F 3519 (Pages : 2) Reg. No.....

Name.....

B.TECH. DEGREE EXAMINATION, NOVEMBER 2016

Third Semester

Branch : Common to all Branches

EN 010 302—ECONOMICS AND COMMUNICATION SKILLS

(AI, AN, AU CE, CH, CS, EC, EE, EI, IC, IT, ME, MT, PE, PO, ST)

[New Scheme—2010 Admission onwards]

(Improvement/Supplementary)

Time : Three Hours Maximum : 100 Marks

Part A

Answer **all** *questions.*
Each question carries 3 *marks.*

1. What are the functions of Commercial banks ?
2. Mention *six* MNC's other than IT field.
3. What is meant by tax evasion system ?
4. Mention the measures to control inflation.
5. What is TRIPS and TRIMS ?

(5 × 3 = 15 marks)

Part B

Answer **all** *questions.*
Each question carries 5 *marks.*

6. Explain the role of Small Scale Industries (S.S.I.).
7. Explain the disadvantages of privatisation.
8. Comment on deficit financing.
9. What is demand pulls and cost push effects of inflation ?
10. Explain the impact of WTO decisions on Indian industry.

(5 × 5 = 25 marks)

Part C

Answer **all** *questions.*
Each full question carries 12 *marks.*

11. Explain the role of RBI in Indian Economy.

Or

12. Comment on the role of stock markets. Briefly explain the problems facing by Indian stock markets.

Turn over

13. Discuss the role of MNC's in Indian Economy.

Or

14. Discuss the future prospects of IT industry in India.

15. Write notes on the following :—

(a) PI. (b) DPI.

(c) GNP.

Or

16. Explain the difficulties in estimating national income.

17. Explain the direct and indirect taxation system of the Ministry of Finance in India.

Or

18. Explain the consiquences and steps to control the tax evasion system.

19. Explain the causes of disequilibrium in India's Balance of Payments (BOP).

Or

20. Explain the importance of General Agreement on Tariff's and Trade (GATT).

(5 × 12 = 60 marks)

F 3536 (Pages : 2) Reg. No.....

Name.....

B.TECH. DEGREE EXAMINATION, NOVEMBER 2016

Third Semester

Branch : Electrical and Electronics Engineering

EE 010 304—ELECTRICAL MEASUREMENTS AND MEASURING INSTRUMENTS [EE]

(New Scheme—2010 Admission onwards)

[Improvement/Supplementary]

Time : Three Hours Maximum : 100 Marks

Part A

Answer **all** *questions.*
Each question carries 3 *marks.*

1. Differentiate between Accuracy and Precision.
2. Indicate, how contact and lead resistances are eliminated in Kelvin's double bridge ?
3. What is creeping ?
4. The secondary of current transformer should not be kept open. Why ?
5. List the difficulties encountered in the measurement of magnetic quantities.

(5 × 3 = 15 marks)

Part B

Answer **all** *questions.*
Each question carries 5 *marks.*

6. Discuss the operating principle of PMMC Instrument.
7. Discuss with the help of suitable diagram, how a potentiometer can be used for measurement of unknown resistance ?
8. Explain the direct deflection method for measurement of high resistances.
9. Obtain the expression for ratio and phase angle error in current transformer.
10. With block diagram, explain the operation of digital voltmeter.

(5 × 5 = 25 marks)

Part C

Answer **all** *questions.*
Each full question carries 12 *marks.*

11. (a) Discuss the construction and operation of Electrostatic voltmeter.

(8 marks)

(b) In a PMMC instrument, a current of 10 A deflects the pointer by 90 °. Find the value of current for a deflection of 60 °, if the instrument is gravity controlled.

(4 marks)

Or

Turn over

12. (a) Discuss the construction and working of Moving Iron ammeter.

(8 marks)

(b) A phosphorbronze spring has the following dimensions : Length of strip = 400 mm, Thickness of strip = 0.075 mm, width of strip = 0.5 mm. The young's modulus of phosphor bronze = 12×10^9 kg/m^2. Estimate the torque exerted by the spring when it is turned through 90 °.

(4 marks)

13. (a) Draw the diagram of ac polar potentiometer and explain its working.

(7 marks)

(b) Explain the measurement of capacitance using Schering bridge.

(5 marks)

Or

14. (a) Explain the operation of a bridge for measuring self inductance of high Q coils.

(7 marks)

(b) What are the applications of potentio meters ?

(5 marks)

15. (a) Describe the construction and working of single-phase induction type Energymeter.

