

Reg No.: \_\_\_\_\_

Name: \_\_\_\_\_

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**  
SEVENTH SEMESTER B.TECH DEGREE EXAMINATION, DECEMBER 2018

**Course Code: EE405**

**Course Name: ELECTRICAL SYSTEM DESIGN**

Max. Marks: 100

Duration: 3 Hours

**PART A**

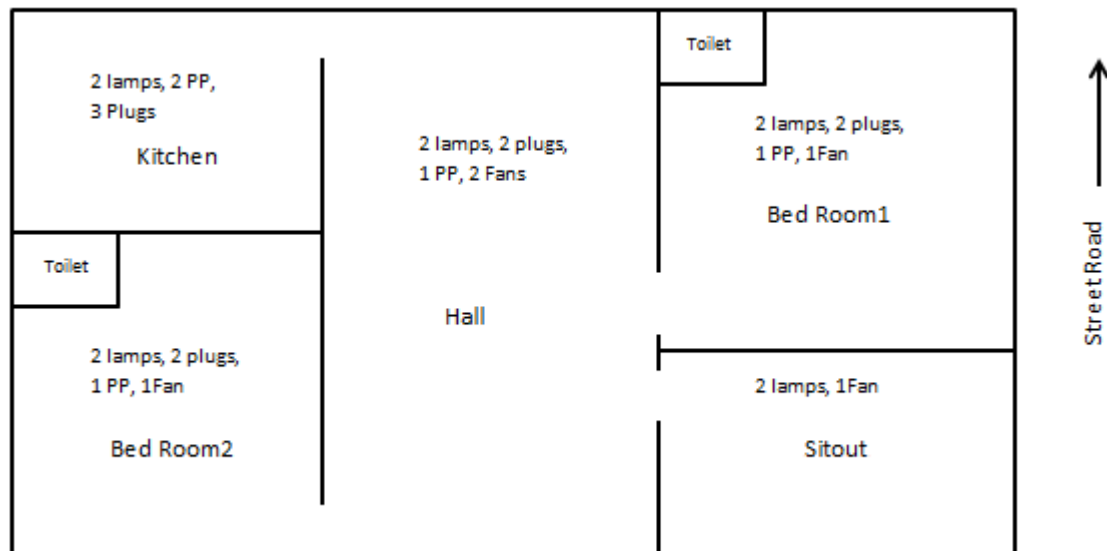
*Answer all questions, each carries 5 marks.*

|   |  | Marks |
|---|--|-------|
| 1 | Mention the Scope of Indian electricity act 2003 in brief.   | (5)   |
| 2 | Specify a circuit breaker having both short circuit and overload protection. Explain its difference between MCB and ELCB.  | (5)   |
| 3 | What are the factors which decide the power distribution architecture in an electrical installation of an industry?  | (5)   |
| 4 | List out different types of transformer tests carried out before commissioning.  | (5)   |
| 5 | A certain incandescent lamp, hangs from the ceiling of a room. The illuminance received on a small horizontal screen lying on a bench 2m vertically below the lamp is 63.5 lux. Calculate illuminance at a point when the screen is moved horizontally a distance of 1.5m along the bench. | (5)   |
| 6 | Mention the various types of luminaries used for proper lighting scheme.   | (5)   |
| 7 | What are the various energy conservation techniques imposed in buildings?  | (5)   |
| 8 | Define the function of AMF panel in electrical supply system   | (5)   |

**PART B**

*Answer any two full questions, each carries 10 marks.*

|    |  |      |
|----|--|------|
| 9  | a) What are the steps to be followed for safety precautions against electric shock?  | (4)  |
|    | b) Describe electric service in buildings.   | (6)  |
| 10 | a) What are different protective devices used in domestic installation? Explain each one in detail.  | (6)  |
|    | b) Describe the selection procedure for ELCB for domestic and industrial dwelling.   | (4)  |
| 11 | Design an electrical schematic for the residential building with following details. Locate the positions of meter board, Main Switch board, DB, switch boards. | (10) |



### PART C

*Answer any two full questions, each carries 10 marks.*

- 12 Draw the single line diagram of a transformer substation of 400 kVA, 11 kV/ 415 V, dry type transformer. Specify the rating of each unit at the primary and secondary side of the transformer with proper justification. (10)
- 13 a) Design a wiring plan for installing a 40HP induction motor in an industry. (6)  
 b) How do you select the starter for 40HP Induction motor of 0.8pf, 80% efficiency? Explain. (4)
- 14 a) How do you design an earth mat in substation? Explain its importance. (5)  
 b) What are most common test in UG cables? Explain. (5)

### PART D

*Answer any two full questions, each carries 10 marks.*

- 15 An office 30m X 15m is illuminated by twin 40w fluorescent luminaries of lumen output 5600 lumens. The lamps being mounted at a height of 3m from the work plane, the average illumination required is 240lux. Calculate the number of lamps required to be fitted in the office, assuming the CU 0.6 and maintenance factor to be 0.8. Assume the height of ceiling as 4.5m (10)
- 16 a) Explain rising mains and rising buses in high rise buildings. (4)  
 b) Explain the various design parameters taken into consideration while designing street lighting and flood lighting. (6)
- 17 Explain with suitable line diagram, how standby generators can include in existing electrical supply system. Assume HT consumer connection. (10)

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