Punjab
JE (Electrical)

Previous Year Paper
2011

Test Booklet Code **B** **Test Booklet Sr No.**

TEST PAPER

Marks: 100 **Time: 60 minutes**

ROLL NO.: _____	**NAME:** _____
SIGNATURE: _____	**DATE / TIME:**_____

	INSTRUCTIONS FOR THE CANDIDATES
1.	Before attempting the paper carefully read out all the Instructions & Examples given on Side 1 of Answer Sheet (OMR Sheet) supplied separately.
2.	At the start of the examination, please ensure that all pages of your Test booklet are properly printed; your Test booklet is not damaged in any manner and contains 100 questions. In case of any discrepancy the candidate should immediately report the matter to the invigilator for replacement of Test Booklet. No claim in this regard will be entertained at the later stage.
3.	An **OMR Answer Sheet** is being provided separately along with this Test booklet. Please fill up all relevant entries like Roll Number, Test Booklet Code etc. in the spaces provided on the OMR Answer Sheet and put your signature in the box provided for this purpose.
4.	Make sure to fill the correct Test booklet code on Side 2 of the OMR Answer Sheet. If the space for the Booklet Code is left blank or more than one booklet code is indicated therein, it will be deemed to be an incorrect booklet code & Answer Sheet will not be evaluated. The candidate himself/herself will be solely responsible for all the consequences arising out of any error or omission in writing the test booklet code.
5.	**This Test Booklet consists of 08 pages containing 100 questions**. Against each question four alternative choices (1), (2), (3), (4) are given, out of which one is correct. Indicate your choice of answer by darkening the suitable circle with **BLACK/BLUE pen** in the OMR Answer Sheet supplied to you separately. Use of Pencil is strictly prohibited. More than one answer indicated against a question will be deemed as incorrect response.
6.	The maximum marks are 100. Each question carries one mark. **There will be no negative marking. The total time allocated is 60 minutes.**
7.	Do not fold or make any stray marks on the OMR Answer Sheet. Any stray mark or smudge on the OMR Answer Sheet may be taken as wrong answer. Any damage to OMR Answer Sheet may result in disqualification of the candidate.
8.	**On completion of the test, candidate must hand over the OMR Answer Sheet to the invigilator on duty in the room/hall.**
9.	**Use of Mobile phones and calculators etc. are not allowed.**
10.	**Keep all your belongings outside the Examination hall. Do not retain any paper except the ADMIT CARD.**

1	In ring main distribution systems, the distributor is fed (1) By one feeder	(2) By two feeders	(3) At different points	(4) By four feeders
2	Spot pricing is about (1) Power factor improvement (3) Tariff/ rate at different times		(2) kVA demand reduction (4) Generation cost reduction	
3	A synchronous machines has higher capacity for (1) Leading power factor (3) Does not depend upon the power factor of machine		(2) Lagging power factor (4) None of the above	
4	A separately excited dc generator is running at rated speed and at no load. If its field winding is suddenly connected to a dc source then rise in armature generated voltage is governed by (1) Armature time constant (3) Both (a) and (b)		(2) Field time constant (4) Mechanical time constant	
5	A 1-phase, 7.46 kW motor is supplied from a 400 V, 50 Hz A.C mains. Its efficiency is 85% and power factor is 0.8 lagging. Calculate the KVA input (1) 9.56 kVA	(2) 5.4 Kva	(3) 10.97 kVA	(4) 8.6 kVA
6	Heat control switches are used in (1) Transformer	(2) Cooling ranges	(3) 3-phase induction motors	(4) 1-phase motors
7	In permanent magnets, the desired features are (1) High retentivity, low corecitivity (3) Low retentivity, low corecitivity		(2) Low retentivity, high corecitivity (4) High retentivity, high corecitivity	
8	Which of the following alternatives will be cheaper (1) A 100 h.p AC, 3-phase motor (3) Five motors of 20 h.p each		(2) Four motors of 25 h.p each (4) 10 motors of 10 h.p each	
9	The efficiency of modern steam turbines is about (1) 50%	(2) 85%	(3) 75%	(4) 90%
10	One 200 V, 100 W bulb is connected in series with primary of a 200 V, 10 kVA transformer. If its secondary is kept open circuited, then the bulb would have (1) Full brightness (3) A little less than full brightness		(2) Poor brightness (4) More than full brightness	
11	Two monthly tariff are offered as Rs 3000+Rs 0.90/kWh Rs 3/kWh At what consumption/ month is tariff (i) is more suitable for consumer (1) 1526.8 kWh	(2) 1428.6 kWh	(3) 1450.4 kWh	(4) 1582.4 kWh
12	A diesel plant has good efficiency at (1) Plant load	(2) Half load	(3) Full load	(4) None of the above
13	The maximum demand of consumer is 2 kW and his daily energy consumption is 20 units. Its Load Factor is (1) 10.15%	(2) 41.6 %	(3) 50 %	(4) 60%
14	Pelton turbine is used for water head is (1) >200 m	(2) 30-200 m	(3) < 30 m	(4) <100 m
15	Filament lamp at staring will take current (1) Less than its full running current (3) More than its full running current		(2) Equal to its full running current (4) None of the above	
16	When a resistance element of a heater gets fused. We remove a portion of it and reconnect it to the same supply, the power drawn by the heater will (1) Increase	(2) Decrease	(3) Remain unchanged	(4) None of the above