(8 marks)

(b) An energymeter whose constant is 1500 revolutions per kWh makes 20 revolutions in 30 seconds. Calculate the load in kW.

(4 marks)

Or

16. Write short notes on the following :

(a) Earth Meggar. (6 marks)

(b) Maximum demand meter. (6 marks)

17. Explain the construction of potential transformer. Draw its phasor diagram and obtain expressions for ratio and phase angle error.

Or

18. Write short notes on the following :

(a) Measurement of speed. (6 marks)

(b) Calibration of wattmeter. (6 marks)

19. (a) With block diagram, explain the operation of CRO.

(7 marks)

(b) Explain the function of permeameters.

(5 marks)

Or

20. (a) Explain the method of reversal for experimental determination of hysteresis loop of a magnetic specimen.

(7 marks)

(b) Write the concept of digital storage oscilloscope.

(5 marks)

[5 × 12 = 60 marks]

F 3548 (Pages : 2) Reg. No.....

Name.....

B.TECH. DEGREE EXAMINATION, NOVEMBER 2016

Third Semester

Branch : Electrical and Electronics Engineering

EE 010 305—ELECTRONIC CIRCUITS (EE)

(New Scheme—2010 Admission onwards)

[Improvement/Supplementary]

Time : Three Hours Maximum : 100 Marks

Part A

Answer **all** *questions.*
Each question carries 3 *marks.*

1. Define Operating point. Explain its significance.
2. Discuss the merits, demerits and applications of different transistor configurations—*i.e.* Common Emitter, Common Lease and Common Collector.
3. Explain Cross-over distortion in power amplifiers.
4. What are the conditions of oscillations ?
5. What is a sweep generator ? Where it is employed ? Name any *three* sweep generators.

(5 × 3 = 15 marks)

Part B

Answer **all** *questions.*
Each question carries 5 *marks.*

6. What are Clampers ? Explain the working of positive and negative clamping circuits with and without biasing.
7. What is a Buffer amplifier ? Why it is employed in a circuit ? Give its input and output impedances.
8. Explain the advantages of using a push-pull configuration in a power amplifier circuit.
9. With block diagram, explain how feedback is employed in an amplifier circuit. List its merits and demerits.
10. With diagram, explain the operation of a Zener shunt regulator.

(5 × 5 = 25 marks)

Turn over

Part C

Answer **all** *questions.*
Each full question carries 12 *marks.*

11. (a) With necessary diagrams, explain the construction, structure and working of a UJT.

    (b) Explain the operation of an FET amplifier.

Or

12. Explain the operation of the following circuits :

    (i) Differentiator and integrator.

    (ii) MOSFET amplifier.

13. Explain the working of a two stage RC coupled amplifier and its frequency response characteristics. Compare its performance with a single stage amplifier.

Or

14. Explain the following terms :

    (i) *h*-parameters.

    (ii) Gain-bandwidth product.

    (iii) Input impedance and output admittance.

15. With circuit diagram, explain the operation of single tuned and double tuned amplifiers. Plot frequency curves and compare low performance of both with special mention to Q and bandwidth.

Or

16. With circuit diagram, explain the working of complementary symmetry push-pull amplifiers. Discuss the advantages of using such a configuration.

17. With circuit diagram, explain the operation of voltage shunt feedback amplifier circuit.

Or

18. Explain with circuit diagram, the operation of any *one* LC oscillator. Give its frequency of oscillation.

19. Describe the design procedure of an astable multi-vibrator. Sketch and explain its output waveshapes.

Or

20. Describe with suitable diagrams the working of the following circuits :

    (i) Bootstrap sweep generator.

    (ii) Transistor series regulator.

(5 × 12 = 60 marks)

F 3559 (Pages : 2) Reg. No.....

Name.....

B.TECH. DEGREE EXAMINATION, NOVEMBER 2016

Third Semester

Branch : Electrical and Electronics Engineering

EE 010 306—MECHANICAL TECHNOLOGY [EE]

(New Scheme—2010 Admission onwards)

(Improvement/Supplementary)

Time : Three Hours Maximum : 100 Marks

Part A

Answer **all** *questions.*
Each question carries 3 *marks.*

1. Give the units of the following in SI units-Pressure, density, Bulk modulous, Dynamic and Kinematic viscosity and surface tension.
2. Draw the sketch of a venturi meter with manometer connection when the flow in towards RHS.
3. Explain the functions of a draft tubes in reaction turbines.
4. What do you mean by priming of pumps ?
5. What is cavitation ? How the effects can be reduced ?

