

WRITTEN TEST FOR THE POST OF
JE(Electrical) (SPS-8)
17th June 2019

Advertisement No. 02-2019
Sr. No. 02

Roll No. _____

Time allowed: 90 min
Total MCQ's: 60

Total Marks: 120

Instructions:

- Must check/till the entries of Name, Roll No, CNIC, Test Centre City and Signature in ANSWER SHEET
- Select the best suitable answer among the given options under each question and blacken the corresponding answer (option) on your answer sheet
- Overwriting/erasing is not allowed on the given ANSWER SHEET
- Question paper must be returned along with ANSWER SHEET at the end of the test
- Each correct answer will carry three marks. Please note that one mark will be deducted for each incorrect answer
- Mobile phones are strictly prohibited in the examination hall. Anyone found with a mobile phone inside the examination hall, his/her paper will be cancelled.

1. In a transformer
 - a) Open circuit and short circuit tests are conducted on low voltage side
 - b) Open circuit and short circuit tests are conducted on high voltage side
 - c) Open circuit test is conducted on high voltage side and short circuit test on low voltage side
 - d) Open circuit test is conducted on low voltage side and short circuit test on high voltage side
2. In a 50 kVA transformer the number of turns in the primary and secondary windings are 834 and 58 respectively. If the primary is connected to 3300 V supply the secondary current will be approximately
 - a) 15 A
 - b) 30 A
 - c) 218 A
 - d) 438 A
3. If full load copper loss of a transformer is 800 W, its copper loss at 75% load will be
 - a) 800 W
 - b) 450 W
 - c) 400 W
 - d) 200 W
4. When a transformer operates under no load conditions, the current
 - a) Will lag the applied voltage by 90°
 - b) Will lag the applied voltage by about 75°
 - c) Will lead the applied voltage by about 75°
 - d) Will be in phase with the applied voltage
5. In a NPN transistor, when emitter junction is forward biased and collector junction is reverse biased the transistor will operate in
 - a) Active region
 - b) Saturation region
 - c) Cut-off region
 - d) Inverted region
6. A transformer has primary to secondary turn ratio of 10. Every single ohm of reactance on secondary winding when referred to primary will be following times
 - a) 0.1 ohm
 - b) 1 ohm
 - c) 10 ohm
 - d) 100 ohm
7. No load current in a transformer as a percentage of full load current is approximately
 - a) 25%
 - b) 15% to 20%
 - c) 5% to 10%
 - d) 1% to 3%
8. A push pull amplifier balances out
 - a) Odd harmonics
 - b) Even harmonics
 - c) Both odd as well as even harmonics
 - d) Neither odd nor even harmonics
9. The residual magnetism of a dc shunt generator can be regained by
 - a) Connecting the shunt field to a battery
 - b) Running a generator on no load for sometime
 - c) Earthing the shunt field
 - d) Reversing the direction of the generator
10. The decrease in terminal voltage of a shunt generator is due to
 - a) Amature resistance
 - b) Amature reactance
 - c) Amature leakage
 - d) None of these

