

**DIPLOMA - VIEP - ELECTRICAL
ENGINEERING (DELVI)****Term-End Examination****December, 2012****BIEE-036 : ELECTRICAL INSTALLATION
AND SYSTEM***Time : 2 hours**Maximum Marks : 70*

NOTE : *Question No 1 is compulsory. Remaining Four questions are to be attempted out of question No.2 to 8.*

1. (a) A 1000MW power station delivers 1000 MW for 2 hours, 500MW for 6 hours and is shut down for the rest of each day. It is also shut down for 60 days annually. The annual load factor of this station is:- **2x7=14**
- (i) 25.8% (ii) 22.0%
- (iii) 20.8% (iv) 23.0%
- (b) Outdoor switch gear is used normally for voltage :
- (i) 1.1 KV and above
- (ii) 11 KV and above
- (iii) 66 KV and above
- (iv) 33 KV and above

- (c) Ring-Bus -Bar scheme's favourable features are :
- (i) It provides double feed to each CKt.
 - (ii) It permits breaker maintenance
 - (iii) It is cheaper than double bus schemes.
 - (iv) All of the above.
- (d) Which tests are performed before commissioning a cable?
- (i) Conductor resistance test
 - (ii) Insulation resistance test
 - (iii) Pressure test
 - (iv) All of the above.
- (e) "In a cable transmission scheme the ratios of volumes of conductor in d.c; single phase a.c. and three phase a.c. are given by
- $$V_1:V_2:V_3 = 1 : \frac{2}{\cos^2\theta} : \frac{1.5}{\cos^2\theta}$$
- where $\cos\theta$ is the p.f. of load "Whether the statement is true or false.
- (f) State true or false for the given statement " For the transmission of power over a given length, the percentage regulation is directly proportional to the square of voltage."
- (g) Which of the following are Power Factor 'Tariffs' class:-
- (i) Block rate Tariffs
 - (ii) KWh and KVARh Tariffs.
 - (iii) Two part Tariffs.
 - (iv) None of the above.

2. An industrial load can be supplied on the following alternative tariffs; 14
- (a) H.V. supply at Rs.60 per KVA per annum plus 3p per KWh.
 - (b) C.V. supply at Rs 65 per KVA per annum plus 3.3p per KWh. Transformers and switch gear suitable for H.V. supply costs Rs. 50 per KVA, the full-load transmission losses being 2%. The fixed charges are 20% per annum on the capital cost of H.V. plant and installation works at full load. If there are 50 working weeks in a year. Find the number of working hours per week above which the H.V. supply is cheaper.
3. (a) Explain method of overhead service connection line to a single storied building.
- (b) What are the different types of Sub-stations ? 7+7=14
4. (a) What is an ELCB? What is it's use ? 7+7=14
- (b) Draw the single-line diagram of a pole mounted sub-station indicating various protective devices installed on HT side and LT side.
5. (a) What is Tender Notice? What are the constituents of Tenders? 8
- (b) Draw and compare different wiring schemes. 6

6. (a) State with reasons why the load at consumer's end is divided into sub-circuits? 7
- (b) What are the precautions to be adopted by consumer, owner, and supplier? 7
7. (a) What are the different types of electrical fans? Explain them briefly. 7
- (b) Why it is important to provide earthing? State relevant IE rules. 7
8. Write short notes on **any four** of the following : $3\frac{1}{2} \times 4 = 14$
- (a) Overhead charges and labour charges.
- (b) Use of wire-gauge and tables.
- (c) Starters.
- (d) Ring Main distribution system
- (e) D.C. three-Wire System.
- (f) Bus-Bars.
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