17416

14115

3 Hours / 100 Marks Seat No. | | | | | | | | |

Instructions – (1) All Questions are *Compulsory.*

(2) Answer each next main Question on a new page.

(3) Illustrate your answers with neat sketches wherever necessary.

(4) Figures to the right indicate full marks.

(5) Assume suitable data, if necessary.

(6) Use of Non-programmable Electronic Pocket Calculator is permissible.

(7) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. Attempt any <u>TEN</u> of the following: **20**

a) Draw the symbols of the following:

(i) Surface conduit wiring

(ii) Exhaust fan

b) State IE rule 29.

c) State the importance of electrical drawing.

d) Define service connection.

e) List types of internal wiring.

f) List principle of circuit design in lighting circuit.

Marks

g) State any two differences between residential and commercial installation.

h) State any two examples of commercial installations.

i) Define Bus-bar.

j) Name the starters used for following motors

(i) 15hp, 3-ph squirrel cage IM.

(ii) D.C. Shunt motor

k) State the permissible limits for earth resistance in industrial installation.

l) State the meaning of security deposit.

2. Attempt any <u>FOUR</u> of the following: **16**

a) Write any four IE rules relating to lighting loads to be followed in electrical installation.

b) Explain any one method of installation of service connection in detail.

c) Prepare schedule of material for underground service connection.

d) Compare overhead service connection and underground service connection on the basis of Location, Economy, Safety and Labour Cost.

e) A newly constructed residential unit is having following load.

(i) 4 Lamps of 100W

(ii) 8 ceiling fan of 65W

(iii) 4 Sockets of 6 Amp having 100 watt.

(iv) 2 Sockets of 16 Amp having 2 kw.

Calculate rating of overhead service conductor.

f) What is tender? State it types.

Marks

3. Attempt any FOUR of the following: **16**

a) Draw the following wiring diagrams

(i) One Lamp controlled by one switch.

(ii) One Lamp controlled by two switches.

b) What is DP-MCB? State its advantages.

c) Explain principle of circuit design in lighting and power circuit.

d) State the purpose of following in conduct wiring.

(i) Elbow

(ii) Look-nut

(iii) Conduit Box

(iv) Inspection Box

e) Explain earthing of commercial installation.

f) Draw and label single line diagram of 3-phase induction motor connected to supply with Star-Delta starter.

4. Attempt any FOUR of the following: **16**

a) Draw a neat sketch of plate earthing and explain it in brief.

b) How selection of rating of main switch and distribution, board is done in residential building installation.

c) Draw and label single line diagram for a 3-phase motor pump connected to supply using Direct ON Line starter.

d) State the meaning of valid contract and state the conditions for the comparative statement.

e) Explain in brief:

(i) Security deposit

(ii) EMD

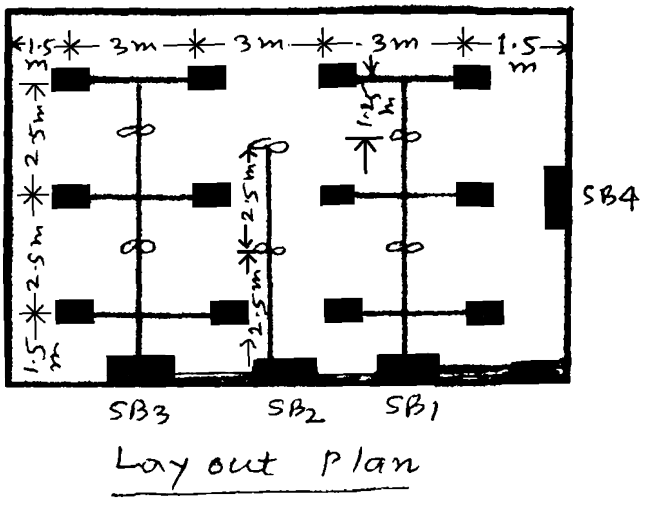
f) Flow will you select a good contractor for a particular project? Write down any four important points.

Marks

5. Attempt any <u>TWO</u> of the following: **16**

a) A Hall whose dimensions are 12m × 8m is to be fitted with an electric installation.

Estimate the quantity of material. Assume the height of ceiling to be 5m. The wiring is running at a height of 2m from the floor. The load in the hall is 12 fluorescent lamps, 6 fans and 8 (5 Amp) Sockets and 2 (15 Amp) Socket outlets-Refer layout plan - Figure No. 1



<u>Fig. No. 1</u>

b) State design considerations (any eight) of electrical installation system for commercial building.

c) What is industrial load? Compare it with residential load on any two points. Also write any five important points of motor wiring.

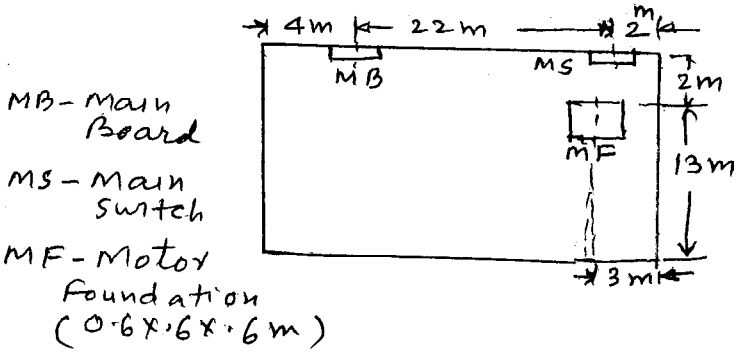
Marks

6. a) **Attempt the following:** **4**

Describe how rating of cable and fuses are to be decided for three phase squirrel cage induction motor by taking suitable rating.

b) **Attempt any <u>ONE</u> of the following:** **12**

(i) In a work shop 20 hp, 415 V, 3ph, 50Hz motor is to be installed. Prepare the estimate required for motor installation assuming PVC surface conduit type of wiring. Detailed Plan is shown in Figure No. 2.



<u>Fig. No. 2</u>

Marks

(ii) Design the sub-circuits, main circuit and conductor size for a residential building whose plan is given in Figure No. 3 and load in each room is as follows.

1) Hall - Light points - 2 Nos.
Fan points - 1 No.
Plug point - 2 Nos.

2) Bed room and Kitchen (each) - Light points - 2 Nos.
Fan points - 1 No.
Plug point - 1 No.

3) W.C. and Bath - Light point - 1 No.
Power point - 1 No.

4) Passage - Light point - 1 No.

5) Porch - Light point - 1 No.

Assume Rating of light point - 60 W
Rating of fan point - 60 W
Plug point (light) - 5 Amp.
Plug point (power) - 15 Amp.

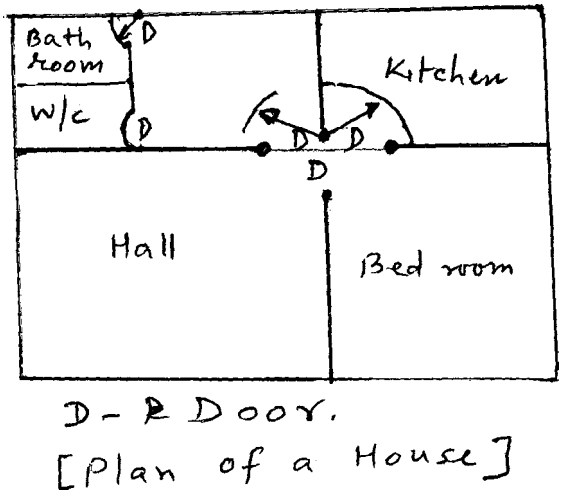


Fig. No. 3