FACULTY OF ENGINEERING

B.E. 4/4 (ECE) I – Semester (Main) Examination, November / December 2016

Subject: Microwave Engineering

Time: 3 Hours   **Max. Marks: 75**

Note: Answer all questions from Part A. Answer any five questions from Part B.

PART – A (25 Marks)

1   Distinguish between micro strip line and strip line   2

2   Difference between TWT and multi cavity klystron, both being amplifiers.   3

3   Define cut-off magnetic field in a magnetron.   2

4   List the applications of cavity resonator.   2

5   Sketch the characteristics of a Varactor diode.   2

6   What is   mode of operation in a Magnetron?   2

7   Give reasons for variation of gain and frequency in TWT amplifier?   3

8   What is the dominant mode in rectangular waveguide?   2

9   List the properties of S matrix.   4

10   Sketch the characteristics of a GUNN diode.   3

PART – B (5X10 =50 Marks)

11 Derive the field expressions for TE modes in a parallel plate waveguide.   10

12 For a rectangular wave guide of size 2.28 X 1 cm, frequency of propagating signal
   is 10 GHz. Find the characteristic wave impedance , phase velocity. What will be the
   input VSWR if this guide is terminated in a load of 400 Ohms?   10

13 a) Derive the S matrix of Directional Coupler.   06

   b) What are Ferrites? Explain the Faradays Law for ferrites.   04

14 With the help of velocity diagram derive the condition for oscillation and explain
   with sketches working principle of   Reflex Klystron. Draw the mode characteristics.   10

15 What is a PIN diode? Describe its applications. Explain the phenomenon of "Gunn
   Effect" with neat figures   10

16 Explain the working principle of a microwave phase shifter with a neat sketch.
    What is frequency pushing and Frequency pulling? How to avoid these problems?   10

17 Discuss in detail limitations of conventional tubes and also the remedies for these
   problems.   10

****

FACULTY OF ENGINEERING

B.E. 4/4 (Prod.) I – Semester (Main) Examination, November / December 2016

Subject: Production Drawing Practice

Time: 3 Hours   **Max.Marks: 75**

Note: Answer all questions from Part A. Answer any five questions from Part B.

PART – A (25 Marks)

1 Mention the contents of an industrial production drawing and explain relevance of different items.
2 What is the difference between Hole basis and Shaft basis for fits.
3 Give the conventional representation for leaf spring and bearings.
4 Define upper limit, deviation, and tolerance.
5 Define interchangeability and selective assembly.
6 What are the recommended tolerance grades for the following processes:
   a) Fine grinding
   b) Turning
   c) Housing
7 Explain the following symbol shown in Fig. 1.
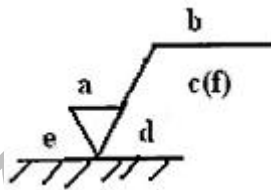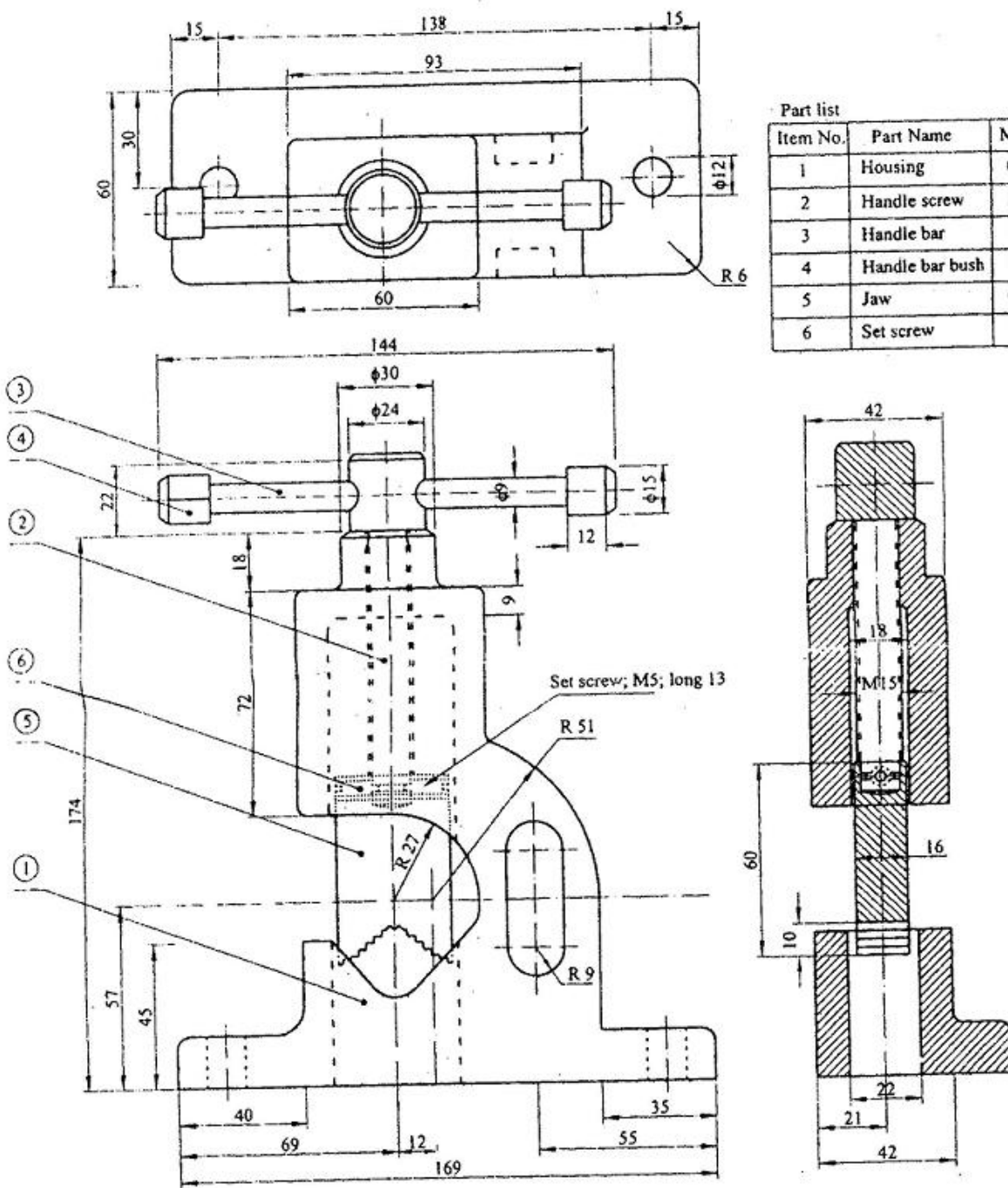

