. So give credit accordingly.		+ 4.00 X 4.00	
P.B. 2.50 P.B. ENTRANCE POST OFFICE SZES_OF_OPENING D'= 2.00X2.50 D= 1.00X2.50 D= 1.00X2.50 D= 0.70X2.10 W= 1.40X1.50 V= 0.60X0.70 W= 1.40X1.50 V= 0.60X0.70 P.B.=POST BOX NOTE:= ALL DIMENSIONS ARE IN METER *(Note- for neat and suitable line plan with scale 05 marks, for proper sizes - 02 marks, for door and window position -02 marks and 01 mark for labeling) Important Note: Student may draw any other line plan of Post office building. So give credit accordingly.			
PB 2.50 PB ENTRANCE SZES OF OPENING P'= 2.00X2.50 P= 1.00X2.50 D= 1.00X2.50 D= 1.00X2.50 D= 0.00X2.10 W= 1.00X1.50 V= 0.60X.70 P.B.=POST BOX NOTE:= ALL DIMENSIONS ARE IN METER *(Note- for neat and suitable line plan with scale 05 marks, for proper sizes - 02 marks, for door and window position -02 marks and 01 mark for labeling) Important Note: Student may draw any other line plan of Post office building. So give credit accordingly.		TABLE D'	
(P.B.) POST OFFICE SIZES OF OPENING USE SUBJECT OFFICE SIZES OF OPENING USE SUBJECT OFFICE SIZES OF OPENING USE SUBJECT OF OPENING			
ENTRACE SIZES_OF_OPENING POST OFFICE U U 1.00X2.50 D= 1.00X2.50 D= 1.00X2.50 D= 0.70X2.10 U W= 1.40X1.50 U V= 1.40X1.50 </td <td></td> <td>(P.B.)</td> <td></td>		(P.B.)	
POST OFFICE SIZES OF OPENING D'= 2.00X2.50 D= 1.00X2.50 D'= 0.70X2.10 W= 1.40X1.50 W= 1.40X1.50 V= 0.60X0.70 P.B.=POST BOX NOTE:= ALL DIMENSIONS ARE IN METER NOTE: *(Note- for neat and suitable line plan with scale 05 marks, for proper sizes - 02 marks, for door and window position -02 marks and 01 mark for labeling) Important Note: Student may draw any other line plan of Post office building. So give credit accordingly.		ENTRANCE	
*(Note- for neat and suitable line plan with scale 05 marks, for proper sizes – 02 marks, for door and window position -02 marks and 01 mark for labeling) Important Note: Student may draw any other line plan of Post office building. So give credit accordingly.		POST OFFICE SIZES OF OPENING	
*(Note- for neat and suitable line plan with scale 05 marks, for proper sizes – 02 marks, for door and window position -02 marks and 01 mark for labeling) Important Note: Student may draw any other line plan of Post office building. So give credit accordingly.		D'= 2.00X2.50	
W= 1.40X1.50 V= 0.60X0.70 P.B.=POST BOX NOTE:- All DIMENSIONS ARE IN METER *(Note- for neat and suitable line plan with scale 05 marks, for proper sizes – 02 marks, for door and window position -02 marks and 01 mark for labeling) Important Note: Student may draw any other line plan of Post office building. So give credit accordingly.		$D = 1.00 \times 2.50$ $D = 0.70 \times 2.10$	
*(Note- for neat and suitable line plan with scale 05 marks, for proper sizes – 02 marks, for door and window position -02 marks and 01 mark for labeling) <u>Important Note: Student may draw any other line plan of Post</u> office building. So give credit accordingly.		W= 1.40X1.50	
*(Note- for neat and suitable line plan with scale 05 marks, for proper sizes – 02 marks, for door and window position -02 marks and 01 mark for labeling) Important Note: Student may draw any other line plan of Post office building. So give credit accordingly.		V= 0.60X0.70 P.B.=POST BOX	
*(Note- for neat and suitable line plan with scale 05 marks, for proper sizes – 02 marks, for door and window position -02 marks and 01 mark for labeling) <u>Important Note: Student may draw any other line plan of Post</u> office building. So give credit accordingly.		RELIAS PRIMARY HEALTH CENTER	
*(Note- for neat and suitable line plan with scale 05 marks, for proper sizes – 02 marks, for door and window position -02 marks and 01 mark for labeling) <u>Important Note: Student may draw any other line plan of Post</u> office building. So give credit accordingly.		NOTE: ALL DIMENSIONS ARE IN METER	
(Note- for near and suitable time plan with scale 05 marks, for proper sizes – 02 marks, for door and window position -02 marks and 01 mark for labeling) <u>Important Note: Student may draw any other line plan of Post</u> <u>office building. So give credit accordingly.</u>		(Note- for next and suitable line plan with scale 05 marks for proper sizes $= 02$	
<u>Important Note: Student may draw any other line plan of Post</u> office building. So give credit accordingly.		(Note- for heat and situate the plan with scale 05 marks, for proper sizes -02	
Important Note: Student may draw any other line plan of Post office building. So give credit accordingly.		marks, for abor and window position -02 marks and 01 mark for labeling)	
office building. So give credit accordingly.			
office building. So give credit accordingly.		Important Notas Chudant man duam and the Providence CD	
		Important Note: Student may draw any other line plan of Post	