17	The most appropriate operating speeds in rpm of generators used in thermal, nuclear and hydro power plants would respectively be (1) 3000, 3000 and 1500 (2) 3000, 3000 and 300 (3) 1500, 1500 and 500 (4) 1000, 900 and 750
18	Power factor of running induction motor is better when (1) Running at half load (2) Full load (3) ¾ of load (4) None of the above
19	Electric are welding process produces temperature up to (1) 1000^0 C (2) 1500^0 C (3) 3500^0 C (4) 5550^0 C
20	For internal faults in generator, the primary protection is provided by (1) Earth fault relay (2) Differential relay (3) Induction type inverse definite minimum time relay (4) Definite minimum time relay
21	Luminous flux is (1) The light energy radiated by sun (2) The part of light energy radiated by sun, which is received on the earth (3) The rate of energy radiation in the form of light waves (4) None of the above
22	If X is the system reactance and R is its resistance, the power transferred is maximum when (1) X=R (2) X=1.414 R (3) X=1.732 R (4) X=2R
23	The all-day efficiency of a transformer is the ratio of (1) kWh output and kWh input per day (2) kWh output and kWh input in a day (3) output power and input power (4) input power and output power
24	The efficiency of a transformer at full load0.8 p.f lagging is 90%. Its efficiency at full load 0.8 p.f leading will be (1) Less than 90% (2) More than 90% (3) 90% (4) None of these
25	Doherty rate is suitable for (1) Industrial customers (2) Domestic customers (3) Agricultural customers (4) Commercial customers
26	For blowers which of the following motor is preferred? (1) D.C. series motor (2) D.C. shunt motor (3) Squirrel cage induction motor (4) Wound rotor induction motor
27	A meter whose constant is 600 revolutions/kWh makes 5 revolutions in 20 seconds. Calculate theload in kW. (1) 0.5 kW (2) 1 kW (3) 1.5 kW (4) 2 kW
28	An alternator with frequency f1 is to be synchronized with an infinite bus of frequency f. For proper synchronization (1) f1=f (2) f1<f (3) f1>f (4) either (b) or (c)
29	Short-circuit kVA is obtained by multiplying the base kVA by (1) 10% *X* (2) 20% *X* (3) 50% *X* (4) 100% *X*
30	The most commonly used moderator material in nuclear plant is (1) Carbon (2) Water (3) Co_2 (4) Liquid metal
31	The overall efficiency of thermal station is (1) 40% (2) Less than 40% (3) More than 40% (4) 50%
32	Light duty cranes are used in which of the following? (1) Power houses (2) Pumping stations (3) Automobile workshops (4) All of the above
33	A transformer when supplying a load, maintained at 11 kV across load terminals. When the load was switched off, the terminal voltage becomes 11550 V, what is the voltage regulation at this load? (1) 11.55 % (2) 5.5% (3) 5% (4) 55%
34	The power factor of a spot welding machine is expected to be around (1) Unity (2) 0.8 lagging (3) 0.3-0.5 lagging (4) 0.8 leading