Fig. 1

8 Expand
   a) PCD
   b) HTS
   c) CRS
9 Define caulking and fullering.
10 Find the limits of the following shafts and holes.
   30 h6, 50 p5, 20 H9, 40 H11.

PART – B (50 Marks)

11 a) From the assembly drawing of pipe vice shown in Fig. 2. Answer the following:
    i) Housing and handle screw
    ii) Handle bar and handle bar bush

   b) Draw the following component drawings and give necessary geometric tolerance, surface roughness and surface treatment.
    Handle screw, handle bar, handle bar bush, JAW and set screw.

c) Write down the process sheet for the component handle bar.

Part list			
Item No.	Part Name	Material	Qty.
1	Housing	C.I	1
2	Handle screw	M.S	1
3	Handle bar	M.S	2
4	Handle bar bush	M.S	1
5	Jaw	C.I	2
6	Set screw	M.S	2

Set screw; M5; long 13

R 51

R 27

R 9

****

FACULTY OF ENGINEERING

B.E. 4/4 (AE) I – Semester (Main) Examination, November / December 2016

Subject: Automotive Pollution and Control

Time: 3 Hours   **Max.Marks: 75**

Note: Answer all questions from Part A. Answer any five questions from Part B.

PART – A (25 Marks)

1 How the transient operation of S.I engine will cause CO formation?

2 Explain the various effects of air pollution on the environment.

3 Draw the effect of engine load on CO formation on C.I engines.

4 Write about the different mechanism of NOx formation.

5 What is meant by a fuel cell? How it is related to automotive pollution?

6 Define EGR ratio.

7 Why unleaded gasoline is used in vehicle fitted with catalytic converters?

8 What is meant by FTP? When it is formed? What for it is?

9 What is the effect of A/F ratio on composition of exhaust of petrol engine?

10 What is the principle of gas chromatograph used for emission measurement?

PART – B (5x10 = 50 Marks)

11 Which is the statutory agency monitoring and assessing the vehicular population in the cities and how the vehicular emissions are monitored and regulated by them? Explain it in detail.

12 a) Discuss about the control of nitric oxide based on equivalence ratio and engine manifold pressure.
 b) Write about the formation of smoke in diesel engine.

13 What is meant by secondary injection? How it is carried out? How it is controlling the emissions in a diesel engine? Discuss in detail.

14 a) Discuss the role of thermal reactors in control of exhaust emissions.
 b) What are the main elements of catalytic converter and explain them.

15 a) Explain the construction and working principle NDIR analyzer for CO and CO_2 concentration with the help of line diagram.
 b) What are the types of dilution tunnels? Explain them in brief.

16 a) What is driving cycle? Explain European driving cycle.
 b) Discuss various emissions and their effects on human health and environment.

17 a) Define smoke and discuss different factors that affect smoke formation in CI engines.
 b) Explain how EGR affect NO_x reduction in CI engine.

****

FACULTY OF ENGINEERING

B.E. 4/4 (IT) I – Semester (Main) Examination, November / December 2016

Subject: Middleware Technologies

Time: 3 Hours **Max.Marks: 75**

Note: Answer all questions from Part A. Answer any five questions from Part B.

PART – A (25 Marks)

1	Define web service. Give some practical uses of web services.	2
2	What are the different types of middleware?	2
3	What are the life cycle methods of servlet?	3
4	Write the different steps to develop struts applications.	3
5	Differentiate between CMP and BMP.	3
6	Define home interface and remote interface.	2
7	What is IDL and why is it useful?	2
8	Define distributed system. Give examples.	3
9	What is the purpose of CLR?	2
10	Differentiate between COM and CORBA.	3

PART – B (5x10 = 50 Marks)

11 a)	Explain about the different WSDL components.	4
b)	How are the servers classified? Describe each type in detail.	6
12 a)	Explain MVC design pattern in Struts framework with a neat diagram.	5
b)	Name different types of JDBC drivers and explain each in detail.	5
13 a)	Explain EJB architecture in detail with a neat sketch.	5
b)	Discuss briefly about different session beans in detail.	5
14 a)	Explain about CORBA and Networking Model with a neat diagram.	6
b)	Discuss about CORBA alternatives.	4
15 a)	Explain the architecture of .Net framework.	6
b)	Describe about proxy and stub in COM.	4
16 a)	Write short notes on SOA.	5
b)	Explain about different session tracking methods.	5

17 Write short notes on the following:
   a) Roles of EJB. 3
   b) CORBA object model. 3
   c) Marshalling and Demarshalling.

****