Registration No : | | | | | | | | | | |

Total Number of Pages : 01 **M.Tech**

EEPE102

1st Semester Back Examination 2019-20

PROTECTION AND DIGITAL RELAYING

BRANCH : ELECTRI & ELECTRO ENGG (POWER SYSTEM ENGG), ELECTRICAL ENGG., ELECTRICAL POWER SYSTEM, POWER SYSTEM ENGG, POWER SYSTEMS

Time : 3 Hours

Max Marks : 70

Q.CODE : HB866

Answer Question No.1 which is compulsory and any FIVE from the rest.

The figures in the right hand margin indicate marks.

Q1 **Answer the following questions :** **(2 x 10)**

a) Define the terms: (i) burden (ii) operating time of a relay.
b) State the reasons for using IDMT relays for overcurrent protection.
c) Draw the offset mho relay characteristics.
d) Why is it considered to keep the secondary of the CT open circuited?
e) Briefly explain Plug Setting Multipler.
f) List two short comings of microprocessor-based relays.
g) What are the advantages of digital relays over conventional relays?
h) Why is it necessary to extract the fundamental frequency component from the complex post fault relaying signals?
i) How the DC offset is removed in the short window Fourier algorithms?
j) What is the role of anti-aliasing filter in a digital relay?

Q2 **a)** Illustrate the effect of arc resistance on the performance of distance relays **(5)**
b) What do you understand by swivelling characteristics? Explain **(5)**

Q3 **a)** Explain phase comparison carrier current protection. **(5)**
b) What is the difference between circulating current principle and balanced voltage scheme principle with respect to pilot protection scheme? **(5)**

Q4 **a)** What is Translay scheme of Pilot Wire Protection? **(5)**
b) Explain the use of blinders. How to distinguish between power swing and fault by the use of blinders? Explain with diagram. **(5)**

Q5 **a)** What are the Compensation used for correct distance measurement? **(5)**
b) Derive the generalized mathematical expression for quadrilateral relay. **(5)**

Q6 Explain with necessary diagram the principle of operation of a distance protection scheme. How a 3 zone stepped units help to achieve fast discrimination? **(10)**

Q7 Describe microprocessor-based relays with clearly mentioning its major functional blocks and its signal flow diagram. **(10)**

Q8 **Write short Notes on any TWO :** **(5 x 2)**

a) Restricted mho relay
b) Quadrilateral relay
c) Pilot relaying schemes