(5 × 3 = 15 marks)

Part B

Answer **all** *questions.*
Each question carries 5 *marks.*

6. Explain how the metacentric height can be obtained for a floating body ? Mention the ranges.
7. With a neat sketch, explain the working of rota meters.
8. Explain evolution of present day hydraulic turbines from the ancient water wheels.
9. Explain the importances of various kinds of impellers of pumps.
10. What are the functions of air vessels ? Give a sketch when air vessels are filled on both sides of a reciprocating pumps.

(5 × 5 = 25 marks)

Turn over

Part C

Answer **all** *questions.*
Each full question carries 12 *marks.*

11. Explain the working of different kinds of manometer.

Or

12. With a neat sketch, explain the working of a Bourden tube pressure gauge.

13. Why governers are essential for turbines ? Explain the working of a governor in Francis turbines.

Or

14. Explain the working of a Pelton turbine. Mention the ranges of head and specific speed.

15. Explain the working of a hydraulic ram. Where it is used ? What are the efficiencies of a hydraulic ram ?

Or

16. Explain the working of a centrifugal pump. Distinguish between centrifugal pumps and reciprocating pumps.

17. Define Bernoulli's theorem. Mention the assumptions. Derive an equation for Bernoullis theorem.

Or

18. What are notches ? Explain, how the discharge is measured in laboratory with a triangular notch ?

19. Derive an equation for acceleration head for a reciprocating pump.

Or

20. What do you mean by slip ? Derive an equation for the efficiency and work done of a double acting reciprocating pump.

(5 × 12 = 60 marks)

F 3526 (Pages : 6) Reg. No.....

Name.....

B.TECH. DEGREE EXAMINATION, NOVEMBER 2016

Third Semester

Branch : Electrical and Electronics Engineering

EE 010 303—ELECTRIC CIRCUIT THEORY (EE)

(New Scheme—2010 Admission onwards)

[Improvement/Supplementary]

Time : Three Hours Maximum : 100 Marks

Part A

Answer **all** *questions.*
Each question carries 3 *marks.*

1. State and explain Tellegen's theorem.
2. Obtain the Laplace Transform of $\delta(t-1)$.
3. Define cut set and tie set.
4. List any *three* properties of Brune's positive real functions.
5. State the advantages of 3-phase system over single phase system.

(5 × 3 = 15 marks)

Part B

Answer **all** *questions.*
Each question carries 5 *marks.*

6. Calculate the current through each resistor of the circuit shown in Fig. 1 using nodal analysis.

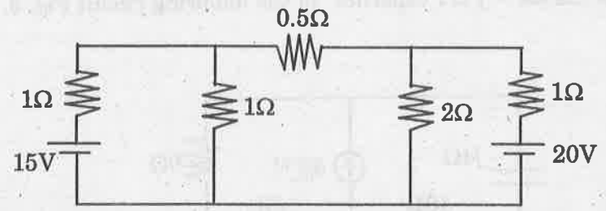


Fig. 1

7. A series RL circuit with R = 10 Ω and L = 2H is excited by a voltage $6u(t)$. Determine the current $i(t)$ and $\frac{di}{dt}$ at $t = 0^+$.

Turn over

8. Explain with suitable examples (i) · PROBE ; (ii) · TRAN statements in PSPICE.

9. Two coupled coils with self inductances $L_1 = 0.6\,H$ and $L_2 = 0.28\,H$ have a coefficient of coupling 0.8. If the current in the first coil is $i_1 = 10 \sin 100t$ A, determine the voltage in the second coil.

10. A 3-phase balanced 400 V ABC source is connected to an unbalanced star-connected load having $R_A = 4\Omega, R_B = 3\Omega$ and $R_C = 5\,\Omega$. Find the neutral shift voltage.

