

**DIPLOMA IN ELECTRICAL AND
MECHANICAL ENGINEERING**

Term-End Examination

December, 2010

**BET-038 : ESTIMATING AND QUANTITY
SURVEYING**

Time : 2 hours

Maximum Marks : 70

Note : All questions of section 'A' are compulsory. Attempt any two questions from section 'B' and any two questions from section 'C'. Use of calculator is permitted.

SECTION 'A'

1. State 'True' or 'False' for the statements given below : 1x8=8
- (a) Testing the service mains of a water supply scheme involves charging the mains with water slowly to allow the air to escape and avoid shock and water hammer.
- (b) MES SSR Part II deals with rates of the incorporated materials depending upon site conditions also.
- (c) Earthwork volume in long trenches is also calculated by mid-sectional method and Prismoidal formula method.

- (d) Consolidation of lime concrete is not taken as complete until a film of pure mortar covers over surface and completely hides the aggregate and until a stick dropped endways from a height rebounds with a ringing sound.
- (e) Rate analysis of plain concrete work does not involve supervision charges, overhead charges, contractor's profit etc.
- (f) Earth resistance cannot be reduced by increasing the size of earth electrode.
- (g) Double throw switch controls one incoming and two outgoing electric supply.
- (h) Lighting domestic load of a house is generally three phase three wire system for distribution.

2. Explain *any three* of the following (maximum 50 words each) : 2x3=6

- (a) Major components of a water supply scheme.
- (b) Outdoor and Indoor type substation.
- (c) Earthing and its purpose.
- (d) Use of DPC in building construction.
- (e) Considerations for rate analysis of plain concrete work.
- (f) MES SSR Part II.

SECTION 'B'

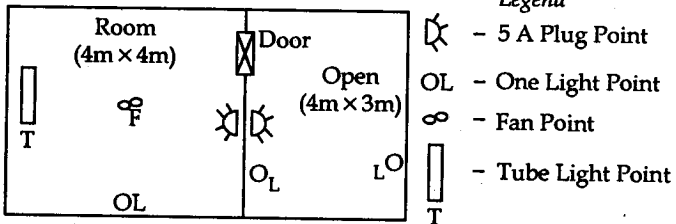
(Attempt *any two* only).

3. (a) Explain the difference between a cable and a wire. Also draw a cross - section of a typical cable. 3+4=7

- (b) Shown below is the plan view of a room and verandah. Diagrammatically show the following : 3+4=7

(i) Conduit layout plan indicating position of energy meter, main switch and switch board.

(ii) Wiring diagram :



4. (a) List the major components of an overhead distribution network in an external electrification scheme. Explain what are 'Guard wires'. 7

- (b) A 1 km long LT overhead distribution line, three phase 50 Hz is to be erected from a 125 kVA pole mounted substation. PCC poles of 8 mtr length is to be used. Assuming distance between adjacent poles is 50 mtrs and 6/1x2.59 mm ACSR conductor is to be used for 3 phase wires and 6/1x2.11 ACSR 7

is to be used for neutral wire, calculate the following :

- (i) Nos. of poles.
- (ii) Nos. of insulators (vertical configuration)
- (iii) Length of conductors required.
- (iv) Nos. of LT earthing sets required.

5. (a) In planning for an external water supply scheme, list the forces that may affect the pipes structurally. Also list the various jointing materials used for jointing of pipes. 4+3=7
- (b) A residential accommodation of that type construction is built as 4 floors (ground + 3 floors) for 50 persons. Calculate the following for an external water supply scheme (do not plan for fire fighting water requirement) : 3+4=7

- (i) Size of roof tank.
- (ii) Diameter of pumping main.

