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| **Scheme of Valuation/Answer Key**  (Scheme of evaluation (marks in brackets) and answers of problems/key) | | | | | |
| **APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**  THIRD SEMESTER B.TECH DEGREE EXAMINATION, DECEMBER 2018 | | | | | |
| **Course Code: CS207** | | | | | |
| **Course Name: ELECTRONIC DEVICES AND CIRCUITS** | | | | | |
| Max. Marks: 100 | | |  | Duration: 3 Hours | |
| **PART A** | | | | | |
|  |  | ***Answer all questions, each carries3 marks.*** | | | Marks |
| 1 |  | Circuit and design equation-2marks, output wave form-1mark | | | (3) |
| 2 |  | Write any 3 features | | | (3\*1) |
| 3 |  | Line regulation and load regulation- concept – 2 marks  Equation for percentage of regulation-1 mark | | | (2+1=3) |
| 4 |  | Sweep circuit with transistor -2 marks  Wave form-1 mark | | | (2+1) |
| **PART B** | | | | | |
| ***Answer any two full questions, each carries9 marks.*** | | | | | |
| 5 | a) | Identify correct function of circuit-1 mark  (i) 1.5 marks (ii) 1.5 marks, (iii) Wave form - 2 marks | | | (1+ 1.5+1.5+2=6) |
|  | b) | Voltage tripler-circuit+ explanation | | | (3) |
| 6 | a) | necessity of Current fold back and current limit protection .- | | | (2) |
|  |  | circuit and graphs | | | (5+2) |
| 7 | a) | structure of depletion mode MOSFET + explain its operation with characteristics | | | (4+3) |
|  | b) | Distinguish between enhancement and depletion mode MOSFET-any 2 differences | | | (2) |
| **PART C** | | | | | |
| ***Answer all questions, each carries3 marks.*** | | | | | |
| 8 |  | Importance of biasing in transistors + significance of operating point. | | | ( 2+1) |
| 9 |  | Effect of cascading in gain and bandwidth of Amplifier | | | (3) |
| 10 |  | Conditions for getting sustained oscillation - 1.5 mark each | | | (1.5\*2=3) |
| 11 |  | Difference between positive and negative feedback -1 mark, Give one application of each.- 1mark each | | | 1+2=3 |
| **PART D** | | | | | |
| ***Answer any two full questions, each carries9 marks.*** | | | | | |
| 12 | a) | Reason-2 marks, circuit-2 marks, equation showing independence of beta-5 marks | | | (2+2+5=9) |
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| 13 | a) | |Hartley oscillator to generate a frequency of 150KHz -circuit-1.5 , design -1.5mark, working-2mark | | | (1.5+1.5+2=5) |
|  | b) | Circuit of RC coupled amplifier—2 mark, specify functions of components-2marks | | | (2+2=4) |
| 14 | a) | Circuit-2marks, design -2 mark, working-5mark | | | (2+2+5=9) |
| **PART E** | | | | | |
| ***Answer any four full questions, each carries10 marks.*** | | | | | |
| 15 | a) | Features of ideal op-amp | | | (2) |
|  | b) | Op-amp can act as integrator, differentiator, adder, subtractor | | | (4\*2=8) |
| 16 | a) | (1) Slew rate, (2)CMRR, (3) offset voltage(4)Offset current | | | (4\*2=8)) |
|  | b) | Practical values for IC 741 | | | (2) |
| 17 | a) | Circuit + equations +waveforms+ working of a Schmit trigger | | | (2+2+2+4=10) |
| 18 | a) | Explain with a binary data- circuit, + explanation=1.5+1.5 | | | (3) |
|  | b) | Circuit and frequency response of active lowpass and high pass filters- 2.5marks each for circuits with explanation and 1 marks each for frequency response with explanation. Also draw the circuit of a second order active low pass filter-2 marks | | | (1.5\*2+1\*2+2=7) |
| 19 | a) | working of any one type of ADC.-flash type OR Dual slope OR SAR type- circuit(4), working (4) | | | 4+4 = 8 |
|  | b) | ADC -any two specifications- 2marks | | | 2 |
| 20 | a) | Functional block diagram(1.5 marks), explain the working of 555 Timer IC(2.5marks), | | | 1.5 +2.5 = 4 |
|  | b) | .Write design equations and pin out of 555 TIMER IC working as astable multivibrator to generate a wave form of 1KHz.  If Design is with proper duty cycle- 4 for design and 2 for correct duty cycle,  Else give 4 marks only. | | | 4+2 = 6 |
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