(5 × 5 = 25 marks)

Part C

Answer **all** *questions.*
Each full question carries 12 *marks.*

11. Find the Thevenin and Norton equivalents of the circuit showing in Fig. 2. Also find the maximum power that can be delivered to a resistive load connected to $a - b$:

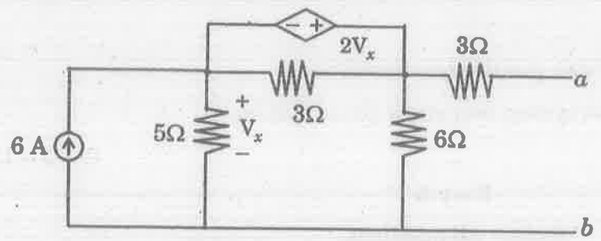


Fig. 2

Or

12. Find V_0 the voltage across $-j\,2\Omega$ capacitor in the following circuit Fig. 3, using Superposition theorem :

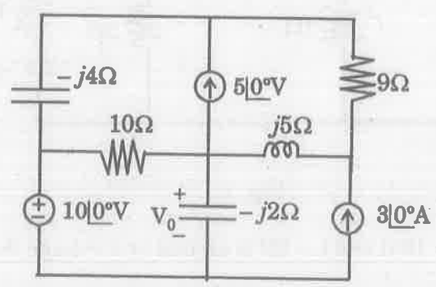


Fig. 3

(b) Three equal resistors are connected in Δ across a 3-phase balanced source. If one resistor is removed, find the percentage decrease in power.

(3 marks)

[5 × 12 = 60 marks]

13. In the circuit shown in Fig. 4, the switch K is closed at $t = 0$ with the network previously unenergized. For the network element values shown, calculate $i_1(t)$ and $i_2(t)$ using Laplace Transform :

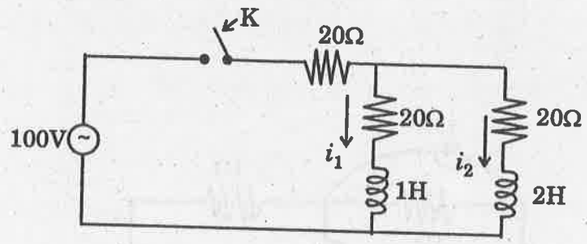


Fig. 4

Or

14. In the network shown in Fig. 5 below, the switch K is moved from 1 to 2 at $t = 0$. Solve for the current $i(t)$ using Laplace Transform method.

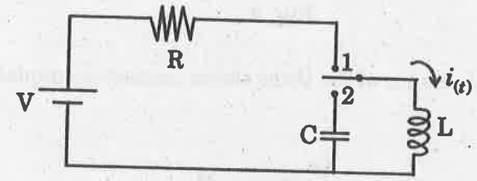


Fig. 5

15. For the network shown in Fig. 6, draw a graph and write a tie-set schedule. Using this obtain the loop equations and find currents and voltages in all branches.

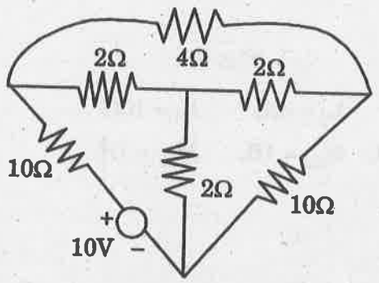


Fig. 6

Or

16. Write the cut-set schedule for the network shown in Fig. 7 on the basis of tree branch voltage as independent variables, using cut-set schedule determine all branch currents and branch voltages :

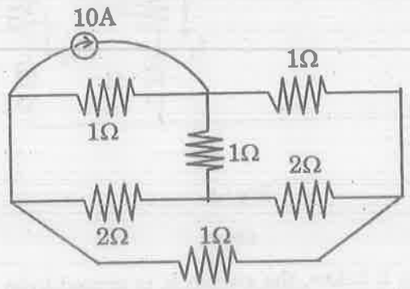


Fig. 7

17. (a) Calculate the total inductance of the three series connected coupled coils shown in Fig. 8.

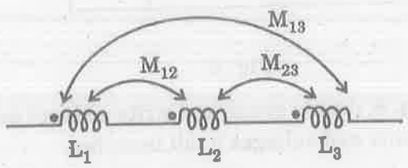


Fig. 8

Given : $L_1 = 2H$, $L_2 = 4H$, $L_3 = 10H$
$M_{12} = 0.5$ H, $M_{23} = 1H$, $M_{13} = 1H$.

(6 marks)

(b) Calculate the voltage drop across R_L.

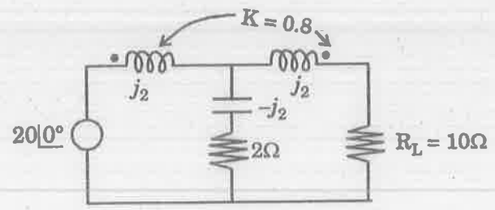


Fig. 9

(6 marks)

Or

18. What are the properties of RC impedance functions ? Realize the following RC driving point impedance $Z(s) = \frac{s^2 + 7s + 10}{s^2 + 4s + 3}$ in Foster II and Caver II forms.

