

Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

B.Tech Degree S6 (R,S) (FT/WP/PT) Examinations April 2026 (2019 Scheme)



Course Code: EET308

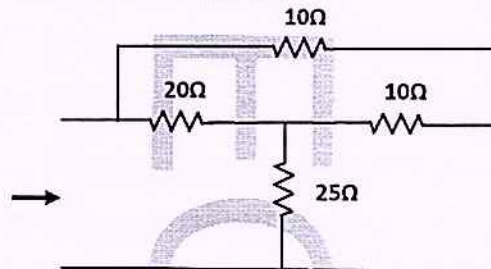
Course name: COMPREHENSIVE COURSE WORK

Max. Marks: 50

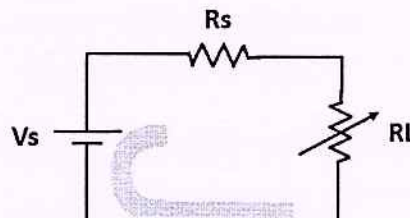
Duration: 1 Hour

- Instructions:**
- (1) Each question carries one mark. No negative marks for wrong answers
 - (2) Total number of questions: 50
 - (3) All questions are to be answered. Each question will be followed by 4 possible answers of which only ONE is correct.
 - (4) If more than one option is chosen, it will not be considered for valuation.

1. The magnetic analogue to electric current is
 - a) MMF
 - b) Flux
 - c) Flux density
 - d) EMF
2. In an RLC series circuit, if the voltage across capacitor is greater than voltage across inductor, then power factor of the network is
 - a) lagging
 - b) leading
 - c) unity
 - d) zero
3. Calculate the effective resistance of the given circuit.



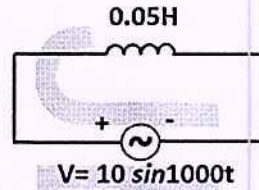
- a) 30Ω
 - b) 45Ω
 - c) 35Ω
 - d) 25Ω
4. For the given circuit, for what value of R_L the maximum power is transferred to R_L .



- a) $R_L = R_s$
 - b) $R_L = 0$
 - c) $R_L = R_s/2$
 - d) $R_L = 2R_s$
5. In a series R, L circuit, voltage across resistor and inductor are 3 V and 4 V respectively, then what is the applied voltage?

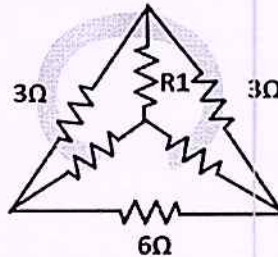
- a) 4V b) 5V c) 4V d) 1V

6. Find the value of current in the circuit.



- a) $i = 0.2 \cos 1000t$ b) $i = -0.2 \cos 1000t$ c) $i = 2 \cos 1000t$ d) $i = -2 \cos 1000t$

7. Calculate the value of R_1 , using delta to star conversion.



- a) $R_1 = 0.5\Omega$ b) $R_1 = 1\Omega$ c) $R_1 = 0.65\Omega$ d) $R_1 = 0.75\Omega$

8. Cascade connection of two port networks is analyzed through

- a) ABCD parameters b) Z parameters c) Y parameters d) h parameters

9. Reciprocity condition for h parameters is

- a) $h_{12} = h_{21}$ b) $h_{12} = -h_{21}$ c) $h_{12} = h_{21}$ d) $h_{11}h_{22} - h_{21}h_{12} = 0$

10. According to duality principle a series inductor (L) can be represented as

- a) Series L b) Parallel L c) Series C d) Parallel C

11. The function of oil in a transformer is to provide

- a) Insulation and cooling b) Protection against lightning c) Protection against short circuit d) Lubrication

12. Two transformers operating in parallel will share the load depending up on their

- a) Rating b) Leakage reactance c) Efficiency d) Per unit impedance

13. In an autotransformer, power is transferred through

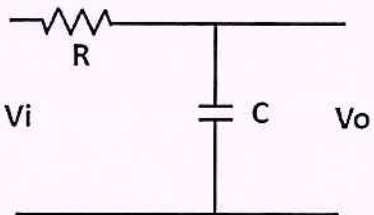
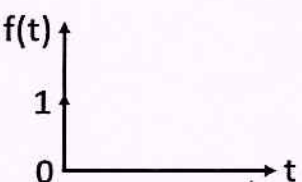
- a) Conduction only b) Induction only c) Conduction and induction process d) Mutual coupling

14. What is the load at which maximum efficiency occurs in case of a 100kVA transformer with iron loss of 1kW and full-load copper loss of 2kW.