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4.	Attempt any <u>TWO</u> of the following:				2 x 6 = 12	
(a)	State the importance of submission drawing and working drawing in civil				6M	
	engineering works.					
	 Ans: Purposes of submission drawing – To get sanction from competent authority before starting actual work. To check whether the proposed construction is as per bye-laws or not. To decide the taxation of building by municipal authority. Without sanction of submission drawing, any construction, if constructed is illegal. To regularize the construction as per bye laws 					1M each (for any three)
	 Purposes of working drawing – To carry out actual construction work. To get better idea of work. To know the sizes of R.C.C. sections, steel reinforcement, etc. To understand the exact nature of work. To carry out the work as per design. To check the work carried out and record measurements. 					1M each (for any three)
(b)	Prepare s	chedule of	openings and area statement table for	ig. No. 1.		6M
	Schedule	of Openin Symbol	For building in Q.NO. 3, Fig. No. gs – Description	Size in m	Nos.	
	1	D1	T.W. Panelled door or Decorative type door	1.2 x 2.1	1	3 M
	2	D2	Flush door	0.9 x 2.0	2	
	3	D3	Flush door or PVC door	0.8 x 1.8	2	
	4	0 W1	Opening Sliding Window	$1.0 \ge 2.0$	l	
	5	W I V	Alluminium Shaing window	1.2×1.2	2	
	<u>In</u> Area Stat	nportant <u>N</u> <u>P</u> tement –	ote: Student may take another type of with different sizes, give credits accordi	<u>door or window</u> ngly.	<u>, </u>	
			Block 1 7.49 x 8.69 Block 2 4.03 x 1.19 Block diagram			