11. The total losses in a well-designed DC generator of 10 kW will be nearly equal to _____
 a) 100 W b) 500 W c) 1000 W d) 1500 W
12. Out of the following losses in dc machines, which one has the highest proportion?
 a) Armature copper loss b) Field copper loss c) Hysteresis loss d) Eddy Current loss
13. While pole flux remains constant, if the speed of a shunt wound dc generator is doubled, its generated emf
 a) Will be doubled b) Will be halved c) Will remain unaltered d) Will tend to decrease slightly
14. A shunt generator running at 600 rpm has an induced emf of 200V. If the speed increases to 750 rpm, the induced emf will be
 a) 150V b) 205V c) 225V d) 250V
15. Following controls are considered for dc motors?
 I Control of flux
 II Armature resistance control
 III Supply voltage control
- Which of the above controls play significant role in the speed control of dc motors?
 a) I only b) II and III only c) I and III only d) I, II and III
16. If the flux of dc motor approaches zero
 a) Its speed will approach zero b) Its speed will remain unchanged
 c) The motor will stop d) The motor will tend to run at infinite speed
17. Which of the following is the most stable oscillator?
 a) Wein bridge oscillator b) Hartley oscillator
 c) Colpitts oscillator d) Crystal controlled oscillator
18. If C be the capacitance, then frequency of oscillations in case of Wein bridge oscillator is proportional to
 a) $\frac{1}{C}$ b) $\frac{1}{C^2}$ c) C d) C^2
19. A 3-phase induction motor is running at 2% slip. If the input to rotor is 1000 W, then mechanical power developed by the motor is:
 a) 500 W b) 200 W c) 20 W d) 980 W
20. If a 3-phase induction motor is running at slip s , then, rotor copper loss is equal to.
 a) $(1 - s) \times$ Rotor input b) $(1 + s) \times$ Rotor input c) $s \times$ Rotor input d) $s \times$ stator input
21. Impedance relay is used on
 a) Short transmission lines b) Medium transmission lines
 c) Long transmission line d) All the transmission lines.
22. In high voltage transmission lines the top most conductor is
 a) R-phase conductor b) Y-phase conductor c) B-phase conductor d) Earth conductor.
23. When load factor and diversity factor increases _____
 a) Cost of electricity decreases b) Cost of electricity also increases
 c) Cost of electricity remains same d) Cost of electricity increases exponential
24. In AC voltage controllers the
 a) Variable ac with fixed frequency is obtained
 b) Variable ac with variable frequency is obtained
 c) Variable dc with fixed frequency is obtained
 d) Variable dc with variable frequency is obtained
25. Permissible pH value of water for boilers is
 a) 1 b) 4.5 c) Slightly more than 7 d) 10
26. Three 3 ohm resistors are connected to form a triangle. What is the resistance between any two of the corners?
 a) $3/4$ ohms b) 3 ohms c) 2 ohms d) $4/3$ ohm.

27. Four identical resistors are first connected in parallel and then in series. The resultant resistance of the first combination to the second will be
 a) 1/16 times b) 1/4 times c) 4 times d) 16 times
28. A heating element of a hot plate on an electric cooking range draws 12 amperes from 240 V mains. How many kWh of energy will be consumed in one hour and 15 minutes
 a) 1.2 b) 3.6 c) 6.0 d) 7.2
29. The ratio V_{rms}/V_{dc} is known as
 a) Form factor b) Ripple factor c) Utilization factor d) None of the mentioned
30. In Q(s) plane, Nyquist plot is symmetrical about the :
 a) Imaginary axis b) Real axis c) Origin d) None of the mentioned
31. A signal of maximum frequency of 10 KHz is sampled at Nyquist rate. The time interval between two successive sample is
 a) 50 micro sec b) 100 micro sec c) 1000 micro sec d) 5 micro sec
32. What is the number of the root locus segments which do not terminate on zeroes?
 a) The number of poles b) The number of zeroes
 c) The difference between the number of poles and zeroes
 d) The sum of the number of poles and the number of the zeroes
33. Maximum efficiency of a class C amplifier is around
 a) 50% b) 78.5% c) 80% d) 90%
34. Thermal runaway of a transistor occurs when
 a) Heat dissipation from transistor is low
 b) Transistor joints are melt due to high temperature
 c) There is excessive leakage current due to temperature rise d) None of these
35. Class B amplifier has less efficiency compared to
 a) Class A b) Class AB c) Class C d) Class A, AB and C
36. Which component of RC coupled amplifier is mainly responsible for the fall of gain in low frequency range
 a) Transistor b) Coupling capacitor c) Grid leak resistor d) Stray shunt capacitance
37. For a Wein-bridge oscillator, the frequency f is given by
 a) $f = \frac{1}{2\lambda\sqrt{RC}}$ b) $f = \frac{1}{\sqrt{2\lambda RC}}$ c) $f = \frac{1}{2\lambda RC}$ d) $f = \frac{2\lambda}{RC}$
38. Which of the following circuit can be used for converting a sine wave to a square wave?
 a) A Schmitt trigger b) bistable multi vibrator c) A astable multivibrator d) All of these
39. A single-phase full bridge diode rectifier delivers power to a constant load current of 10 A. The average and rms values of the source currents will be respectively.
 a) 5 A, 10 A b) 10 A, 10 A c) 5 A, 5 A d) 10 A, 5A
40. Which of the following devices does not belong to the transistor family?
 a) IGBT b) MOSFET c) GTO d) BJT
41. For a power transistor, which of the following relations is true?
 a) $I_e > I_c > I_b$ b) $I_b > I_c > I_e$ c) $I_c > I_e > I_b$ d) $I_e = I_b$
42. The N-channel MOSFET is considered better than the P-channel MOSFET due to its
 a) Low noise levels b) TTL compatibility c) Lower input impedance d) Faster operation
43. Find the output voltage expression for a step down dc chopper with V_s as the input voltage and α as the duty cycle.
 a) $V_o = V_s/\alpha$ b) $V_o = V_s \times \alpha$ c) $V_o = V_s^2/\alpha$ d) $V_o = 2V_s/\alpha\pi$
44. If the peak message signal amplitude is half the peak amplitude of the carrier signal, the signal is _____ modulated.
 a) 100% b) 2% c) 50% d) 70%
45. In a transformer minimum voltage regulation occurs when the power factor of the load is
 a) Unity b) 0.707 c) Lagging d) Leading