- a) 100kVA b) 50.5kVA c) 70.7kVA d) 25.2kVA

- 15 A sinusoidal flux of 0.02Wb links with 55 turns of a transformer secondary coil. What is the rms value of the induced emf in the secondary, if the supply frequency is 50Hz .
 a) 244.2V b) 334.2V c) 414.2V d) 504.2V
- 16 The current drawn by a 220V DC motor of armature resistance of 0.5Ω and a back emf of 200V is
 a) 40A b) 44A c) 400A d) 440A
- 17 The dummy coil in DC machine is used to
 a) Increase the efficiency b) Improve commutation c) Reduce the cost of the machine d) Maintain mechanical balance of the armature
- 18 The generator efficiency of a shunt generator will be maximum when its variable loss is equal to
 a) Constant loss b) Stray loss c) Iron loss d) Friction and windage loss
- 19 A four pole DC machine has 54 slots. It is lap wound with single turn coil. How many armature coils are required.
 a) 27 b) 54 c) 81 d) 108
- 20 The structure of a DC commutator machine is generally designed with
 a) Non-salient stator and salient rotor b) Salient stator and non-salient rotor c) Salient stator and salient rotor d) Non-salient stator and non-salient rotor
- 21 The logic function $A+BC$ is the simplified form of which of the following?
 a) $AB+BC$ b) ABC c) $(A+B)(A+C)$ d) $(A+B)C$
- 22 Race-around condition occurs in
 a) Multiplexers b) ROM c) Flip-flops d) Voltage regulator
- 23 Converter the binary number $(100101)_2$ to decimal.
 a) 73 b) 21 c) 45 d) 37
- 24 If the output of a logic gate is '1' then all its inputs are at logic '0', the gate is either
 a) NAND or NOR b) AND or Ex-NOR c) OR or NAND d) Ex-NOR or Ex-NOR
- 25 NAND and NOR gates are called universal gates primarily because
 a) They are available everywhere b) They are widely used in IC packages c) They can be combined to produce AND, OR and NOT gates d) They can be manufactured easily
- 26 D-flip-flop can be made from JK flip-flop by making
 a) $J=K$ b) $J=K=0$ c) $J=0, K=1$ d) $J=\bar{K}$
- 27 Which on the following circuits is classified as sequential logic circuit

- a) Full adder b) Half adder c) Counter d) Comparator
- 28 The reduced state table of a sequential machine has 7 rows. What is the minimum number of flip-flops needed to implement the machine?
a) 2 b) 3 c) 4 d) 7
- 29 The expression MOD number for a ripple counter with N flip-flop is
a) N b) 2^N c) $2^N - 1$ d) 2^{N-1}
- 30 The resolution of a 12-bit analog to digital converter in percent is
a) 0.01220 b) 0.02442 c) 0.04882 d) 0.09760
- 31 A power station's plant load factor is defined as the ratio of
a) Energy generated to that of the maximum energy that could have been generated b) Average load to peak load c) Minimum load to peak load d) Minimum load to average load
- 32 For heads about less than 30meter, which type of turbine is used in hydro power plants.
a) Pelton b) Kaplan c) Francis d) All the above
- 33 The daily energy produced in a thermal power station is 720MWh at a load factor of 0.6. What is the maximum demand of the station.
a) 50MW b) 30MW c) 72MW d) 720MW
- 34 Air pollution due to smoke around a thermal power station can be reduced by installing
a) Induced draft fan b) Super heater c) Economizer d) Electrostatic precipitator
- 35 The surge impedance of a 3-phase, 400kV transmission line is 400Ohms. The surge impedance loading (SIL) is
a) 400MW b) 100MW c) 1600MW d) 200MW
- 36 Which one of the following equations is correct? Where, A, B, C, D are the generalized circuit constants.
a) $-AB + CD = -1$ b) $AD + CB = 1$ c) $AB - CD = -1$ d) $-AD + BC = -1$
- 37 When is the Ferranti effect on long overhead lines experienced?
a) The line is lightly loaded b) The line is heavily loaded c) The line is fully loaded d) The power factor is unit
- 38 When the bundled conductors are used the effective inductance and capacitance will, respectively
a) Increase and decrease b) Decrease and increase c) Decrease and remain unaffected d) Increase and remain unaffected
- 39 Electricity supply systems are invariably three-phase and they are so designed and loaded that the operation is
a) Delta connected b) Balanced three-phase c) Unbalanced three-phase d) Star connected
- 40 What is the approximate efficiency of a normal thermal power station?

- a) 30-40% b) 45-55% c) 20-25% d) 60-70%
- 41 With negative feedback, the system stability and system gain respectively
- a) Increase and decrease b) Decrease and increase c) Decrease and remain unaffected d) Increase and remain unaffected
- 42 The transfer function of the circuit as shown in the figure is expressed as
- 
- a) $\frac{R}{1 + sRC}$ b) $\frac{s}{1 + sRC}$ c) $\frac{1}{1 + sRC}$ d) $\frac{1}{1 + RC}$
- 43 What does the function $f(t)$ plotted in the given figure represent?
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- a) Unit step function b) Unit ramp function c) Unit impulse function d) Unit parabolic function
- 44 The response of an initially relaxed system to a unit ramp excitation is $(t + e^{-t})$. Its step response will be
- a) $0.5(t^2 - e^{-t})$ b) $(1 - e^{-t})$ c) $-e^{-t}$ d) t
- 45 What is the steady-state response due to a unit step input to the given function?
- $$\frac{2(s+3)}{(s+2)(s+4)}$$
- a) $4/3$ b) $1/2$ c) $3/4$ d) 1
- 46 For a unit feedback control with $G(s) = \frac{9}{s(s+3)}$ the damping ratio is
- a) 0.5 b) 1 c) 0.707 d) 0.33
- 47 In order to recover the original signal from the sampled one, what is the condition to be satisfied for sampling frequency ω_s and is the maximum frequency ω_m ?
- a) $\omega_m < \omega_s < 2\omega_m$ b) $\omega_m < \omega_s$ c) $\omega_m = \omega_s$ d) $2\omega_m < \omega_s$
- 48 What is the ROC of z-transform of a two-sided infinite sequence?

- a) $|z| > r1$ b) $|z| < r1$ c) $r2 < |z| < r1$ d) None of the mentioned
- 49 If two blocks having gains A and B respectively are in series connection, find the resultant gain using block diagram reduction technique?
a) $A + B$ b) $A * B$ c) $A - B$ d) A/B
- 50 Transient state analysis deals with
a) Magnitude of error b) Nature of response c) Both 1 and 2 d) None of the above