35	In induction heating, the depth upto which the current will penetrate is proportional to (1) f (2) f^2 (3) $1/f$ (4) $1/\sqrt{f}$
36	While selecting motor for an A.C which of the following characteristics is of great importance (1) Type of bearings (2) Type of enclosure (3) Noise (4) Arrangement for power transmission
37	The staring torque in case of centrifugal pumps is generally (1) Less than running torque (2) Same as running torque (3) Slightly more than running torque (4) Double the running torque
38	Transformer voltage is maximum when two coils are (1) Normal to each other (2) Aligned along the same axis (3) 60^0 away from each other (4) 270^0 away from each other
39	A dc shunt motor runs at 500 r.p.m at 220 V. A resistance of 4.5 Ω is added in series with the armature for speed control. The armature resistance is 0.5 ohms. The current to stall the motor will be (1) 44 A (2) 50 A (3) 44.4 A (4) 60 A
40	In sodium vapour lamp the function of the leak transformer is (1) To stabilize the arc (2) To increase the supply voltage (3) Both (a) and (b) (4) None of the above
41	In the equivalent circuit of a 3-phase induction motor, the mechanical load on the motor can be represented by a resistance of value (1) R_2 (2) R_2/S (3) $R_2(1-S)/S$ (4) $(R_2/S)+1$
42	The direction of rotation of an ordinary shaded pole single phase induction motor (1) Can be reversed by reversing the supply terminal connections to the stator winding (2) Cannot be reversed (3) Can be reversed by open circuit the shading rings (4) Can be reversed by short circuit the shading rings
43	The most efficient from of damping employed in electrical instruments is (1) Air friction (2) Fluid friction (3) Eddy current (4) None of the above
44	The diameter of the rotor shaft for an electric motor depends on which of the following (1) rpm only (2) hp only (3) hp and rpm (4) hp, rpm and Power factor
45	For a normal wire, the approximate value of fusing current is given by (1) $I=K(d)^{3/2}$ (2) $I=K(d)^3$ (3) $I=K(d)^{3/4}$ (4) $I=(K\,d)^{3/2}$
46	Cost of low voltage capacitor /kVAr is (1) More than cost of high voltage capacitor/kVAr (2) Is independent of voltage level (3) Less than cost of high voltage capacitor/kVAr (4) Is function of size of capacitor
47	During 3-phase short circuit on a unloaded alternator, the dc component may be zero in (1) One phase only (2) Any two phases (3) All three phases (4) None of the above
48	Transformer zero voltage regulation occurs at (1) Unity power factor (2) Leading power factor (3) Lagging power factor (4) Zero power factor leading
49	Which of the following is not equivalent to watts? (1) Amperes*volts (2) $(\text{Amperes})^2$*ohm (3) Amperes/volt (4) Joules per second
50	When two alternators A and B are operating in parallel, the increase in steam supply to alternator A will cause the active power output of (1) Alternator A to be decreased and alternator B to be increased (2) Alternators A and B is not affected (3) Alternators A and B is increased (4) Alternator A to be increased and alternator B to be decreased