19. Three impedances $Z_A = 20\angle 30°$, $Z_B = 20\angle 60°$ and $Z_C = 20\angle -30°$ are connected in Y across a 400 V, 3 phase, 3 wire, ACB sequence symmetrical sources. Find :

(a) Potential of star point of load with respect to neutral.

(b) Load phase voltages.

(c) Current in the lines.

(d) Total real, reactive and apparent powers.

(e) Balanced delta connected resistors that would take same real power as the above load from the same source.

Or

20. (a) Three currents in RY, YB and BR branches of a delta connected system with symmetrical voltages are 50 A at pf 0.8 lagging, 60 A at pf 0.7 leading and 40 A at u.p.f. respectively. Calculate the current in each line. Phase sequence is RYB. Also find the balanced Δ connected resistors which would take the same power from the above source.

(9 marks)

F 3601 (Pages : 3) Reg. No.....

Name.....

B.TECH. DEGREE EXAMINATION, NOVEMBER 2016

Third Semester

Branch : Electrical and Electronics Engineering

POWER GENERATION AND DISTRIBUTION (E)

(Prior to 2010 Admissions—Old Scheme)

[Supplementary/Mercy Chance]

Time : Three Hours Maximum : 100 Marks

Part A

Answer **all** *questions.*
Each question carries 4 *marks.*

1. Write the significance of higher values of Load factor and Diversity factor.
2. What are the factors involved in designing the tariff ?
3. Define the terms Service main and Distributor.
4. How to perform the Distribution System maintenance ?
5. State Kelvin's Law. Explain its limitations.
6. Explain the power factor improvement.
7. Derive an expression for capacitance of single core cable.
8. Briefly explain the extra high voltage cables.
9. Explain the generation of high voltage D.C. using cascade circuits.
10. Briefly explain the impulse voltage.

(10 × 4 = 40 marks)

Part B

Answer **all** *questions.*
Each full question carries 12 *marks.*

11. (a) Explain : (i) Connected load factor ; (ii) Demand factor and ; (iii) Plant factor. (6 marks)

Turn over

(b) A generating station has a maximum demand of 35,500 kW and a connected load of 65,000 kW. The number of units generated annually is 25.6×10^7. Calculate : (i) The load factor ; (ii) The demand factor.

(6 marks)

Or

12. Compare different types of tariff. (12 marks)

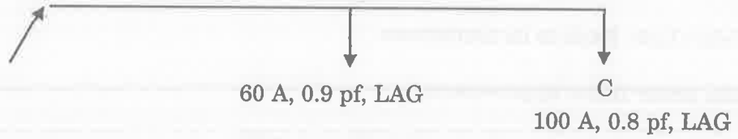
13. (a) Explain various systems of d.c. distribution. (6 marks)

(b) A 2-wire d.c. distributor 200 metres long is uniformly loaded with 2 A / metre. Resistance of single wire is 0.3 Ω / km. If the distributor is fed at one end, calculate : (i) The voltage drop up to a distance of 150 m from the feeding point ; (ii) The voltage drop.

(6 marks)

Or

14. A two wire distributor 1 ,200 m long is loaded as shown in figure B is the midpoint.



The power factors at the two load points refer to the voltage at C. The impedance of each line is $(0.15 + j\ 0.2)\ \Omega$. Calculate the sending end voltage, current and power factor. The voltage at point C is 220V.

15. (a) List the important rules regarding the supply of electrical energy. (6 marks)

(b) A 500V, 2-core feeder 0.8 km, long is required to supply a constant load of 100 kW. The cost of the cable including installation charges is Rs.(6a + 1.3) per metre where 'a' is the cross-sectional area of each conductor in sq.cm. The rate of interest and depreciation is 10 %. Determine the economical size. Cost of energy is 2P. per unit. Specific resistance of copper is $1.75 \times 10^{-6}\ \Omega$ per cm^2 cross sectional area and 1 cm. long.

(6 marks)

Or

16. Explain the different methods of power factor improvement.

17. Explain single core and three core underground cables in detail with neat diagrams.

Or

18. What is the purpose of grading of cable ? Explain the intersheath grading of cable.

19. Explain voltage multiplier and Electrostatic machines in detail with diagrams.

Or

20. Explain cascade transformers and series resonance circuits in detail for A.C. high voltage generation.

(5 × 12 = 60 marks)