BACHELOR OF ENGINEERING IN ELECTRICAL ENGINEERING (EVENING)EXAMINATION , 2018

(2ND Year, 1st Semester)

POWER SUPPLY SYSTEMS(PART I)

Time: One and Half hours
Full Marks: 50
Use separate Answer Scripts for each part.

PART-I
Answer any *three* questions.
Two marks reserved for neatness.

Q1(a)Draw a simple SLD of a single area power system.Show the different parts and sections   6 marks

(b) (i)What type of transformer is used for distribution purposes?   5 x 2marks
(ii)What is the phase to neutral voltage on the secondary side?
(iii)What is the voltage variation allowed on the secondary side?
(iv)What is the frequency variation allowed?
(v)What is a 24/7 ACSR conductor?

Q2 (a) Draw a simple ring main power distribution scheme and show the LT and HT loops .   5 marks

(b) Draw the main and transfer bus scheme in a substation   5 marks

(c) Mathematically prove the advantages of high voltage AC transmission.   6 marks

Q3(a) Mathematically prove the advantages of DC for transmission.   5 marks

(b) Explain Kelvin's law for conductors.What are the limitations?   5 marks

(c) A 500V, 2 core feeder 0.8 km long is required to supply a constant load of 100KW.   6 marks
The cost of the cable including installation charge is Rs.(6a+1.3) per meter, where 'a' is the cross sectional area of the feeder in cm^2. Interest and depreciation is 10%. Determine the most economical size.Cost of energy is 12 paise per unit and the specific resistance of copper is 1.75 x 10^{-6} Ωcm

[Turn Over

Q4(a) Draw the voltage and current profiles for a uniformly loaded distributor fed at one end. Show all the dimensions clearly.

6 marks

(b) A single phase ac distributor AB 300m long is fed from A and is loaded as follows:

100 A at 0.707 pf lag 200m from A

200 A at 0.8 pf lag 300m from A.

The resistance and reactance of the distributor is 0.2 Ω and 0.1 Ω/km. Calculate the total voltage drop in the distributor.

10 marks

Q5(a)(i) Explain the difference between Equipment Earthing and System Neutral Earthing. 4 marks

(ii) What is the normal value of earthing resistance and how can it be lowered?

(b) (i) What are the advantages of stranded conductors?

(ii) What is meant by a 7/0.26 PVC wire ?

4 marks

(c) (i) Draw the time current characteristic for a fuse. What materials are used in fuses?

(ii) Define fusing factor. What is its importance?

4marks

(d)(i) What is the limitation on the points in a residential house wiring scheme?

(ii) Draw a simple fluorescent tube circuit.

4 marks

_____END_____

BACHELOR OF ELECTRICAL ENGINEERING (EVENING) EXAMINATION 2017

(SECOND YEAR FIRST SEMESTER)

POWER SUPPLY SYSTEMS

Time: Three hour   Full marks: 100

(50 marks for each part)

Use a separate Answer Script for each part

PART – II

Answer Question 1 and any two from the rest.

1. Write short notes on any six: **6X3**
   a) Steam turbine operation monitoring.
   b) Flow duration curve.
   c) Pelton turbine.
   d) Safety measures for nuclear waste disposal.
   e) Catchment area.
   f) Auxiliary power supply arrangement of power station.
   g) Cooling tower in thermal power plant.
   h) Air preheater.
   i) Coal unloading in power plant.

2. a) Describe water-steam cycle in a coal fired power plant.   **7**
   b) What are the safety measures taken for H_2 cooling of alternator? **3**
   c) Water flow from January to December in a year is available in a river
      as follows: 350/450/950/1850/1650/2050/2450/1850/1050/850
      /450 /450 cu.m per second. Find the storage capacity required to
      maintain equal power generation throughout the year. What will be
      the average generation?   **6**

3. a) Describe operation of one type of Nuclear Reactor.   **5**
   b) What are functions of Spillway and Forebay Tank?   **4**
   c) Coal contains 57.2% carbon, 2.2% hydrogen, 0.5% sulphur, 6.9%
      oxygen and 33.2% ash. If Excess Air Coefficient is 1.3, find quantity of
      air required for burning 1kg of coal. Air contains 23.2% oxygen by
      weight.   **7**

4. a) Why Moderator and Control Rods are used in Nuclear Power Plant?   **4**
   b) What is the sequence of operations from boiler light-up to
      synchronisation of generator in coal fired power plant?   **6**
   c) What are the advantages of gas turbine power station?   **3**
   d) Define base and peak loads.   **3**