51	The correlation between utilization factor, load factor and capacity factor is (1) Utilization factor=load factor*capacity factor (2) Capacity factor= Utilization factor*load factor (3) Capacity factor=Utilization factor/Load factor (4) Load factor=Utilization factor*capacity factor
52	A moving coli ammeter has a fixed shunt of 0.02 Ω with a coil circuit resistance of R=1 kΩ and needs potential of 0.5 V across it for full scale deflection. Calculate the value of shunt to give full scale deflection when the total current is 10 A. (1) 0.05 Ω (2) 0.005 Ω (3) 0.5 Ω (4) 0.0005 Ω
53	Moving iron instruments can be used for measuring (1) Direct currents and voltages (2) Radio frequency currents (3) A.C currents and voltages (4) Both (a) and (c)
54	Plugging of dc motors is carried by (1) Reversing only the field and armature polarity (2) Reversing only the field polarity (3) Reversing only the armature polarity (4) Disconnecting the armature from supply and connecting across a resistance
55	If supply voltage decreases by 4% the torque in 3-phase induction motor would decrease by (1) 4% (2) 16% (3) 8% (4) 7.84%
56	The ratio of the primary to secondary voltage of a transformer is 2:1. The saving in the turns of weight of copper required if an autotransformer is used instead of two winding transformer is (1) 50% (2) 33.33% (3) 66.67% (4) 97%
57	Which of the following methods of heating is not dependent on the frequency of supply (1) Induction heating (2) Dielectric heating (3) Electric resistance heating (4) All of the above
58	An alternator is connected to a bus. For a symmetrical fault at the bus, the fault level is 60 MVA. If another alternator is connected to the same bus, the new fault level will be (1) 120 MVA (2) 60 MVA (3) 30 MVA (4) 15 MVA
59	Synchronous motor is found more economical when the load is above (1) 2 kW (2) 20 kW (3) 50 kW (4) 100 kW
60	The maximum torque that a synchronous motor can deliver is proportional to (1) $1/V^2$ (2) 1/V (3) V (4) V^2
61	Ash content of Indian coal is (1) 40% (2) 50% (3) 35% (4) 45%
62	the division of active power amongst alternators running in parallel depends upon (1) speed-load characteristics of prime mover (2) V-I characteristics of alternator (3) Excitation voltages of alternators (4) Both (b) and (c)
63	Pumped storage plant is suitable for (1) Peak loads (2) Off peak loads (3) Average load (4) Medium load
64	The tariff generally used for tubewell loads is (1) Flat demand (2) Straight meter rate (3) Block meter (4) None of the above
65	The electrode of a direct are furnace is made of (1) Tungsten (2) Graphite (3) Silver (4) Copper
66	The number of parallel paths in armature winding of four pole wave winding connected dc machine having 22 coil sides is (1) 4 (2) 22 (3) 2 (4) 11
67	Domestic consumers are charged at (1) Block meter rate (2) Flat demand (3) Two part tariff (4) Straight rate meter
68	Which of the following is present inside the fluorescent tube (1) Argon and neon (2) Argon and co_2 (3) Mercury vapour (4) Helium and oxygen

69	The coolant used in Nuclear power stations is (1) Hydrogen	(2) CO_2	(3) Lithium	(4) Neon
70	Differential protection is used for protection against (1) Phase fault	(2) Unbalanced voltage fault	(3) Unbalanced Current fault	(4) Overcurrent fault
71	A synchronous machine with large SCR has (1) Poor voltage regulation (3) Low short circuit current		(2) Poor stability (4) More synchronizing power	
72	The main function of economizer of a boiler in a plant is to (1) Increase steam production (3) Increase stem pressure		(2) Reduce fuel consumption (4) Increase life of the boiler	
73	The supply both to field and armature circuits are disconnected simultaneously in a separately excited dc motor and it comes to a standstill in 5 sec. If the armature circuit of this motor is disconnected from supply with field circuit remaining energized, the motor would come to rest in (1) 5 sec	(2) 7 sec	(3) 4 sec	(4) A very long time
74	In case of a power transformer, the no load current in terms of rated current is (1) 10-20%	(2) 15-30%	(3) 2-6%	(4) 30-50%
75	Which of the following lamp cannot sustain much voltage fluctuations (1) Sodium vapour lamp	(2) Mercury vapour lamp	(3) Incandescent lamp	(4) Fluorescent lamp
76	Use of synchronous condenser improves (1) Power factor	(2) System stability	(3) Reduces losses	(4) All of the above
77	Short circuit in a system causes which type of faults (1) Series	(2) Shunt	(3) Symmetrical	(4) All of the above
78	A star arrangement of resistances has branch resistance of 3 Ω. The equivalent delta arrangement will have resistance of values (1) 9 Ω	(2) 6 Ω	(3) 3 Ω	(4) 1 Ω
79	The welding load is always (1) Continuous but varying (3) Intermittent		(2) Continuous and constant (4) None of the above	
80	The vapour discharge tube used for domestic lighting has (1) No filament	(2) One filament	(3) Two filament	(4) Three filament
81	The changes in real bus power affects mainly (1) the bus voltage phase angles (3) reactive line flows		(2) bus voltage magnitude (4) none of the above	
82	The torque produced in a 4-pole machine is 100 Nm. If machine is re-wound with 6 ploes, other things remaining the unchanged, then the torque produced would be (1) 66.67 Nm	(2) 100 Nm	(3) 150 Nm	(4) 133.33 Nm
83	The role of moderator is to (1) Speed up of neutrons (3) To start fission reaction		(2) Slow down the fast neutrons (4) To control the fusion	
84	In AC system, the voltage drops are due to (1) Resistance	(2) Inductance	(3) Capacitance	(4) All of the above
85	A salient pole machine delivers maximum power when δ is (1) 90^0	(2) $0\text{-}45^0$	(3) $45\text{-}90^0$	(4) 60^0
86	The role of surge tank in a hydroelectric plant is to (1) Increase water hammer and reduce vacuum (3) Increases water hammer and vacuum		(2) Decrease water hammer and increase vacuum (4) Reduces water hammer and vacuum	

