

Register Number .....

**B.E. DEGREE EXAMINATIONS: APRIL/MAY 2012**

Eighth Semester

**AERONAUTICAL ENGINEERING**

U07ARE13: Helicopter Maintenance

**Time: Three Hours**

**Maximum Marks: 100**

**Answer All Questions:-**

**PART A (10 x 1 = 10 Marks)**

1. Colour code for multi bladed system?  
A. red and white dots    B. blue and yellow    C. white and green    D. blue and green
2. Bearing is used where movement in more than one direction  
A. ball bearing    B. roller bearing    C. spherical bearing    D. none
3. Dynamic component to ensure rotor stability  
A. clutch    B. sprag    C. mercury clutch    D. stabilizer bar
4. Rotary motion is transferred in to linear motion  
A. bell crank    B. torque tube    C. linkage    D. push-pull rod
5. Misalignment in the drive shaft is accommodated by  
A. rotor brake    B. clutch    C. flexible couplings    D. all the above
6. Speed reduction in helicopter by  
A. bevel gears    B. planetary gears    C. couplings    D. both A and B
7. Ignition system is composed of  
A. capacitor discharge exciter    B. spark ignition lead    C. igniter    D. all the above
8. Hot gases moves through combustor making 180degree turn  
A. can type    B. annular    C. reverse flow combustor    D. none
9. Cabin section of helicopter mostly made of  
A. steel    B. plastics    C. glass    D. polycarbonate glass fibers
10. Special inspection is done in helicopters on  
A. over torque    B. sudden stoppage    C. heavy landings    D. all the above

**PART B (10x2 = 20 Marks)**

11. What is lash and pattern?
12. What are the common defects on bearings?

13. Differentiate span wise and chord wise balance?
14. Define blade sweeping?
15. What is collective pitch?
16. What is the principle of sprag clutch?
17. What are the factors reducing compressor efficiency?
18. State the purpose of tail rotor?
19. Define ground resonance?
20. What is bonded construction?

**PART C (5x14=70 Marks)**

21. a) (i) Explain the types of elastomeric bearings used in helicopters with the diagram? (7)  
(ii) What is mooring? Write the safety precautions observed while using ground wheels? (7)

**(OR)**

- b) (i) Describe general procedure of installation of bearings? (7)  
(ii) Enumerate advantages and disadvantages of elastomeric bearings? (7)

22. a) (i) Explain the methods of ground tracking of helicopter with suitable diagrams? (7)  
(ii) What is control rigging? Explain the basic procedure of control rigging in helicopter? (7)

**(OR)**

- b) (i) Write short notes on  
(a) Mixer box (2)  
(b) Mast (2)  
(c) Counter weight adjustment (3)  
(ii) Describe the inspections carried out on main rotor head? (7)

23. a) Explain about vibrations in helicopter and mounting systems used to dampen vibrations?

**(OR)**

- b) Explain the function of components fitted between engine and transmission with suitable diagrams?

24. a) Write short notes on

- (i) Modular concept (7)
- (ii) Correlation system (7)

**(OR)**

b) Explain the modifications carried out on fixed wing power plant to fit in helicopters?

25. a) Write about special equipments used in helicopter for various tasks?

**(OR)**

b) Explain the basic structural components of a helicopter?

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