

Total No. of printed pages = 6

EL-602/ACDU/6th Sem/2018/J/A

AC DISTRIBUTION AND UTILIZATION

Full Marks – 70

Time – Three hours

The figures in the margin indicate full marks for the questions.

Answer both Parts A and B.

PART – A

Marks – 25

1. Fill in the blanks : 1×15=15
 - (a) _____ wire is present at the top of transmission line.
 - (b) ACSR conductor uses _____ wire to get additional mechanical strength.
 - (c) While designing a distributor _____ along its length is the main consideration.

[Turn over

- (d) Current remains same throughout from feeder due to _____.
- (e) In ring main system a loop circuit is formed by _____.
- (f) _____ substations are developed in thickly populated cities.
- (g) Isolator is an _____ device.
- (h) The length of cable decrease the insulation resistance will _____.
- (i) If the length of cable increases its insulation resistance _____.
- (j) The most commonly used insulation in HV cable is _____.
- (k) The minimum dielectric stress in a cable is at _____.
- (l) Resistance heating is based upon _____.
- (m) The specific resistance of graphite electrode is _____ than carbon.
- (n) The save energy during braking _____ braking is used.
- (o) Luminous flux is measured in _____.

2. State whether true or false : $1 \times 10 = 10$

- (a) In DC arc welding electrode is made positive and workpiece as negative.
- (b) Electrical drive cannot be controlled remotely.
- (c) In lathe machine DC shunt motor is used.
- (d) Glare is the imperfect vision of eye caused by exposure of eyes to a very bright source of light.
- (e) Synchronous condenser takes leading current when connected in parallel with the supply.
- (f) For fixed power and voltage, the load current I_L is directly proportional to the power factor.
- (g) 3-phase, 4-wire AC system is generally used for transmission of electric power.
- (h) In lead sheath of a cable dielectric stress is maximum.
- (i) Electroplating is used for production of printing blocks.
- (j) kVA rating of equipment is directly proportional to the power factor.

PART - B

Marks - 45

Answer any *three* questions.

1. A. A single phase AC distributor AB 300m long is fed from end A and is loaded as under :

(a) 100A at 0.707 p.f lagging 200m from point A.

(b) 200A at 0.8 p.f lagging 300m from point A.

The total resistance and reactance of the distributor is 0.2 ohm and 0.1 ohm per kilometre. Calculate the total voltage drop in the distributor. The load p.f.s refers to the voltage at the far end. 8

- B. Discuss the advantages of feeding a distribution system at both ends. 7

2. A. What is distribution system ? Discuss with neat diagram the primary and secondary substation. 2+6=8

- B. What are the necessary requirements of cable? 3

- C. What are various factors to be considered for selecting a drive of motor ? 4

3. A. What are the requirements of good lighting scheme ? 5
- B. Mention the various methods of improving power factor. 3
- C. A single phase motor connected to a 240V, 50 Hz supply takes current 20A at a power factor of 0.75 lagging. A capacitor is shunted across the motor terminals to improve the power factor to 0.9. Determine the capacitance of the capacitor to be used. 7
4. A. What are the Faraday's laws of electrolysis? Explain. 3
- B. What is an electric 'arc' ? What are the different types of arc furnaces ? Describe with neat diagram 'the direct arc furnaces.'
1+2+3=6
- C. What is electroforming ? Describe with the help of suitable diagram. What is its application ? 6

5. Write short notes on any *three* :

5×3=15

- (a) Grid system
- (b) Dielectric heating
- (c) Street lighting scheme
- (d) Tariff
- (e) Electroplating.

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