## LAGOS CITY POLYTECHNIC, IKEJA

SCHOOL OF ENGINEERING AND APPLIED SCIENCE
Derive the expression for the reliability of a system in terms of exponential 1. model. DEBAREMENT OF ELECTRICAL/ELECTRONICS ENGINEERING Series system (ii) Parallel 2016/2017 SEMESTER EXAMINATION 2. following: (a) Explain the **MTTR** Bath tube curve **MTTF** (iii) (ii) COURSE Availability TEST ING Mainte METHOD Spe**ElfTdaffo**n (v) & Mentiainance RELIABÍLITY OF (vii) **QUESTION:** GOURSE OF GOVERNMENT OF THE PROPERTY OF A CERTAIN CONTINUENT, A JOLOWED TO CONTINUE TO CON period FÓR WHOM: HND YR I EE, CE **INSTRUCTIONS:** PT Answer<sub>a)</sub> locting 200 begins slike times to failure left for gordinants are also we extended produi. failure (b) Derive the expression for the **Sailus**e system  $(ii)^1$   $^{1}$ Parallel  $^{1}$ (i) 1 system  $t_1 = 2$   $t_2 = 4$   $t_3 = 8$   $t_4$  following: Explain ime (x100hrs)  $t_0 = t \theta e$ 2. (a) (i) 10 **MTTF** (ii) t<sub>6</sub> MTTR (iii) Bath tube cur Availability (vi) Specification Maintenibility (iv) (v) g<del>y</del>ii) Mentialinancents survived without failure. the failure can ignored. use out be Assuming or in ordernto determinenthe MTBEseeda certain component, softwere tested four (b) period hours without asting 2001 hours. The times to failure of the spannonents are shown in the table below: **MTBF** (iv) Endutesting is made on six (non-repairable) electrical lamps and the (i) 3. (a) following Time (x100hrs)  $t_0 = 0_{\text{wert}} = 2$   $t_2 = 4$   $t_3 = 8$  $t_4 = \text{obtained}$ . 10 15 **Failure** 0 1 1 1 1 **3**5 components survived without failure. Figure (1500Hrs) out<sub>0</sub> = thilure<sub>1</sub> =  $t_{ant_2}$  =  $t_{be}$ 0  $t_{ig}$   $t_{a}$   $t_{be}$ 0  $t_{be}$ 1  $t_{be}$ 2  $t_{be}$ 3  $t_{be}$ 3  $t_{be}$ 4  $t_{be}$ 3  $t_{be}$ 4  $t_{be}$ 5  $t_{be}$ 6  $t_{be}6$   $t_{be}6$  tAssuming The tested hours before failure (i) 2Botal without failure (ii) Total tested hours Total Calculate Mitatis survival (iii) **EXTEN** the classification failure (vii) 3. (a) ExplainLife thesting fivenade footorisx (nother pairable) seelectrical steamps and lither following results R1 R2 R3 R4wereR5 R6 R7 R8 obrained. 4. (a) R(t) R10 Reliability **Failure** 0 1 1 1 1 0.87 **¥**alues 0.97 0.87 0.98 0.98 0.99 0.96 0.96 0.87  $t_1 = 4$   $t_2 = 10$   $t_3 = 16$   $t_4 = 20$   $t_5$  $t_0 = 0$ Time (100Hrs) Determine 23 the of the (i) total reliability system. ofsystem What (ii) in type Sketch Calculate the (iii) system block dipograma classification failure the A complex communication satellite has an in built microwave repeater unit (b)

five

factors that courses

having (b)

Explain

the