46. A dc series motor develops a torque of 20 N.m at 3 A of load current. If the current is increased to 6 A, the torque developed will be
 a) 10 N.m b) 20 N.m c) 40 N.m d) 80 N.m
47. A relay used on long transmission lines is
 a) mho's relay b) Reactance relay c) Impedance relay d) No relay is used.
48. Which is the most expensive bus bar scheme?
 a) Single bus bar scheme b) Ring bus bar scheme
 c) Double bus bar double breaker d) Main and transfer scheme.
49. In power station practice "spinning reserve" is
 a) Reserve generating capacity that is in operation but not in service
 b) Reserve generating capacity that is connected to bus and ready to take the load
 c) Reserve generating capacity that is available for service but not in operation
 d) Capacity of the part of the plant that remains under maintenance.
50. High frequency transformers are used for output voltage isolation and scaling in the following type of power supplies
 a) Switched mode power supplies b) Linear power supplies
 c) Hybrid power supplies d) Both (a) and (c)
51. Hajj (Pilgrimage) became obligatory in _____ AH
 a) 9 b) 8 c) 7 d) 6
52. The longest Surah of the Qur'an is:
 a) Surah al Baqarah b) Surah al Imran c) Surah al Tauba d) Surah Yunus
53. *Namaz-e-Istasqa* is related to _____
 a) Peace for nation b) Blessing of Allah c) Rain d) None of these
54. When did Pakistan become member of UNO
 a) 30th September 1947 b) 30th September 1948
 c) 30th September 1952 d) None of them
55. Panama canal connects"
 a) Pacific Ocean with Caribbean Sea b) Atlantic Ocean with Pacific Ocean
 c) Red Sea with Pacific Ocean d) Mediterranean Sea with Red Sea
56. World War II started in the year?
 a) 1940 b) 1939 c) 1857 d) 1942
57. Which is the shortest day in northern Hemisphere?
 a) 1st January b) 22nd December c) 30th December d) 1st December
58. Opposite of Melancholy is
 a) Sad b) Happy c) lonely d) None of these
59. Sum of prime numbers from 60 to 80?
 a) 361 b) 341 c) 351 d) 349
60. How many times do the hands of a clock coincide in a day
 a) 20 b) 21 c) 22 d) 24

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