87	A reluctance motor (1) Is provided with slip rings (2) Requires starting gear (3) Has high cost (4) Is compact
88	For precision work, the illumination level required is of the order of (1) 500-1000 lumens/m^2 (2) 200-400 lumens/m^2 (3) 50-100 lumens/m^2 (4) 10-25 lumens/m^2
89	100. A series R-L circuit is suddenly connected to d.c. voltage source of V volts. The current in this series circuit, just after the switch is closed, is equal to (1) Zero (2) V/L (3) V/C (4) V.L/C
90	A dc series motor when connected across an AC supply will (1) Develop torque in same direction (2) Not develop any torque (3) Draw dangerously high current (4) Develop a pulsating torque
91	Typical value of SCR for modern turbo alternator is (1) 1 (2) 1.2 (3) 0.5 (4) 1.5
92	A 3-phase, 2 pole, 11 kV, 10000 kVA alternator has earthed neutral through a resistance of 7.0Ω. The machine has current balance protection which operates if out of balance current exceeds 20% of full load. Determine %age of winding protected against earth fault (1) 10.6% (2) 11.6% (3) 10.9% (4) 11.2%
93	The value of group diversity factor is any generating station is (1) Less than 1 (2) Equal to 1 (3) Greater than 1 (4) None of the above
94	A delta connected 400 V, 50 Hz, 3-phase induction motor when started direct-on-line takes a starting current of 30 A. When the motor is started through a star-delta starts, the starting current will be (1) 3A (2) 10 A (3) 15 A (4) 30 A
95	The phenomenon of squirrel cage motors sometimes showing tendency to run at very low speed is known as (1) Cogging (2) Crawling (3) Damping (4) Skewing
96	A dynamometer type wattmeter with its voltage coil connected across the load side of instrument reads 250 W. If the load voltage be 200 V, what power is being taken by load? The voltage coil has resistance of 2000 Ω. (1) 200 W (2) 215W (3) 230 W /(4) 245 W
97	To limit the short circuit current during fault conditions: (1) Reactors are used (2) Capacitors are used (3) A coil of high inductive reactance as compared to its resistance is used (4) Both (a) and (c)
98	To enable dc series motor work satisfactory with an AC supply, the following modifications should be done (1) The yoke and poles should be completely laminated (2) The poles should be made of laminated steel (3) The air gap between stator and rotor be reduced (4) Compensating poles should be introduced
99	Hysteresis and eddy current loss are used in (1) Induction heating of steel (2) Dielectric heating (3) Induction heating of brass (4) Resistance heating
100	An A.C current is given by i=100sin100. It will achieve a value of 50 A after (1) 1/600 sec (2) 1/300 sec (3) 1/1800 sec (4) 1/900 sec

ROUGH WORK