Model AnswerWinter-2019 BPD-22405



	1) Plot area (Assuming all side margin as 3 M) $= (7.49 + 3 + 3) \times (8.69 + 3 + 3)$ $= 13.49 \times 14.69$ $= 198.17 \text{ Sq.M.}$ 2) Built up Area $= [(7.49 \times 8.69) - (4.03 \times 1.19)]$ $= 60.29 \text{ Sq.M.}$ 3) F.S.I. allowed 1 4) F.S.I. Consumed $= Built up \text{ area} / Plot area$ $= 60.29 / 198.17$ $= 0.304$			3M
(c) Dif	ferentiate between load	bearing and fram	ed structure.	6M
An	s;	U		
S	r. Load Bearin	g Structure	Framed Structure	
	 Load is transferre foundation through Walls play an impor structural element for 	d to ground or walls. tant role as a or taking &	Load is transferred to ground or foundation through columns. Walls don't transfer load but acts as partition only.	6M (for any
3	transfer of loads. () Structure consist s walls.	slabs, beams and	Structure consist slabs, beams, walls and columns.	six points of difference
2	•) Continuous wall fo wall.	oting under every	Continuous wall footing under every wall.)
	6) More space utilised	for walls.	Less space utilised for walls.	
6	b) Every floor arran same.	gement shall be	Scope for changes in arrangement.	
7	7) (G+2) structure can be constructed at No restriction over no. of floors.			
8	U.C.R. masonry for	plinth.	U.C.R. masonry may not be used as plinth.	
]	
5. Att	empt any <u>TWO</u> of the f	following:		$2 \ge 6 = 12$
(a) En	list the various docume	nts and drawings r	required for municipal sanction.	6M
An Th 1) 2) 3) 4) 5) 6) Th 1) 2) 3) 4) 5)	 The various drawings required for municipal sanction are – Site Plan : Along with block plan showing plinth outline and area statement Ground floor plan, first floor plan, plans of higher floors. Basement floor plan, terrace plan and car park plan. Elevation Section passing through staircase, W.C., bath etc giving details upto foundation. Schedule of doors, windows and grill work. Schedule giving notes for type of construction. Foundation, R.C.C. work etc. The various documents required for municipal sanction are – Notice to execute the proposed work in the standard form. Undertaking from the architect in the standard form. Extract from property register stating the details regarding the owner and land. Plan from city survey office showing boundaries of the plot and adjoining survey numbers. Certificate regarding to area of plot given by a corporation or town planning department. 			1M each (for any six points)



(b)	Define following:			6M	
	(i) Floor Area				
	(ii) Super built up Area				
	(iii) Carpet Area				
	Ans:				
	(1) Floor Area –	area of the build	ng at any floor laval. Elaan area i	21	
	This is the usable covered	area of the build	ing at any moor level. Floor area is		
	calculated by deducting area	t of wans from plin	in area.		
	(ii) Super built up /	roo			
	When area of common use	like staircase corri	idors lift lobbies lift walls machine	2M	
	rooms duct walls pump ro	oms, security cabi	ns panel room water tanks servan	t	
	rooms/toilets, clubhouse, et	c. is added proporti	onally to built up area, it is called as		
	super built up area.	r is under proport			
	This term is mostly used for	flats in multi dwell	ling units like apartments.		
	5				
	(iii) Carpet Area –			3 N <i>A</i>	
	This is the floor area of the	usable rooms at any	y floor OR the area where carpet car		
	be laid.				
(c)	Suggest various units and	their sizes for prin	nary health centre for the structure	e 6M	
	constructed in a village.				
	Ans:				
	Units required for Drimon	y hoolth control			
	Units required for <u>Primar</u>	<u>y nearth centre</u> :			
	a) Entrance or reception	n = 2.5 m wide		6M*	
	b) Doctor's Room – 3 r	$m \times 3.6 m$		(for any	
	c) Examination Room -	-3 m x 4 m		(ioi any six)	
	d) Operation Theatre –	4 m x 5.5 m		SIX)	
	e) Circulation Space –	3 m wide			
	f) Laboratory – 15 sq.	n 🔪 🗡			
	g) Ward (general/ mate	rnity) – area 8 to 10) sq. m per bed		
	h) Medical Store or Pharmacy $-3 \times 4.5 \text{ m}$				
	i) Office – 12 sq. m				
	j) Family Planning Uni	it – 3 m x 4 m			
	k) Parking - Scooter/ Motorcycle – 3 sq.m./ vehicle, Cycle- 1.2 sq.m./ cycle				
	l) Sanitary block				
	TT. •4	N /T _ 1 _	Famala		
			remaie		
	W.C.	$\frac{1 \text{ III } 100}{1 \text{ in 50}}$	1 111 30		
	Ullilai Wash basin	1 III 30 1 in 100	 1 in 100		
	Roth	2 per word	2 per ward		
	Daui	∠ per waru	2 per waru		
	*(Note- ½ mark for	statino sir units an	d ½ mark for their respective		
	minimum sizes. i.e. $3 + 3 = 6$ marks.)				
			,		
				•	





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