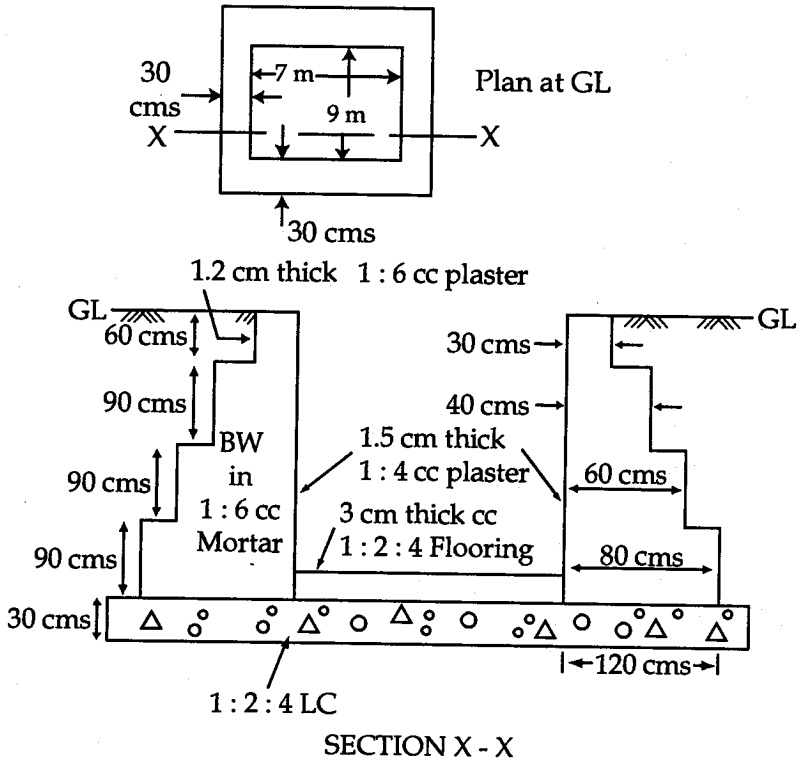
Assume the following :

- (i) Per capita rate of water supply is 100 Ltrs/day.
- (ii) 1/2 day storage only required.
- (iii) Filling time for tank is 2 hrs.
- (iv) Velocity in pumping main is 1.5 mtr/sec.

SECTION 'C'

(Attempt *any two* questions only).

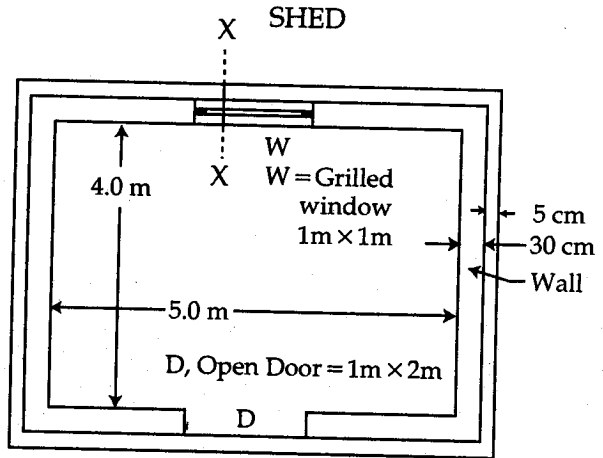
6. Explain the following : **3+4+3+4=14**
- (a) Earthwork in laying pipes and cables.
 - (b) Purpose and procedure for 'Hump Test'.
 - (c) General specifications of ceiling plaster.
 - (d) Considerations for analysis of rates.
7. Given the plan and section of a water tank which **14**
lies entirely below GL, calculate the earthwork involved and quantity of lime concrete (1:2:4)
required to be laid in foundation :



8. Calculate the earthwork in excavation (in foundations) for a small shed shown below. Tabulate the results in the form of a bill of quantities as per the format given for showing calculations by 'Centre - Line' method and by 'Long wall and short wall' method. 14

Bill of Quantities (Earthwork in Excavation)

Item No.	Particulars	No.	Measurements			Qty (m ³)
			L(m)	B(m)	H(m)	
1	By centre line By Long wall and short wall					



Plan Above Plinth Level
(at window level)

