QP Code : 50233

Maximum marks: 100

Duration: 3 Hrs

Answer All (Two marks each)

1. A DC-DC converter using which voltage can be step down is:

   A. Buck Converter
   B. Boost conerter
   C. Buch Boost
   D. None of the above

2. Consider two machine model of power system with Vs=Vr=220kV. Reactance of the transmission line is 0.1Ω. Calculate transmittable power in MW.

   A. 484000
   B. 484
   C. 4840
   D. 48400

3. A source has an internal impedance of (3 +j4) Ω. If a purely resistive load connected to this source has to extract the maximum power out of the source, its value in Ω should be

   A. 3
   B. 4
   C. 5
   D. 7

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4. The most suitable location of shunt compensation in a transmission line for improving power transfer capability is;

   A. Sending end of transmission line
   B. Receiving end of transmission line
   C. Mid-point of transmission line
   D. Generator end

5. The objective of iron core in a transformer is:

   A. Low reluctance
   B. High reluctance
   C. Low resistance
   D. High conductivity

6. To protect SCR from dv/dt which of the following is used

   A. Snubber circuit
   B. Series inductor
   C. Parallel diode
   D. Filter

7. To get variable DC voltage from fixed AC voltage which of the following can be used

   A. Diode rectifier
   B. Inverter
   C. PWM rectifier
   D. Buck-boost converter

8. Which of the following bridge is used to measure inductance of inductance of a high Q inductor?

   A. Maxwell bridge
   B. Hay bridge
   C. Wein bridge
   D. Anderson bridge

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9. If DC voltage is applied to a primary of a transformer it may:

A. Work
B. Not work
C. Burn the winding
D. Give lower voltage on the secondary

10. The loop transfer function zeros are the same as:

A. Poles of G(s)H(s)
B. Zeros of G(s)H(s)
C. Poles of 1+ G(s)H(s)
D. Zeros of 1+ G(s)H(s)

11. The current drawn by armature of a DC motor with supply voltage V and back emfVb is:

A. V/Ra
B. Vb/Ra
C. (V-Vb)/Ra
D. (Vb-V)/Ra

12. Skin effect in AC circuit

A. Increases with frequency
B. Decreases with frequency
C. No change with frequency
D. None of the above

13. Fundamental component of current in TSR

A. Lags the line current by 90°
B. Lags the line current by somewhat less than 90 °
C. Leads the applied voltage by 90 °
D. Leads the applied voltage by somewhat less than 90 °

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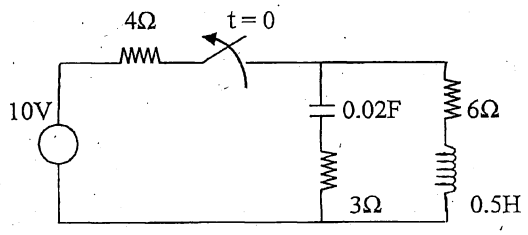
14. Using midpoint series compensation power transfer capability of the transmission line can be

A. Halved
B. Doubled
C. made proportional to degree of series compensation
D. can not be controlled

15. Equal area criterion is used to find out:

A. Steady state stability
B. Transient stability
C. Dynamic stability
D. None of the above

16. Find inductor current just before switching in the circuit shown. Assume that the circuit has reached steady state at t=0-



A. 1.6A
B. 2.5A
C. 1A
D. Zero

17. The transfer function for the state variable representation $X=AX+Bu$, $Y=CX+Du$ is given by :

A. $D+C(sI-A)^{-1}B$
B. $B(sI-A)^{-1}C+D$
C. $D(sI-A)^{-1}B+C$
D. $C(sI-A)^{-1}D+B$

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18. What will be the ratio of the CT on the HV side of a three phase star/delta 33/11 kV transformer if the protecting CT on the low voltage side has a ratio of 300:5?

A. 200: 5/√3
B. 100: 5/√3
C. 150:4/√3
D. 120:6/√3

19. Mho relay is used for the protection of

A. Short line
B. Long line
C. Medium line
D. None of the above

20. Keeping in view the cost and overall effectiveness which circuit breaker is best suited for capacitor bank switching

A. Vaccum
B. Oil
C. Air Blast
D. SF6

Answer any three (10 Marks each)

1. Explain speed torque characteristics of a dc shunt motor
2. Develop equivalent circuit of induction motor
3. Explain differential protection in transformers
4. Draw the circuit of a half controlled rectifier with high value of inductive load and plot output voltage and input current
5. Explain any one method for load flow analysis
6. What are the causes and effects of unbalance in power system

Answer any two (15 Marks each)

1. Explain conventional and non-conventional source of energy
2. Explain V/F control of induction motor
3. Explain the working of a boost converter with proper diagram
4. Explain P,PI.PID controllers and compare its performance

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